

Climate and Sustainability Forum Working Group Report August 2018



Introduction

The Sustainable Health Review Panel's Interim Report (February, 2018), under Direction 1: 'Keep people healthy and get serious about prevention and health promotion', noted, "a strong concern regarding the emergence of environmental impacts such as extreme weather conditions and the growth of infectious and communicable diseases that might expose and put further strain on the WA health system. An adaptive and flexible approach to this area is needed."

It indicated that the Review would consider "opportunities to reduce environmental harm" and to gain advice on this, and in recognition that the climate change implications for the WA health system warranted further exploration, the Panel established a Working Group to organise a Climate and Sustainability Forum of health sector representatives, clinicians, consumers and other stakeholders from a wide range of sectors to answer two questions:

1. What role can the health system play in relation to the mitigation of and adaptation to climate change?
2. How can the health system contribute to efforts across government and society in addressing the health impacts of climate change?

The Working Group facilitated the generation of a set of priorities and practical recommendations via input from a broad selection of cross sectoral stakeholders, including a cross section of health and public health representatives at a Climate Change and Sustainability Forum (consultation methodology described below). This paper is the report from the Working Group to the Sustainable Health Review Panel on the findings and recommendations of the Climate and Sustainability Forum and supporting consultation efforts.

The starting point for the Climate and Sustainability Forum discussion was the acknowledgement by participants that climate change has serious implications for the population of WA and the WA health system. The impacts from climate change are already being observed here in Western Australia, and they will become more significant in the future. They raise pressing issues for today, not just the distant future.

The Forum discussion did not debate the details of climate change science, which are well established. It focused on the priority issues for the WA health system, as a contributor to climate change, as a service that needs to meet increased demand from the community, and as a group of professionals who can influence government policy and are trusted communicators within the community. Particular focus on the practical recommendations that can be considered to address mitigation of, and adaptation to climate change was discussed.

Climate change represents a series of risks to human health and the WA health system. The potential responses identified by the Forum to climate change issues provide a range of opportunities to drive innovation in the WA health system that can support quality health care provision, make the health system more resilient to climate impacts, reduce the climate and environmental impacts of the health system, be influential in community and Government, and in the process help reduce health system costs.

This paper is organised under a number of sections to provide an overview of the Forums discussion and outcomes and includes:

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Summary of Recommendations

Discussion of the Working Group's recommendations and supporting detail are provided at the end of this Report. Here is a Summary of the recommendations.

Recommendation 1: The Forum recommends that a Sustainability Unit be established within the Department of Health to provide stewardship in matters of climate change and sustainability across the Department and the WA health system.

Recommendation 2: Establish an inquiry under the *Public Health Act 2016* (Part 15) to review the current WA Health System planning and response to the health impacts of climate change and make recommendations for improvement in terms of climate change mitigation and public health adaptation strategies.

Recommendation 3: Bring forward the preparation and implementation of Part 15 of the *Public Health Act 2016* to expedite a robust Health Impact Assessment (HIA) capability in Western Australia.

Recommendation 4: Ensure that the Future Health Research and Innovation Fund is established in a manner that encourages, supports and allows for investigation, research and development on climate change and health, and environmental sustainability, solutions.

Relevance for sustainability

The United Nations Sustainable Development Goals recognise the importance of the broader relationship between the environment, and health and wellbeing. The seventeen goals include climate action, biodiversity (life on land and below water), clean energy, sustainable communities, and responsible consumption. The latest Sustainable Development Goals (SDG) index ranked Australia in the lowest performing nations in the world on climate action (Sustainable Development Goal No. 13). The measure takes into account greenhouse gas emissions within Australia; emissions embodied in the goods we consume; climate change vulnerability; and emissions from fossil fuel exports to other countries [1].

Addressing environmental determinants in areas such as the Kimberley could see a reduction of 13% of the overall gap in mortality between Aboriginal and non-Aboriginal people in WA and reduce hospitalisation costs by an estimated at \$16,930,056 per year [2].

In 2009, climate change was described by the Lancet as the biggest global health threat of the twenty first century [3]. Direct effects on health include increasing injury, physical and mental illness, and death related to a greater frequency of more intense weather events (floods, droughts, hurricanes and storms), as well as the effects of increasing temperatures and heatwaves. Extreme weather events can lead to both increased pressure on healthcare services and facilities, and damage to those facilities [4].

Indirect health effects include those mediated via changes in environmental systems, causing alterations in the distribution of vector-, water- and food-borne infectious diseases, air pollution patterns, and the availability of safe drinking water and adequate nutrition. Further health impacts relate to changes in economic and social systems, including as people migrate or conflict over scarce resources [4].

Climate change health impacts vary based on the vulnerability and adaptive capacity of individuals and populations. Well recognised vulnerable groups include women and children, the elderly, those with pre-existing medical conditions, those living in rural and remote areas, those in outdoor occupations, and poor and marginalized communities [4]. More information on climate change impacts of health is provided in the *Background Paper: Climate Change and Health* (Appendix A).

Greenhouse Gas (GHG) emissions from human activities have increased since the pre-industrial era and have driven up global atmospheric concentrations of GHGs to levels unprecedented in at least the last 800,000 years. This has resulted in warming of the climate system (IPCC, 2014 [5]), causing impacts on natural and human systems on all continents and across the oceans. Continued emissions will cause further warming and continue to amplify climate-related risks to natural and human systems.

Western Australia's climate has been observed to have changed over the last century, and more so over the last 50 years. Average temperatures have increased by about 1°C since 1910 and the average annual number of days over 35°C in Perth has increased from 12 to 28 since 1958. There has been a steady decline in rainfall in the south-west since the 1970s which has resulted in a 50 per cent reduction in streamflow and approximately 60 per cent reduction of inflow to metropolitan dams since the 1970s. Fire risk, fire weather and the length of fire seasons have increased since the 1970s and the mean sea level at Fremantle has increased almost 20 cm since 1897, at an average rate of 1.54 millimetres each year. Since 1991, sea level on the west coast has raised at a rate almost three times the global average. This has

contributed to a three-fold increase in flooding events in Fremantle. More information on climate change more generally is provided in the *Climate Change in Western Australia; Background Paper* (Appendix B). Human health is dependent on the health of the planet and its ecosystems. Climate change is ultimately a major health threat because the effects of future climate projections represent an unacceptably high and potentially catastrophic risk to human health by undermining the environmental and social foundations of health [4].

Watts et al. [4] state that, “The magnitude and nature of health impacts are hard to predict with precision; however, it is clear that they are pervasive and reflect effects on key determinants of health, including food availability. There are real risks that the effects will become non-linear as emissions and global temperatures increase”.

Responses to the health impacts of climate change

In general, the responses to the health impacts of climate change can be considered under the two broad categories: adaptation and mitigation.

Adaptation refers to coping with the impacts of current and future climate changes. This can involve assessing the climate risks and vulnerabilities, and then evaluating, planning and implementing actions to minimise the costs of those risks, and taking advantage of any opportunities that might arise. Adaptation is sometimes referred to as “*managing the unavoidable*”.

Mitigation refers to reducing greenhouse gas emissions (GHG emissions). This can be referred to as “*avoiding the unmanageable*”. It is critical to prevent the worst/catastrophic climate change by urgently reducing GHG emissions, given that there are recognised limits to our capacity to ‘adapt’. The burden of reduction in emissions needs to be shared across sectors and society to achieve adequate reductions.

Mitigation within the healthcare sector

The (GHG) emissions resulting from the healthcare sector are substantial: a recent study estimated the GHG emissions from the Australian healthcare sector are equivalent to seven percent of the nation's current emissions [6]. It is recognised that many measures to reduce emissions or waste may also save money for the healthcare sector (e.g. using less energy, changing pharmaceutical practices, changing care models, improved waste management).

Specific cohorts affected by climate change

The health effects of climate change are expected to be disproportionately distributed among population groups, with some being more vulnerable than others. Differential exposure, sensitivity and adaptive capacity of individuals and groups contribute to their vulnerability. Age, pre-existing medical conditions and social deprivation are important factors in making people vulnerable to the adverse effects of climate change. Children, particularly young children, are vulnerable due to immature and rapidly developing organ, immune and metabolic systems. They also breathe, eat and drink more per unit of body weight (thereby increasing relative intake of toxicants) and have a smaller body mass to surface area, affecting heat loss, than adults.

The elderly are also at greater risk due to changing physiology with age-related decreases in metabolic process, immune responses and thermoregulatory mechanisms. The elderly are also more likely than younger adults to have chronic illness, which further increases their susceptibility to the direct and indirect impacts of climate change.

There are a number of pathways that increase the susceptibility of those who experience social and/or economic disadvantage and vulnerabilities. These include reduced opportunity to 'escape' extreme weather events due to poor, or no housing, poor existing health due to inadequate nutrition and other lifestyle factors, and impaired immune responses due to increased levels of stress. Aboriginal and Torres Strait Islander populations are particularly vulnerable due to existing levels of poor health, healthcare access and poverty, combined with a stronger cultural connection to the land increasing the sense of loss with natural system changes occurring as a result of climate change

Mental Health and Climate Change

The impacts of climate change on people's mental and community health arise directly and indirectly with some human health effects surfacing gradually. Some communities and populations are more vulnerable to the health-related impacts of climate change with factors that may increase sensitivity to the mental health impacts including geographic location, presence of pre-existing disabilities or chronic illnesses, and socioeconomic and demographic inequalities, such as education level, income, and age. In particular, stress from climate impacts can cause children to experience changes in behavior, development, memory, executive function, decision-making, and scholastic achievement [7].

A Western Australian Context

It is recognised the health effects of climate change are already being felt in WA. However, there is little data or documented understanding of either how these impacts are or will be experienced or the costs (both financial and non-financial) within and external to the health system. Extreme weather events are causing heat-related illness, likely contributing to infectious disease incidents (water, food and vector borne diseases) and have presented threats to critical infrastructure. Bushfires and droughts have likely presented increased demand for physical and mental health services. Local councils and residents are already dealing with the effects of sea level rise on infrastructure, and homes, and natural and built coastal assets.

A key report "Health impacts of climate change: Adaptation strategies for Western Australia" was produced by the WA Department of Health ten years ago. In more recent years, further study of the effect of heatwaves on hospital and ambulance usage has resulted in two research publications from the Department of Health [8, 9].

At a state level, there is currently no specific team or resourcing within the WA Department of Health working on documenting or managing climate change as an explicit health risk however is tasked with overall responsibility for:

- emergency management response to heatwaves, as part of the State Hazard Plan - Heatwave.
- Local Government Policy development – climate change is part of the health risk assessment process and the Department of Health contributes to requests regarding this.
- The WA Department of Health provides climate change impact, risk or vulnerability assessments and/or mapping for government departments and agencies seeking advice on climate change.

Clinical Senate of Western Australia

The March 2018 WA Health Clinical Senate, *'Waste Not: Want Not'* [10] identified environmental areas for change, noting every decision made is a resource decision and to reduce environmental impacts. The outcome recommendations from the Clinical Senate requested the System Manager to: Produce a benchmarked report annually across hospitals for key waste areas and makes the report publicly available.

Approaches taken by other jurisdictions/exemplars

Queensland

As part of the **Queensland Climate Adaptation Strategy** (2017) [11] the Queensland Government has committed to develop, in partnership with key stakeholders, climate change adaptation plans to facilitate sectoral collaboration and identify and address key issues. To help achieve this the Queensland Department of Environment and Science has engaged the National Climate Change Adaptation Research Facility (NCCARF) and the Climate and Health Alliance to facilitate the development of a Health and Wellbeing Climate, Adaptation Plan with the health and wellbeing sector in Queensland.

This project aims to facilitate the development of a plan to support the sector 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. A Discussion Paper released for comment is available at: http://www.caha.org.au/projects_h-cap or at: <https://www.nccarf.edu.au/content/climate-health-and-wellbeing-plan-queensland-h-cap> [12].

Victoria

The Victorian Government through its *'Victoria's Climate Change Adaptation Plan 2017-2020'* [13] sets out its commitment to develop climate change adaptation plans for key systems (sectors) by 2021, to meet the requirements in the Victorian *Climate Change Act 2017*. The Act requires 'Adaptation Action Plans' to be developed every five years for 'health and human services' and six other systems.

United Kingdom – NHS Sustainable Development Unit: England has tackled sustainable health in an innovative manner that has also managed to introduce significant financial gains. From 2008, led by Dr David Pencheon, the NHS Sustainable Development Unit, underpinned by a Sustainable Development Strategy has had the vision of, *"A sustainable health and care system works within the available environmental and social resources protecting and improving health now and for future generations"*. (Dr Pencheon presented at the Climate and Sustainability Forum and a 15 minute video of his presentation can be viewed [here](#)).

The three goals of the SDU strategy are *a healthier environment; communities and services are ready and resilient for changing times and climates; and every opportunity contributes to healthy lives, healthy communities and healthy environments*[14].

Between 2007 and 2015, despite an 18% increase in admissions, the NHS was able to reduce greenhouse gas emissions by 11% [15]. The estimated financial savings are £90 million per annum. This strategy has demonstrated an ability to address climate change, introduce efficiencies, reduce waste, and result in financial savings.

United Nations Sustainable Development Goals

United Nations Sustainable Development Goals (SDGs), are a set of interrelated global goals and targets for environmental, economic and social sustainability. In September 2015, United Nations and 193 Member States, including Australia, endorsed the *Transforming our World: 2030 Agenda for Sustainable Development*, encompassing the 17 SDGs.

The goals address social and economic development issues, including poverty, hunger, health, education, climate change, gender equality, water, sanitation, energy, urbanisation, environment and social justice. Although some of the goals are more applicable to developing countries than Australia, *Goal 4: Good Health and Wellbeing*, *Goal 12: Responsible Consumption and Production* and *Goal 13: Combat Climate Change*, and their target actions, are particularly relevant. The goals establish the commitment to long-term health of the community and physical environment, and align to broader global aspirations.

Clean Energy Finance Corporation

A statutory authority established by the Commonwealth Government under the Clean Energy Finance Corporation Act 2012. The CEFC invests in industry sectors with the strongest potential to reduce Australia's carbon emissions. Finance options for projects include:

- Project finance: for larger projects, or smaller projects with specific features that may require individual financing solutions;
- Equity finance: equity investments in the development of structured investments and new capital products such as climate bonds and equity funds;
- Corporate loans: for corporates with one or more eligible project, of varying sizes; and
- Aggregation finance: working with co-financiers to bring CEFC asset finance to a large number of individual projects, such as small businesses, manufacturers and agribusiness.

Global Green and Healthy Hospitals

The Global Green and Healthy Hospitals community has 1,017 members in 52 countries on 6 continents who represent the interests of over 32,100 hospitals and health centres. It brings together hospitals, health systems, and health organisations from around the world under the shared goal of reducing the environmental footprint of the health sector, and contributing to improved public and environmental health. The framework and roadmap to reach this goal is provided by the GGHH Agenda and its 10 interconnected sustainability goals for hospitals and health systems to work towards at their facilities. More information can be found [here](#).

Climate and Health Alliance

Non-government organisation the Climate and Health Alliance (CAHA) have proposed a Framework for a National Strategy on Climate, Health and Well-being for Australia to federal stakeholders. More information can be found [here](#).

Climate and Sustainability Forum Working Group Methodology

Working Group

The Sustainable Health Review received feedback in relation to climate change through direct submissions and public forums (recommendations and comments can be found at Appendix C), participation through the Consumer and Carer and Clinical Reference Groups, input from the SHR Prevention, Promotion and Partnerships Working Group, and through clinician feedback.

To progress engagement and consultation regarding and in response to the Panel's Interim Report a Working Group was established with staff from the Department of Health, the SHR Secretariat, the Department of Water and Environmental Regulations Climate Change Unit, and a consultant involved in the SHR's Consumer and Carer Reference Group.

Climate and Sustainability Forum Outcome

The engagement event planning involved a list of carefully selected participants to ensure a broad cross section of stakeholders provided input for change (the list of participants who attended the Forum and provided advice to the working group is at Appendix D.) Fifty six participants attended the forum on the 23rd July 2018.

In addition, a number of one-on one conversations and meetings were conducted by the Working Group with stakeholders who were unable to attend the Forum, to ensure their input could be included.

Utilising the facilitation of Tuna Blue and Group Map technology nine recommendations were generated by the participants at the Forum and discussed in a plenary discussion. Following the Forum these were refined based on the plenary feedback into 10 recommendations (these can be found at Appendix E). A post Forum survey was sent to participants and invitees that were unable to attend, as well as the Consumer and Carer Reference Group to provide an opportunity for further refinement and comment of the recommendations.

At the completion of the Forum participants were handed a personalised message from children and young people through a project of Millennium Kids. Images of these messages are included in this report.



The forum included various presentations including one from Dr David Pencheon about the Sustainable Development Unit in the UK which can be [viewed here](#).

Findings

The Working Group reviewed the material generated (full records of the Group Map content and survey results can be found in the Appendix F) and refined the recommendations into four for the Panel's consideration (see Recommendations section below).

During the post-forum survey participants were asked if they would be interested in participating in a Community of Practice, and 88% of respondents answered 'yes'. As a result two members of the Working Group are in the process of establishing a series of open meetings to support the establishment of a Community of Practice for those interested in health and climate change related issues.

Themes and quotes from stakeholders

There were a number of key themes that arose from the Forum, survey and consultation process. In this section these themes, along with relevant quotes are summarised to provide further context for the four recommendations in the following section.

Stakeholders are engaged, enthusiastic and want to be involved.

"I am encouraged and enthused by the participation. I feel invigorated in moving forward. I would love to see real imagination and initiative in this area. I will push forward in my communication with the health area network I am in to help encourage sustainable changes."

"It makes me feel more secure that there is support for action to address social impacts from climate change."

"Act quickly, with imagination, passion, and proactive thinking."

"Great job with the roundtable, I hope it leads to climate change and environmental issues becoming a priority for the WA Government."

"I just wanted to congratulate you on today, it was as interesting and thought provoking as I expected it to be, but also easier to understand than I expected which is awesome! I think the way the info was presented really did that, so truly, good job!" (Consumer)

"AHCWA [Aboriginal Health Council of WA] can advocate on behalf of the Forum to our 22 Aboriginal Community Controlled Health Service, regarding the recommendations."

"Thank you for holding this event. It has identified important priorities and recommendations. I hope we can ensure that practical measures can be implemented as result of the recommendations identified."

There is a strong desire for leadership in this area and recognition of the role WA Health and health professionals can provide.

"Health professionals can substantially challenge social behaviours and are a group who can educate as well as lead by example."

"We need leadership and accountability from the top through targets and KPIs for Director Generals."

"You can't control what you can't measure - and without hospital / health service auditing, measuring, recording, benchmarking, and KPI targets, there will be no accountability. There are already experts doing this and information available on what, how, when and why. We should seek assistance from others in this space to achieve this ASAP."

"Kids want someone to take a lead on this issue with a strong voice. Having the Health Department as a lead would be hugely beneficial."

"Minister to set sustainability targets for health CEO's."

Advocacy: "health experts should be highlighting the health impacts (both directly from air pollution and indirectly through climate change) relating to fossil fuel combustion domestically but also exports".

Messaging: "to induce cultural shift that recognises climate change as a health issue (e.g. mentioning sustainability in WA Health slogan / vision, discussions on sustainability throughout health sector)".

It was acknowledged that climate change is a whole of society issue and requires a whole of government response beyond the three year electoral cycle.

“Take a whole of Government approach, with the State Government leading by example. We need to start with high level KPIs, backed by legislation and policy.”

“The State’s public sector accounts for 7% of the State’s employed workforce with over 2000 worksites. The Health Department has the opportunity to advocate for the State Government to resume benchmarking for (at least) energy, water and waste across the sector.”

“Housing and buildings should be low emission; only approve building of new health facilities that are low impact; enforce building performance standards and planning regulations in healthcare and elsewhere”.

“Factor sustainability clauses into employment agreements and negotiations. Avoid the swings and roundabouts of changing government commitment as seen in WA over the last decade.”

“Agencies with a client population vulnerable to climate change (e.g. communities, justice) should develop heatwave preparedness plans.”

“Health system to provide robust, public advice and assessment of health impacts of decisions/development with a major focus on climate change.”

“Strong cross-sectoral linkages will aid the department in tackling climate change. As noted previously tackling climate change needs a whole of government response and for the State Government to lead by example.”

There are significant opportunities for innovation in Climate and Health Research

“The Future Health Research and Innovation Fund - could this be a source of funds for climate change adaptation research?”

“We need to develop modelling on impacts of adaptation (how much, when and where).”

“Recognise uniqueness of WA in adaptation challenges and opportunities”.

“Develop a Climate Change Adaptation Plan for the health sector”.

“Publish health impact scenarios for WA against different global temperature rise trajectories (i.e. 2°C, 4°C, 6°C), looking at health costs including from migration etc.”

“Some modeling to be done and made available to public on what will happen in terms of our health if we keep business as usual, was mentioned and sounded good.” (Consumer)

It is vital we work with and alongside the community including those who will be disproportionately affected

“Yes - engage consumers.”

“People do care about this, we just need some clear consistent messaging.”

“There, I feel, needs to be really heavy consumer and community engagement, the messages are powerful and I think compelling obviously, just need to be sure that they bring us along for the talking and planning. An example I gave was about hospital waste and single use items - it’s been common practice for so long and it was and is questioned a lot, “why do you use scissors once and chuck them away when you’ve only cut a piece of tape?”, and the answer is always it’s for our protection, it needs to be done for infection control etc. To change that they’ll need to convince us we aren’t all now going to get a raging hospital infection - even though we thought it was ridiculous anyway! Waste, climate change, the impact - it’s been minimised for so long, I think it’s going to take a big vocal “all of government” messaging to overcome that. But definitely a worthwhile one.”

“Health professionals need to be strongly encouraged to enter the public debate so that the public support efforts to mitigate climate change.”

“Co-design intergenerational sustainability policies with young people and at-risk cohorts.”

“Ensure understanding of, and support for, mental health impacts of climate change including for remote, farming and indigenous communities.”

“Establish a media strategy and media partnerships that promote understanding of climate science, climate risks, and the measures that households and health service users can take. This should coordinate with communication campaigns to improve community understanding of how to prepare and respond to emergencies like heatwaves.”

“Ensure adequate resources are provided to young people who are dealing with health impacts of climate change and of lack of action of this issue.”

Effectively addressing climate mitigation and adaptation provide many co-benefits and there are resources available to do this work

“There are numerous co-benefits of climate and sustainability measures - reduction of emissions and waste, better health but also reduced financial costs, e.g. telehealth initiatives.”

“Shift focus to preventative health to reduce burden on the emissions and energy intensive health services.”

“Look at ways to drive the uptake of telehealth and remove barriers / explore why uptake is low in some areas.”

“Access funding from innovative sources for refurbishment, renewable energy and waste management programs, e.g. Clean Energy Finance Corporation’s Sustainable Cities program.”

“Procurement is the biggest source of emissions in healthcare. Standards that obligate health services and health purchasers to include sustainability criteria in procurement contracts. The government should include carbon neutral and [cradle to] grave product stewardship in all its purchasing contracts.”

Recommendations for the Sustainable Health Review Panel

Recommendation 1: The Forum recommends that a Sustainability Unit be established within the Department of Health to provide stewardship in matters of climate change and sustainability across the Department and the WA health system.

The Unit should be established with sufficient independence from the policy and operational aspects of the Department to ensure it provides clear advice to the Minister for Health, Director General and health services on how best to improve the health systems performance on Sustainability and Climate Change objectives.

The Office should be established at a high level of influence within the Department and headed by a Director or Executive Director in a Tier 3 level position. The leader of this Unit should hold a position on the Health Executive Committee to ensure that these matters are under active consideration in all WA Health system decisions. The Unit should be adequately resourced to enable it to carry out initial research and strategy development and to execute implementation plans for a three year period.

It should operate on a business plan showing the desired return on investment, acknowledging there is likely to be significant net savings to WA Health. The first three years of operation should provide guidance on the ongoing funding model for the future.

The final objectives and strategy for the Sustainability Unit should be informed by parallel activity conducted by a Public Health Inquiry, which is also a recommendation of this Forum. However, it is important that the work of the Unit is not delayed by the processes of a Public Health Inquiry.

The Unit should commence work on key strategies as soon as possible. These include:

1. Introduction of enforceable benchmarks and targets for all health service provision with executives held accountable. These targets should cover emission levels, waste, consumption, and sustainability, linked to health care quality measures.
2. A plan to invest in green/sustainable infrastructure (solar panels, green space, energy efficiency etc.) for health operations, including service provision, new facilities and retrofits of existing facilities (for example a *Sustainable Cities Clean Energy Finance Corporation* funded pilot).
3. A review of procurement policies and practice to specify emissions reduction and waste reduction in existing health services and in the establishment of new facilities.
4. A program to engage widely with clinicians and managers to encourage and share experiences of service-level actions, and ensure a culture of support and leadership for climate change action and sustainability measures across the health system.

Recommendation 2: Establish an inquiry under the *Public Health Act 2016 (Part 15)* to review the current WA Health System planning and response to the health impacts of climate change and make recommendations for improvement in terms of climate change mitigation and public health adaptation strategies.

Aims of the inquiry

The aim of the Inquiry should be to identify and recommend a program of work that would address both adaptation and mitigation responses, namely:

- (a) protect the public from the harmful health impacts of climate change, and strengthen the preparedness resilience of communities and health services against extreme weather events; and
- (b) reduce the contribution of WA health services to climate change and other detrimental environmental impacts.

Terms of Reference

1. Investigate and synthesise current knowledge on the implications of climate change for health in Western Australia.
2. Make recommendations for further determining the current and future implications of climate change for health in Western Australia.
3. Outline and advise on the role and strategies WA health services should undertake in contributing to: mitigating greenhouse gas emissions; and adapting to climate change impacts to minimise harm to vulnerable people and to better prepare the community and WA health services.
4. Summarise the likely benefits of measures advised from the third TOR for quality health care delivery, healthcare budget savings, and other environmental benefits.
5. Define the Department of Health's role in relevant public policy with respect to climate change and environmental sustainability. This should include the departments role in leading and supporting the development of relevant strategy and policy in relation to adaptation and mitigation responses to climate change, the three pillars of sustainability (social, environment and economic), and other sectors that influence the determinants of health, such as urban planning and developments.
6. Provide recommendations on resourcing and institutional arrangements to support priority climate change mitigation and adaptation measures.
7. Investigate measures to adopt energy efficiency and other climate change mitigation measures across the WA health services that will have a positive cost-benefit ratio over the short to medium term. Mitigation measures to be considered could also include investment in energy generation, building design and retrofitting, waste reduction, and other sustainability measures.
8. Recommend the terms of reference, scope and preferred method/s for: (a). undertaking a climate change vulnerability assessment for the health sector; and (b). developing a Climate Change Adaptation Plan for the health sector.

These would identify future programs and projects that could provide guidance to communities and the State on adaptation actions to protect public health from the impacts of climate change. The Background legislation to Recommendation 2 is the Public Health Act 2014. The full text is available at:

[https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_40846.pdf/\\$FILE/Public%20Health%20Act%202016%20-%20%5B00-f0-01%5D.pdf?OpenElement](https://www.legislation.wa.gov.au/legislation/prod/filestore.nsf/FileURL/mrdoc_40846.pdf/$FILE/Public%20Health%20Act%202016%20-%20%5B00-f0-01%5D.pdf?OpenElement)

The relevant sections of the Act can be found in Appendix H.

Recommendation 3: Bring forward the preparation and implementation of Part 15 of the *Public Health Act 2016* to expedite a robust Health Impact Assessment (HIA) capability in Western Australia.

In accordance with the Government's Health in All Policies election commitment, the development of the Health Impact Assessment regulations under the provisions of the *Public Health Act 2016* has been included in the stage 5 work package scheduled to occur in 2020. These proposed Regulations could be used to assess proposals for projects or developments which may increase the impacts of climate change on human health and recommend changes to those proposals that would mitigate the effects or assist with adaptation.

It is recommended that the Department of Health is directed to accelerate the development and implementation of those Regulations as a stand-alone priority public health initiative.

Recommendation 4: Ensure that the Future Health Research and Innovation Fund is established in a manner that encourages, supports and allows for investigation, research and development on climate change and health, and environmental sustainability, solutions.

Currently there is minimal investment at a state or federal level or by philanthropic sources into researching the health impacts of climate change and attendant health system responses. There is significant opportunity to position WA at the forefront of climate change and health research given our unique geography and weather systems (e.g. patient transport solutions, solar systems) and our particular vulnerability to increasing climate change impacts. The relationship between climate change and health is likely to be a growing area of research as communities across the world face worsening climate change impacts and increasingly seek to adopt solutions.

The SHR Interim Report listed Direction 9 as, "Harness and support health and medical research, collaboration and innovation". Research in climate change and sustainability solutions would contribute to three of four areas of research subsequently outlined in the Interim Report, namely: Public Health Research (develop and improves disease prevention programs), Basic Research (improves understanding of the causes and mechanisms of disease), and Health Services (Systems) research (enhance the quality and effectiveness of health care delivery).

The WA Government's Future Health Research and Innovation Fund provides \$1 billion dollars to drive medical research and innovation. Investment from such a Fund would enable research into areas including:

- establishing and quantifying the health impacts and healthcare costs of climate change, both current and predicted. This could include a focus on mental health, especially for children and young people, and rural and remote communities.
- researching adaptation responses to the health impacts of climate change e.g. identifying effective measures for protecting the health of the population, including vulnerable groups, during extreme weather events (floods, bushfires, heat waves, storms, unexpected e.g. thunderstorm asthma).
- investigating measures to reduce greenhouse gas emissions and waste in healthcare systems, including more efficient provision of services and changed models of care.
- researching the health effects (risks and benefits) of building more sustainable cities/environments e.g. greenspace, urban heat island effect, better public and active transport

planning, interactions with other health issues such as obesity and physical activity, how to build community resilience and connectedness.

- managing the health benefits and risks of a global shift to a low carbon economy.

The above research would play an important role in informing the work of a 'Sustainability Unit', as per Recommendation 1 above.

Proposed sequencing of implementation of recommendations

As mentioned above an immediate follow up action from the Climate and Sustainability Forum will be the facilitation, by two of the Working Group Members, of a series of informal 'Health and Climate Change Community of Practice' open meetings, to continue the discussion of priority issues and practical steps that can be taken regarding climate change and health.

Subject to consideration by the Minister for Health and the Director General of the Department of Health, the establishment of a Sustainability Unit could occur in the short term (within months), and begin implementing a number of suggestions arising from the Forum in a relatively short time frame.

These actions need not wait for the outcomes of the proposed Inquiry. We recommend a Sustainability Unit be resourced to facilitate ensure a critical mass of skills required for success. Health Service Providers could also consider employing (within months) 'sustainability officers' at major hospitals to assist in identifying and implementing sustainability measures-this has been achieved across the United Kingdom resulting in net savings to participating health services.

The establishment of an Inquiry into the climate change implications could be commenced relatively quickly, but should be given sufficient time to undertake its research, consultations and deliberations. We suggest a timeframe of twelve to eighteen months depending on resourcing.

There is an opportunity for WA Health to investigate and apply to fund potential pilot projects through the CEFC's Sustainable Cities Program as an initial investment source to achieve outcomes in energy efficiency, increased utilisation and maintenance of infrastructure, waste, procurement processes or renewable energy technologies. This initiative could happen in collaboration with, or independent of the above recommendations.

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Appendices:

Appendix A

Climate Change and Health – (background paper)

The following paper is designed to give attendees a brief introduction to the topic of climate change and health. It includes an opening segment on the health impacts of climate change (in a general sense), then a framework and examples of the health sector response to climate change, and concludes with an assessment of health and climate change specific to Western Australia. It is not designed to be a comprehensive paper but rather a starting point for discussion at the Climate and Sustainability Forum. Additional perspectives are invited from the many different voices that will be present on the day.

Health impacts of climate change

In 2009, climate change was described by the world-leading medical journal, the Lancet, as the biggest global health threat of the twenty first century [1]. Direct effects on health include increasing injury, physical and mental illness, and death related to a greater frequency of more intense weather events (floods, droughts, hurricanes and storms), as well as the effects of increasing temperatures and heatwaves. Extreme weather events can lead to both increased pressure on healthcare services and facilities, and damage to those facilities [2].

Indirect health effects include those mediated via changes in environmental systems, causing alterations in the distribution of vector-, water- and food-borne infectious diseases, air pollution patterns, and the availability of safe drinking water and adequate nutrition. Further health impacts relate to changes in economic and social systems, including as people migrate or conflict over scarce resources [2].

Climate change health impacts vary based on the vulnerability and adaptive capacity of individuals and populations. Well recognised vulnerable groups include women and children, the elderly, those with pre-existing medical conditions, those living in rural and remote areas, those in outdoor occupations, and poor and marginalized communities [2]. Climate change is an issue of intergenerational and international injustice - future generations will suffer worse health impacts, and poorer countries are already suffering greater impacts despite being the least responsible for emissions. Impacts threaten to undermine the last half century of gains in development and global health [2]. No region of the globe is immune: the Fifth Assessment Report of the Intergovernmental Panel on Climate Change (AR5 IPCC), published in 2014, described Australia as a country very vulnerable to existing and future climate changes [3].

Non-linearities, interactions, and unknown unknowns

Human health is dependent on the health of the planet and its ecosystems. Climate change is ultimately a major health threat because the effects of future climate projections represent an unacceptably high and potentially catastrophic risk to human health by undermining the environmental and social foundations of health [2].

Watts et al. [2] state that, “The magnitude and nature of health impacts are hard to predict with precision; however, it is clear that they are pervasive and reflect effects on key determinants of health, including food availability. There are real risks that the effects will become non-linear as emissions and global temperatures increase. First, large-scale disruptions to the climate system are not included in climate modelling and impact assessments. As we proceed rapidly towards 4°C of warming by the end of the century, the likelihood of crossing thresholds and tipping points rises, threatening further warming and accelerated sea-level rise. Second, small risks can interact to produce larger-than- expected chances of catastrophic outcomes. Such impacts (and their interactions) are unlikely to be trivial and could be sufficient to trigger a discontinuity in the long-term progression of humanity. Whilst the poorest and most vulnerable communities might suffer

first, the interconnected nature of climate systems, ecosystems, and global society means that none will be immune. Indeed, on the basis of current emission trajectories, temperature rises in the next eighty five years may be incompatible with an organised global community” and well beyond the realms of ‘adaptation’.

In the Pacific Islands, communities are already struggling with compounding impacts: ocean acidification leading to coral reef death that reduces the supply of fish as the main protein source, salt water inundation reducing available arable land, houses affected by sea-level rise and storm surges, and frequent storm disasters impacting hospitals and other infrastructure, and indeed challenging state resources and capacity for recovery. Programs, including Kirabati’s ‘Migration with Dignity’, are now proceeding to aid community migrations. In Australia, increased frequency and intensity of bushfires, heatwaves, major flood events and droughts are creating compounding and major effects, while the thunderstorm asthma event in Melbourne (10 deaths and 8000 additional emergency department presentations) highlights the potential for ‘unknown unknowns’.

Watts et al. “Health and climate change: policy responses to protect public health” paper provides a good summary of the current scientific understanding of the health impacts and risks of climate change [2]. It includes a case study (page 5) of compounding “tail” risks: flooding in the UK in 2007 threatened the electricity supply of the whole country and drinking water of many people, via the flooding of one substation. The AR5 IPCC also provides a good overview of health impacts in general and climate impacts in Australasia [3, 4] (link in Further Resources below); however, this is considered conservative by virtue of consensus between many scientists.

Climate changes as one element of environmental sustainability

It is acknowledged climate change is part of a wider issue of the global populations’ ability to live sustainably. The Lancet has recently produced a further series for a new field of research: “Planetary Health”. This recognises that human civilisation has flourished via unsustainable use of natural resources but now risks substantial health effects from the degradation of nature’s life support systems in the future - climate change is but one example of an altered natural system now threatening health [5]. ‘Planetary Health’ practically manifests in the healthcare sector with measures such as mass use of packaging and single-use items, without regard for impacts on future generations. This [paper](#) from Harvard further explains the planetary health concept [5], which is also available as a [lecture or 5 minute video](#). The United Nations [Sustainable Development Goals](#) recognise the importance of the broader relationship between the environment, and health and wellbeing. The seventeen Goals include climate action, biodiversity (life on land and below water), clean energy, sustainable communities, and responsible consumption.

Responses to the health impacts of climate change

In general, the responses to the health impacts of climate change can be considered under the two broad categories: adaptation and mitigation.

Adaptation refers to coping with the impacts of current and future climate changes. Adaptation is sometimes referred to as “*managing the unavoidable*”. This recognises current changes are from past emissions, and some future changes are already locked in, because there is an approximately thirty year delay in climate system effects resulting from carbon emissions.

Mitigation refers to reducing greenhouse gas emissions. This can be referred to as “*avoiding the unmanageable*”. It is critical to prevent the worst/catastrophic climate change by urgently reducing carbon emissions, given that there is a scientifically-recognised limit to our capacity to ‘adapt’. The burden of reduction in emissions needs to be shared across sectors and society to achieve adequate reductions.

Mitigation within the healthcare sector

The carbon emissions resulting from the healthcare sector are substantial: a recent [study](#) estimated the carbon emissions from the Australian healthcare sector are equivalent to seven percent of the nation's

current emissions [6]. It is recognised that many measures to reduce emissions or waste may also save money for the healthcare sector (e.g. using less energy, changing pharmaceutical practices, changing care models, improved waste management).

Health co-benefits of mitigation by sectors external to health

Many of the measures to reduce emissions (and sometimes to adapt to health impacts) may have ‘co-benefits’ for other current major public health issues, such as obesity and chronic heart and lung diseases. Measures, for example, relate to changing transport systems: increasing active transport (walking and cycling in combination with public transport systems) can improve health via increasing physical activity and reducing harmful air pollution; similarly, electric cars can create less air pollution than diesel and petrol cars. Furthermore, increasing green spaces can provide more opportunity for people to exercise and socially connect, offering benefits for mental and physical health, and can reduce the urban ‘heat island effect’ during heat waves, all while reducing carbon emissions. Another example relates to changing electricity generation sources: converting to renewable electricity reduces significant public health harms from air pollution associated with burning coal and gas.

Decreasing the consumption of red meats reduces emissions and may reduce heart disease and bowel cancer rates in Western settings [2].

Communication responses - Climate change is also a communication issue, as much as a scientific one. There is a need for the health sector to increase the public recognition of climate change as a health risk, over and above an ‘environmental’ risk.

Measuring progress – ‘The Lancet Countdown: Tracking Progress on Health and Climate Change’ is an international, multi-disciplinary research collaboration that is dedicated to tracking progress on the responses to health and climate change from 2016 to 2030 in countries across the world. They are proposing to track progress against (more detail in the *policy consultation form* [here](#)):

1. Health Impacts of Climate Change
2. Health Resilience and Adaptation
3. Health Co-Benefits of Mitigation
4. Finance and Economics
5. Political and broader engagement

Key responses by specific jurisdictions

The following key examples include adaptation or mitigation measures, or elements of both:

United Kingdom: England has tackled sustainable health in an innovative manner that has also managed to introduce significant financial gains. In 2008, the [NHS Sustainable Development Unit](#) commenced operations. The Unit’s work has been underpinned by a [Sustainable Development Strategy](#), whose vision states, “*A sustainable health and care system works within the available environmental and social resources protecting and improving health now and for future generations*”. The three goals of the strategy are *a healthier environment; communities and services are ready and resilient for changing times and climates; and every opportunity contributes to healthy lives, healthy communities and healthy environments*. The strategy has seen the adoption of a raft of measures, including development of a network of local sustainability leaders, inclusion of sustainability measures in performance metrics, and networking and education for health care staff.

A key program of SDU work has involved reducing the carbon footprint of the NHS, Public Health and Social Care system, with the aim of a 34% reduction in CO₂ emissions from building energy use, travel and procurement by 2020. It was found that 60% of CO₂ emissions from health services related to procurement, most commonly of pharmaceuticals. Between 2007 and 2015, despite an 18% increase in admissions, the

NHS was able to reduce greenhouse gas emissions by 11% [7]. The estimated financial savings were £90 million per annum. Such a strategy, therefore, has the potential to not only address climate change, but also introduce efficiencies, reduce waste, and result in financial savings.

South Australian Health: has ‘preparing for climate change’ as one of five key priorities in their current [State Public Health Plan](#) and recently received [media coverage](#) of the Chief Medical Officer’s efforts to raise awareness of the health impacts of climate change. South Australia has done extensive work on [heatwave health impacts and responses](#) (e.g. the Red Cross provides a [telephone service](#) to vulnerable citizens during heatwaves).

Queensland: The National Climate Change Adaptation Research Facility (NCCARF) and the Climate and Health Alliance (CAHA) are currently working to develop a [Human Health and Wellbeing Climate Adaptation Plan for Queensland \(H-CAP\)](#). This project is funded by the Queensland Government Department of Environment and Science (DES) and is the latest in a series of climate adaptation plans in development for various sectors in the State.

Local governments: are in some states required to have a public health plan and may consider climate change risks. The Department of Health and Human Services in Victoria has developed [guidelines](#) for local councils in how to consider climate change in public health plans. Local government have, in some cases, been leaders in identifying and responding to climate change risks, including in relation to sea-level rise and storm surges and with heatwave [plans](#) for the homeless.

Australian Government: While the federal government has signed Australia up to the Paris Agreement, national emissions have risen for the past three years, and there is currently no notable program to specifically address the health impacts of climate change. Non-government organisation the Climate and Health Alliance (CAHA) have proposed a [Framework for a National Strategy on Climate, Health and Well-being for Australia](#) to federal stakeholders. This 2015 Lancet [paper](#) has further examples and discussion around specific adaptation and mitigation measures [2].

Status of “health and climate change” in Western Australia

The Fifth Assessment Report of the Intergovernmental Panel on Climate Change, published in 2014, described Australia as a developed country very vulnerable to changes in the climate [3]. The South West of Western Australia is recognised as a region with significant existing rainfall decline due to climate change (in comparison to the rest of Australia), and temperatures and extreme heat events have increased. Sea level rise, in combination with storm surges, and ocean warming and acidification, are an increasing concern. Recent extreme climatic events show significant vulnerability of some ecosystems and many human systems to current climate variability [3]. For example, high sea surface temperatures have bleached coral reefs in Western Australia. At a national level, recent floods have caused severe damage to infrastructure and settlements and 35 deaths in Queensland in 2011; the Victorian heat wave (2009) increased heat-related morbidity and was associated with more than 300 excess deaths, while coinciding ‘Black Saturday’ bushfires destroyed more than 2000 buildings and led to 173 deaths; and widespread drought in southeast Australia (1997–2009) resulted in substantial economic losses. Without adaptation and mitigation, further changes in climate, atmospheric carbon dioxide (CO₂), and ocean acidity are projected to have substantial impacts on water resources, coastal ecosystems, infrastructure, health, agriculture, and biodiversity [3].

It is recognised the health effects of climate change are already being felt in WA. However, there is little data or documented understanding of either how these impacts are or will be experienced or the costs (both financial and non-financial) within and external to the health system. Extreme weather events are causing heat-related illness, likely contributing to infectious disease incidents (water, food and vector-borne diseases) and have presented major threats to critical infrastructure. Bushfires and droughts have likely presented increased demand for physical and mental health services. Local councils and residents are

already dealing with the effects of sea level rise on infrastructure and homes, with the recent introduction of a financially uncompensated ‘planned retreat’ process under the WACoastal Zone Strategy [8].

A key report [“Health impacts of climate change: Adaptation strategies for Western Australia”](#) was produced by the WA Department of Health ten years ago. In more recent years, further study of the effect of heatwaves on hospital and ambulance usage has resulted in two research publications from the Department of Health: [9,10].

At a state level, there is currently no specific team or resourcing within the WA Department of Health working on documenting or managing climate change as an explicit health risk. The WA Department of Health does currently assist in the following climate-related capacities:

- The WA Department of Health is the government department tasked with overall responsibility for emergency management response to heatwaves, as part of the [State Hazard Plan -Heatwave](#) directing the WA Government response to heatwaves.
- Local Government Policy development – climate change is part of the health risk assessment process and the Department of Health contributes to requests regarding this.
- The WA Department of Health provides climate change impact, risk or vulnerability assessments and/or mapping for government departments and agencies seeking advice on climate change.

The Western Australian Local Government Association has recently passed an updated Climate Change Policy recognising a ‘climate emergency’ and calling for greater ambition and a whole of government response. They provide advocacy and support to local councils in addressing climate risks.

Conclusions

In summary, unabated climate change poses an existential risk to the global population, including the people of Australia. Australia and Western Australia is particularly vulnerable to a changing climate and is already suffering significant impacts. In Western Australia, the health consequences of these impacts are poorly documented or quantified. There is an urgent need for the WA health sector to contribute to efforts to reduce emissions and operate more sustainably, and implement adaptation measures. The health sector should be part of efforts to raise public awareness of climate change as a health issue and to assist other sectors in realising the health benefits of mitigation.

Additional commentary

The commentary below provides some pertinent insight. This was taken from the Climate Code Red website [11]:

“At the London School of Economics in 2008, Queen Elizabeth questioned: “Why did no one foresee the timing, extent and severity of the Global Financial Crisis?” The British Academy [answered](#) a year later: “A psychology of denial gripped the financial and corporate world... [it was] the failure of the collective imagination of many bright people... to understand the risks to the system as a whole”.

A similar failure is occurring with climate change today.

A 2016 report, [Thinking the unthinkable](#), based on interviews with top leaders around the world, found that: “A proliferation of ‘unthinkable’ events... has revealed a new fragility at the highest levels of corporate and public service leaderships. Their ability to spot, identify and handle unexpected, non-normative events is... perilously inadequate at critical moments... Remarkably, there remains a deep reluctance, or what might be called ‘executive myopia’, to see and contemplate even the possibility that ‘unthinkables’ might happen, let alone how to handle them.

Such failures are manifested in two ways in climate policy. At the political, bureaucratic and business level in underplaying the high-end risks and in failing to recognise that the existential risk of climate change is totally different from other risk categories. And at the research level in underestimating the rate of climate change impact and costs, along with an under-emphasis on, and poor communication of, those high-end risks..."

Four degrees or more: Australia in a hot world. *In opening this 2011 conference, keynote speaker Professor Hans Joachim Schellnhuber, director of the Potsdam Institute, and former climate adviser to the German Chancellor and the EU, asked rhetorically: "What is the difference between two degrees (of temperature increase) and four degrees?" His answer was concise. "The difference," he said, "is human civilisation".*

And the following was extracted from a Global Green and Healthy Hospitals [report](#) [12]:

"We are living in a moment in which the twin crises of public health and the environment are merging, the confluence of the two magnifying the destructive power of each. As they run together, the crosscurrents of disease and ecological deterioration build on one another...."

Meanwhile, the health sector itself is paradoxically contributing to these very environmental health problems, even as it attempts to address their impacts. Through the products and technologies it deploys, the resources it consumes, the waste it generates and the buildings it constructs and operates, the health sector is a significant source of pollution around the world, and therefore an unintentional contributor to trends that undermine public health.

Yet the converse is also true. While there is a confluence of crises, there is also a growing convergence of solutions that foster both public health and environmental sustainability, pointing the way toward a greener, healthier future.

"Nurses, doctors, hospitals, health systems and ministries of health are increasingly at the center of the solutions -- playing leadership roles in transforming their own institutions and becoming advocates for policies and practices that promote public environmental health, while often saving scarce financial resources.

These health sector leaders have evolved the Hippocratic Oath of "First Do No Harm" beyond the immediacy of the doctor-patient relationship to incorporate a more global vision of health and sustainability. Whether working to reduce a hospital's climate footprint, or eliminate a community's exposure to health care waste, these trailblazers recognize that we cannot have healthy people on a sick planet, and are putting hospitals and the health sector at the forefront of a global movement for environmental health."

Further resources:

- The [Australian Medical Association](#) and the [Royal Australasian College of Physicians](#) have policy positions on climate change.
- [IPCC: Climate Change 2014: Impacts, Adaptation, and Vulnerability Human Health: Impacts, Adaptation, and Co-Benefits Australasia](#)
- 2009 Lancet article: [Managing the health effects of climate change](#)
- 2015 Lancet article: [Health and climate change: policy responses to protect public health](#)
- [Report](#) from the American Psychological Association on the relationships between a changing climate and mental health.

- Four Degrees or More: Australia in a Hot World (website no longer available) Conference in 2011. Australia in a Hot World explored the unintended consequences of domestic and international climate policies. It invites us to imagine the social, economic and ecological implications of catastrophic global warming for Australia and its region.
- Explore the range of materials from The Lancet Countdown: Tracking Progress on Health and Climate Change. <http://www.lancetcountdown.org/resources/>
<http://www.lancetcountdown.org/media/1341/2017-lancet-countdown-australian-policy-brief.pdf>
- The UK's NHS Sustainable Development Unit has a [website](#) with useful resources. Former director Dr David Pencheon has multiple talks on sustainable healthcare available by searching Youtube.
- The [Global Green Healthy Hospitals](#) network brings together hospitals, health systems, and health organisations from around the world under the shared goal of reducing the environmental footprint of the health sector and contributing to improved public and environmental health.
- The framework and roadmap to reach this goal is provided by the GGHH Agenda and its 10 interconnected sustainability goals for hospitals and health systems to work towards at their facilities. [GGHH offers access to tools and resources, events, webinars](#), and more.
- The Conversation article by Forbes McGain, anaesthetist in Melbourne: [Five ways hospitals can reduce their environmental footprint](#)
- [The National Climate Change Adaptation Research Facility](#) (NCCARF) (funded by the Australian Government) works to support decision makers throughout Australia as they prepare for and manage the risks of climate change and sea-level rise. Relevant papers is available on the website.
- [Public Health Adaptation Strategies to Extreme Weather Events](#) (PHASE) is a 3-year project (2011-2014), funded by the [Executive Agency for Health and Consumers](#) (CHAFFEA) within the European Commission [Health Programme](#) (2008-2013). The project encompasses 8 European countries and is coordinated by the [Department of Epidemiology, Lazio Regional Service](#) (Italy).
- [An Evidence-Based Public Health Approach to Climate Change Adaptation](#) (article) Objectives: the goal was to review the literature on evidence-based public health (EBPH), to determine whether it can be applied to climate change adaptation, and to consider how emphasising evidence-based practice may influence research and practice decisions related to public health adaptation to climate change.
- [The Climate and Health Alliance](#) is an Australian coalition of healthcare stakeholders who work together to see the threat to human health from climate change and ecological degradation addressed through prompt policy action. The membership of CAHA includes organisations and individuals from across the health sector, with organisations representing health care professionals from medicine, nursing, public health, social work and psychology, as well as health care service providers, research and academic institutions, and health consumers.
- Doctors for the Environment Australia is an independent organization of doctors and medical students that work to address health harms caused by adverse conditions in the natural and built environments. They have a range of [fact sheets](#) and resources related to climate change and sustainable healthcare.

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Appendix B

Climate Change in Western Australia – (background paper)

Observed changes to our climate

Western Australia's climate has changed over the last century, and more so over the last 50 years. For example:

- Average temperatures have increased by about 1°C since 1910¹ (see Figure 1).
- The average annual number of days over 35°C in Perth has increased from 12 to 28 since 1958².
- There has been a steady decline in rainfall in the south-west since the 1970s³.
- The decline in south-west rainfall has resulted in a 50 per cent reduction in streamflow and approximately 60 per cent reduction of inflow to metropolitan dams since the 1970s⁴.
- Fire risk, fire weather and the length of fire seasons have increased since the 1970s⁵.
- Mean sea level at Fremantle has increased almost 20 cm since 1897, at an average rate of 1.54 millimetres each year. Since 1991, sea level on the west coast has risen at a rate almost three times the global average⁶. This has contributed to a three-fold increase in flooding events in Fremantle⁷.

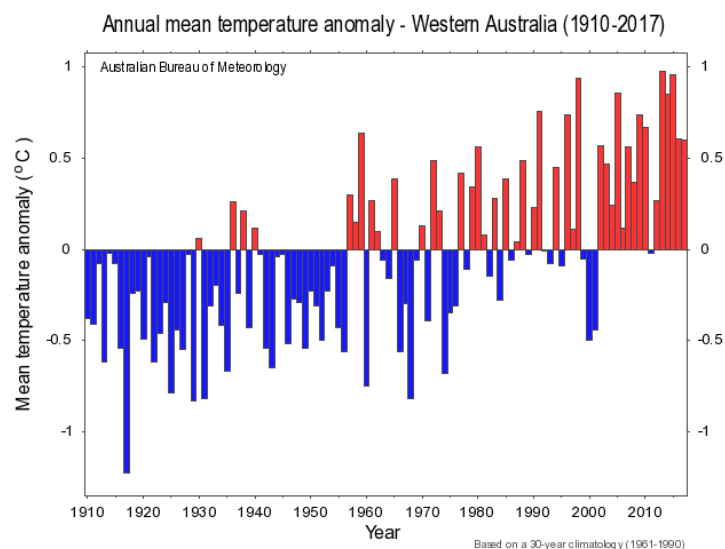


Figure 1: Annual mean temperature anomaly 1901 to 2017 for Western Australia⁸

Projected future changes

The International Panel on Climate Change (IPCC), finds that concentrations of greenhouse gases in the atmosphere has increased to levels unprecedented in at least the last 800 000 years, and that human

¹ CSIRO & BOM (2016) *State of the Climate 2016*

² *ibid*

³ *ibid*

⁴ *ibid*

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⁶ Pattiaratchi and Eliot (2005) *How our regional sea level has changed*. Climate Note 9/05. IOCI

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⁸ BOM 2017 *Australian climate variability & change – Time Series*, accessed <http://www.bom.gov.au/climate/change/>, 19/02/17

influence on the climate system is clear⁹. This has resulted in warming of the climate system. Continued emissions of greenhouse gases will cause further warming, lead to changes in all components of the climate system, and continue to amplify climate-related risk to natural and human systems.

There is broad agreement on the direction of projected future changes in a number of key climate parameters for Western Australia, particularly in the south-west. The following table summarises some projections for 2030 and 2090 under different emissions pathways.

Table 1: Summary of climate change projections for Western Australia for 2030 and 2090

Climate variable	2030 RCP ¹⁰ 4.5	2090 RCP 4.5	2090 RCP 8.5
Mean temperature increase in south-west	0.8°C	1.7°C	3.5°C
Annual average days above 35 in Perth (currently 28)	36	43	63
Winter rainfall change in south-west	-7%	-14%	-29%
Sea level rise at Fremantle	12cm	46cm	60cm

Other projected changes include:

- In the south-west the prolonged period of extensive drying will continue¹¹, with implications for food and urban water supplies, among others. The south-west will spend an increasing amount of time in drought.
- The intensity of heavy rainfall events will increase across the state, despite projected decreases in mean rainfall¹².
- The frequency and duration of hot spells and maximum temperatures on the hottest days will increase across the state¹³. Increased frequency, duration and intensity of heatwaves will increase the risk of heat related deaths for vulnerable groups.
- Fire weather will be more extreme and fire seasons longer (except in the State's north). The number of days with severe fire danger ratings will increase by 65 per cent by 2090 under a high emission scenario¹⁴.
- Tropical cyclone numbers may reduce in the second half of the century, however, cyclones are likely to be more intense. Cyclone formation and tracking is likely to shift southward by 100 km¹⁵.
- Sea level rise will increase the vulnerability of coastal settlements and communities to coastal hazards as a result of inundation; back up of stormwater; and erosion of the coastline¹⁶. Sea level rise will also amplify the impacts of existing processes such as high tides and storm surges.

⁹ IPCC (2013) Summary for Policymakers. In: *Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change* Cambridge University Press

¹⁰ Representative Concentration Pathways (RCP) reflect different emission pathways. RCP8.5 is a high emissions pathway, where there is little curbing of emissions (CO₂ concentrations reaching 940 ppm by 2100). RCP 4.5 is an intermediate emission pathway, reflective of a future where emissions peak and then decline to a stabilised level of CO₂ (540 ppm) by 2100.

¹¹ Department of Water (2015) *Selection of future climate projections for Western Australia*, Water Science Technical Series, report no. 72, Department of Water, Western Australia.

¹² CSIRO and BOM (2015) *Climate Change in Australia*

¹³ Ibid.

¹⁴ CSIRO and BOM (2015) *Climate Change in Australia*

¹⁵ Indian Ocean Climate Initiative (2012) *Western Australia's Weather and Climate; A Synthesis of Indian Ocean Climate Initiative Stage 3 Research*. CSIRO and BOM, Australia.

- Changing patterns of disease will result from increasing temperatures and changing rainfall patterns, such as a southward shift in the Dengue fever.
- Air quality may be adversely impacted by increasing bushfires and urban smog.
- Warmer temperatures and increasing levels of Carbon Dioxide in the atmosphere can increase the production, potency and release of allergens such as pollens and spores.

These changes are likely to affect the health and wellbeing of all Western Australians but will disproportionately impact the most vulnerable such as the elderly, young, and those who have existing underlying health conditions and/or are in poverty.

State government climate change activities

The McGowan Government acknowledges the need to adapt to current and projected impacts of climate change and to mitigate greenhouse gas emissions in Western Australia to protect our environment, economy and the community.

As a first step in establishing the McGowan Government's climate change policy, at the Minister for Environment's direction, the Department of Water and Environment Regulation, has undertaken a stocktake of climate change mitigation and adaptation policies, projects and programs across State Government to inform future direction setting and priorities.

The climate change stocktake identified a broad range of existing adaptation and mitigation actions, and revealed opportunities for a more systematic and coordinated approach to climate change policies.

Some notable examples of existing adaptation initiatives include the Western Australian Planning Commission's *State Planning Policy 2.6 State Coastal Planning Policy* and its associated guidelines, which requires the consideration of sea level rise in coastal development; the significant investment by the Water Corporation to secure alternative water sources into the future; and research undertaken by Department of Biodiversity Conservation and Attractions into the changing fire environment in the south-west. New adaptation initiatives include: \$5.1 million for groundwater investigation to address water needs for horticulture and the environment and keep water sources sustainable under climate change; and rural water rebates, totaling more than \$400,000, provided to dryland farms to help cover the costs of improving water supplies in the face of reduced rainfall.

The McGowan Government has taken steps to address greenhouse gas emission in Western Australia. These include signing a memorandum of understanding in December 2017 to identify opportunities to collaborate with other sub-national jurisdictions in promoting and accelerating the transition to electric vehicles in Australia. The Minister for Environment has also asked the Environmental Protection Authority to inquire into the current greenhouse gas Ministerial Conditions places on the Wheatstone Liquefied Natural Gas project to ensure they are in line with contemporary best practice.

Over the last 12 months, the State government has also announced a number of new renewable energy initiatives and investments, including:

- Investigating opportunities for large scale solar projects in the Goldfields;
- a \$19.5 million investment in the Albany Renewable Energy Project;

¹⁶ *Western Australian Planning Commission (WAPC) (2014) Coastal hazard risk management and adaptation planning guidelines. Western Australian Government.*

- expansion of Greenough River Solar Farm and the refurbishment of the Albany Grasmere Wind Farm;
- approval for Synergy to enter into a joint venture with a private sector investor to build the new Warradarge Wind Farm, near Eneabba;
- awarding a contract for development of a micro-grid in Kalbarri comprised of wind and solar power and a large scale battery.

In December 2017, the State Government joined the Climate Action Roundtable (CAR), an inter-jurisdictional forum to progress climate actions across Australia. Western Australia signed the communique resulting from 1 December 2017 meeting, committing to collaborating on climate change.

Building on the result of the stocktake and the activities above, the government is committed to undertaking consultation on climate change as part of delivering the government's future climate change policy.

The Australian Government has ratified the international climate change Paris Agreement. Australia's target under this agreement is to reduce greenhouse gas emission by between 26 and 28 per cent below 2005 levels by 2030. Further national policy development will be required to achieve this 2030 target, which equates to a two-thirds reduction in economic emissions intensity. The State Government continues to monitor the Australian Government's development of climate and energy policy, and the implications for Western Australia.

Synergies and opportunities from other State Government policies

A number of current activities present opportunities for further action and partnerships, with synergies across climate change and health.

Reducing costs and greenhouse emissions through Procurement Policy

The National Health Service in England, through a 10 year program managed by a Sustainable Development Unit, has achieved, by 2017, an 11% reduction in greenhouse gas emissions, while expanding the level of health care activity by 18%¹⁷. The associated financial savings associated with environmental sustainability measures (mainly energy, waste and water) has reached £90 million annually.

The state government is a significant purchaser of goods and services. In 2013-14 State Government expenditure on goods and services was over \$23 billion, two thirds of which was expended by government agencies (nearly \$14 billion). Through their activities most state government agencies generate commercial and industrial waste, for example, office paper, old office equipment and components. Some agencies involved in construction activities also generate construction and demolition waste.

Reducing waste through State Government procurement is a priority of the McGowan Labor Government. This is reflected in its recent 'Waste Avoidance and Resource Recovery Strategy Consultation Paper' and the Waste Authority's Business Plan for 2017-18. The need for agencies to improve waste outcomes through their procurement processes was a key theme raised by stakeholders during the recent Waste Strategy consultation process.

¹⁷ David Pencheon (2018) 'Developing a sustainable health care system: the United Kingdom experience', *MJA* (208) (7), 284-285.e1, 16 April 2018.

The government procurement system could provide opportunities to increase reuse, recycling and recovery of materials that might otherwise be disposed of at landfills. In addition to providing environmental benefits, keeping these materials circulating in the economy for as long as possible, increases their value and can avoid additional costs associated with landfilling. Given its considerable purchasing power, government procurement policies can also contribute to the development of markets (jobs, growth and investment) for recycled products.

Improving health and environment outcomes through waste management

The DWER has commenced a project that will identify opportunities for government agencies to improve waste outcomes through procurement by reducing waste from their operations, diverting waste from landfill and increasing use of recycled products. DWER has engaged a consult to consult with key government agencies, including the Department of Health, on the barriers and opportunities within the procurement system to achieving these outcomes and how these might be overcome or realised. The findings of the project will inform recommendations to government on options to be considered for implementation.

The Waste Authority, on behalf of the State Government, is reviewing the Western Australian Waste Strategy which sets the long-term direction for improving waste and recycling performance. With the assistance of the DWER, the Waste Avoidance and Resource Recovery Strategy Consultation paper (consultation paper) was released in 2017 and feedback provided is currently being considered. DWER anticipates that the new Waste Strategy will be released later this year.

The vision for the new Waste Strategy, as proposed in the consultation paper, is for Western Australia to become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.

Human health and air quality connection - Perth Air Quality Management Plan

Achieving and maintaining good air quality is critical to our health and wellbeing, and the amenity of the places we live in. The primary goal of air quality management is addressing the potential short and long-term effects of air pollution on human health.

The Perth Air Quality Management Plan (AQMP), first released in 2000, created a blueprint for air quality management over 30 years and outlined a number of cross-disciplinary strategies and actions to safeguard Perth's air quality. The key areas for action addressed in the AQMP are:

1. Land Use and Transport Planning;
2. Vehicle Emissions Management;
3. Health Effects Research and Indoor Air Quality;
4. Monitoring, Modelling and Research;
5. Industrial Emissions Management;
6. Small to Medium Enterprise (SME) Emissions Reduction;
7. Domestic Smoke Management; and
8. Smoke Management.

A growing body of scientific research over the past decade has contributed significantly to our understanding of the health effects of major pollutants. In recent years, the concentrations of some air pollutants – such as nitrogen dioxide, lead and sulfur dioxide – have decreased around Australia, including

in Perth. Unfortunately, ozone and particulate emissions, both associated with respiratory conditions, have not declined. These pollutants remain the subject of ongoing concern as a result of their likely cumulative impact and evidence that there is no safe level of exposure.

As we have passed the halfway point of Perth's 30-year plan for managing air quality, it should be acknowledged that while our air quality is generally good, ongoing effort is required to safeguard past achievements and deliver further improvements.

Perth Air Emissions Study 2011-12

Air emission inventories are an important tool for estimating pollutant emissions, developing a better understanding of air pollution issues and identifying the source of emissions.

The DWER has now completed the Perth Air Emissions Study 2011-12. The study used census data from 2011-12 because it was the most current data at the time the study commenced. The Department intends to communicate the findings of the study to stakeholders to promote understanding and use of the air emissions inventory. The DWER has prepared six reports, aimed primarily at technical audiences, which detail the methodology and results of the study and seven fact sheets which provide publicly accessible information about key pollutants and overall toxicity.

Consistent with the Western Australian Government's policy on open data, the emission estimate data will be published on www.data.wa.gov.au and the DWER's website. This will allow the information to be used for air dispersion modelling, environmental impact assessments, mapping and general environmental studies.

Appendix C

Sustainable Health Review – Public Submission Comments

Climate change has been highlighted as an issue to be addressed in a number of submissions and at public forums. The table below provides an account of comments and recommendations.

Impetus for change
<ul style="list-style-type: none"> Climate change more generally has been recognised as the biggest health threat of the 21st century in the Lancet medical journal- as a health service we must play our part in protecting our children’s futures by reducing emissions within the sector and raising awareness of the level of health threat. The South West of Western Australia is already being affected by a changing climate and is very vulnerable to further change, with a 20% decline in rainfall over the last 30 years and an associated 80% decrease in runoff into dams. Climate change has been identified as the greatest challenge to human health in the 21st century. They include the direct and shorter term impacts of extreme temperatures and extreme weather or weather-related events (wind, flood, including inundation by the sea, and fire), which adversely affect air quality, cause mass release of aero-allergens and cause mass local displacement of and loss, both financial and personal, to affected people; and indirect and longer term effects of changing the range and behaviour of infectious and vector borne diseases, and locally and regionally increasing sea levels leading to the permanent displacement of large numbers of people and driving conflict between people. Given the scarcity of the state's potable water supply, the importance of water quality for the purposes of hygiene, measurement of levels of hormones in water sources and algal outbreaks, the growing workload involved with state food safety and the threats posed by pesticides, insecticides and by surges in vermin and disease, this unit has a very broad area of responsibility to contend with. Increased vulnerability to changing climate, natural disasters, heat waves. The aged population and people with chronic disease and disability will be most affected – increasing pressure on the health system. Addressing climate disruption on public health is urgent e.g.the impact of heat waves on mortality and morbidity. The health industry is a huge generator of waste and greenhouse gases. These costs have been externalised from the health system so that these costs are not included in the health budget, but they should be. Whilst we continue to live in a society that is based on continual economic growth at the expense of our health, the planet's health and our climate, we will be unable to have a sustainable public health system. Often a tangible natural disaster such as a ‘Black Saturday’ bushfires is the political impetus for change.
Increased hospitalisations
<ul style="list-style-type: none"> Research has recently been done by the Department of Health showing there has been an increase in hospital presentations and admissions during recent heatwaves, particularly for low socioeconomic areas. Bushfires are also an increasing threat to health.
WA Health response to climate change
<ul style="list-style-type: none"> Provide leadership (from Minister and DG down) that acknowledges the climate threat to community health and energetically embraces the challenge to meet it. Develop a culture that recognises the accelerating climate threat and the need to adapt to it, to minimise its effects and to find solutions. The CPSU/CSA has strongly argued against the continued defunding and deskilling of the Environmental Health Unit of the Department. In the last ten years, this unit has shrunk by approximately 33 per cent at a time when the population of Western Australia has grown from 2 million to 2.5 million. The current governance is not effectively covering Environmental Health issues, the roles within Local Government could be clearer. Health and climate considerations need to be in all Government policies, not just in specific Health policies. I looked for an analysis of the economic impact of climate change on health in Australia and it hasn’t been done because of the political climate here but I found research from the US and it showed that implementing an emissions scheme and the money saved easily far outweighs the cost of the climate change impact on public health; but it takes courage to do this and think systemically.

Mitigation and preparation

- Implement a process of finding ways to reduce carbon emissions, procure supplies with lowest possible carbon footprints, increase energy efficiency.
- Research ways of preparing for the accelerating morbidity and consequent demands on the system.
- Provide training that enables all staff to understand the threat and to recognise their role in meeting and mitigating it.
- Whilst we cannot know how effective global action to mitigate climate change is going to be, we have already experienced 1°C of warming over the Australian continent and must plan for at least 2 degrees (as this will occur even with mitigation).
- The current heatwave plan is a start in ensuring the provision of health care services in the near future, but should be reviewed for the longer term where temperature elevations will be higher and persist for longer.
- Without planning there is a danger we could find ourselves with a health services that cannot cope with demands or function as a result of climate impacts such as prolonged heatwaves, extreme winds, floods and disease epidemics.
- Climate change and the associated health problems we'll face with increased temperatures and how will hospitals cope, how will households without AC cope when temps will rise to 50 degrees?

Appendix D

Forum and Consultation Participants List

Vic Andrich	Department of Health
Fiona Armstrong	Climate and Health Alliance
Helen Brown	Curtin University
Stacey Burrows	Aboriginal Health Council of WA
Jonathan Carapetis	Telethon Kids Institute
Sheryl Carmody	Mercycare
May Carter	Department of Local Government, Sport and Cultural Industries
Catrina Aniere	Millennium Kids
Ronda Clark	Aboriginal Health Council WA
George Crisp	Doctors for the Environment
Erica Davison	Sustainable Health Review
Evie Devitt-Rix	WA Local Government Association
Jim Dodds	Department of Health
James Duggie	Department of Water, Environment and Regulation
Kingsley Faulkner	East Metropolitan Health Service
Sallie Forrest	North Metropolitan Health Service
Meredith Hammat	Unions WA (SHR Panel Member)
Rosh Ireland	Department of Treasury
Dianne Katscherian	Curtin University
Rita Freijah	South Metropolitan Health Service
Robyn Kruk	Sustainable Health Review (SHR Panel Chair)
Mike Lindsay	Department of Health
Gino Marinucci	Office of the Minister for Health
Katherine Middleton	Australian Medical Students Association
Mark Monaghan	WA Country Health Service
Craig Perry	WA Local Government Association
Andrew Robertson	Department of Health
Iqbal Samnakay	Department of Water and Environment Regulation
Melissa Stoneham	Public Health Advocacy Institute WA
Katie Stublely	Centre for Social Impact
Petra Tschakert	University of Western Australia
Piers Verstegen	Conservation Council of WA
Charles Watson	Australasian Faculty of Public Health Medicine
Tarun Weeramanthri	Department of Health
James Williamson	Department of Health
Jaime Yallup Farrant	RRaFT Educators (Consumer and Carer Representative Group)
Richard Yin	Doctors for the Environment Australia and local GP
Emma Yuen	Cooperative Research Centre for Water Sensitive Cities
Muriel Leclercq	Office of Emergency Management
Alexa Wilkins	The Commissioner for Children and Young People
Dev Tayal	Horizon Power
Katharine Noonan	Australian Medical Association
Carolyn Marshall	Department of Finance
Rolee Kumar	University of Western Australia
Graham Hansen	WA Council of Social Services
Angus Cook	University of Western Australia
Linda Paterson	Bureau of Meteorology

Yanhui Blockley
Katie MacWilliams
Amanda Ling
Mike Jones
Greg Ryan
Andrew Sanders
Lesley Thomas
Emma-Leigh Synnott
Tom Harper
Tania Harris
Rob Pulsford
Bruce Armstrong
Ryan Sengara
Samantha Tough
Luke Skinner
Luke Van De Beeke

Bureau of Meteorology
Department of Biodiversity, Conservation and Attractions
Ramsay Joondalup
WA Association of Mental Health
Landcorp
Department of Fire and Emergency Services
CPSU/CSA
Fiona Stanley Hospital
Sustainable Health Review Secretariat
Health Consumers Council WA
WA Country Health Service
University of Western Australia
Sustainable Health Review Secretariat
Clean Energy Finance Corporation
Consumer
Marketing for Change

Appendix E

Forum Recommendations

The following recommendations were proposed by the participants to the Climate and Sustainability Working Group:

1. **Recognise climate change as a health issue**, not just an environmental issue; requires leadership across the whole of Government but accept the need for a societal shift in the conversation led by health professionals (allow them the space to have an individual and independent voice).
2. **Establish a Sustainability Unit** within Department of Health (or independent) to ensure climate mitigation and adaptation policy across all areas/operations, with savings potentially reinvested into health services.
3. **Introduce enforceable benchmarks and targets** for emission levels, waste and consumption and sustainability, linked to health care quality measures, for all health service provision with executives held accountable.
4. **Invest in green/sustainable infrastructure** (solar panels, green space, etc) for health operations, including service provision, new facilities and retrofits of existing facilities (potential for a *Sustainable Cities* funded pilot).
5. **Review procurement policies and practice** to specify emissions and waste reduction in health service provision and the establishment of new facilities.
6. **Codesign climate change adaptation plans and strategies** for health and other sectors (including mental health services; support for vulnerable populations such as homeless, youth and aged; housing and urban design; and remote, farming and indigenous communities); **Engage consumers directly in codesigning intergenerational sustainability policies** with young people and at-risk cohorts.
7. **Position WA at the forefront of new climate change adaptation research** by leveraging our unique remote geography (e.g. patient transport solutions, solar generation).
8. **Establish an Inquiry under the Public Health Act** into the health impacts of climate change to build the evidence base and show Ministerial level leadership.
9. **Develop mechanisms and processes for cross-departmental and community wide collaboration** (e.g. Health and BoM).
10. **Advocate for external legislation to include climate change and health impacts** (planning legislation, urban design, reuse of water, waste management etc.), including transitioning to a low carbon society (domestic and export emissions).

Appendix F

Forum Participants Group Map Input

Forum participants were asked for their input at the Climate and Sustainability Forum – ‘what are your recommendations to the SHR Panel to’:

- Reduce the climate and environmental impact of health services’ operations?
- Ensure that the appropriate adaptation and preparedness measures are undertaken to minimise the adverse health effects of climate change on Western Australians?

The detailed responses are captured below as clusters under the key recommendations.

Reduce the climate and environmental impact of health services’ operations?

- Waste audit of hospitals and DOH with targets and benchmarks
- Monitoring and reporting of energy use and CO2 with reduction targets
- Health care at home with regional options to prevent travel
- Energy use targets, reporting and monitoring are essential. Creating policies with a requirement to report back to higher levels keeping health care systems accountable
- Reduce carbon footprint from waste water, food and procurement.
- Improve the quality of care to reduce readmission
- Establish a Sustainability Unit in the Department of Health to advise on priorities and implement measures; design and implement education program for staff and service users and the supply chain providers. The Unit would need to ensure cross collaboration with like units across Government
- Solar panels on all buildings and carparks
- Agree on a start point to measure emissions reduction / current approach to measure
- Legislation to require all major procurements to include minimum sustainability standards
- Requirement to report on mitigation against a Government wide target
- Federal coordination and support with States in initiation of positive change; allow for sharing and communicating skills and knowledge.
- Health leading the way to drive a whole of Government approach
- Promote uptake of innovative approaches through case studies
- Treasury to agree on some process to embed costs and benefits to sustainability initiatives
- Reduce energy consumption through learning from private sector hotels and shopping centres
- Shift focus to preventative health to reduce burden on the emissions and energy intensive health services
- Invest in infrastructure and system change in health and elsewhere
- Health professionals need to be strongly encouraged to enter the public debate so that the public support efforts to mitigate climate change
- Review of procedures and materials used across surgery and other medical interventions to see how we can reduce waste where possible and use environmentally friendly products (e.g. biodegradable products)
- Housing and buildings to be low emission; only approve building of new health facilities that are low impact; Enforce building performance standards and planning regulations in healthcare and elsewhere

- Hospitals to join GGHH network, employ environmental and sustainability officer in each hospital and utilise information already available (e.g. CAHA)
- Local food sourcing and managing waste of pharmaceuticals
- Packaging of surgical instruments to reduce waste
- Allow departments to keep savings they achieve through the sustainability measures they adopt
- Build staff agreement
- Sustainable building standards should be updated and applicable; Upgrade old buildings to comply to these standards (e.g. Freo hospital)
- Review of energy and water usage across the health sector, this should include consideration of energy efficiency opportunities, new power technology options including lithium storage batteries, wind & solar technologies for health care sites and new buildings constructed with new power technologies
- Industry needs to be a key partner to ensure sustainability objectives are achieved
- Checking of vehicle fleets for GHG emissions
- Consider procurement of electric vehicles by health services
- Need leadership and accountability from the top through targets and KPIs for Director Generals
- Reduce energy used to get to hospitals through public transport
- Minister to set sustainability targets for health CEO's
- Create incentives and rewards for achieving targets
- Create a financial model (e.g. climate bonds) that incentivises climate programs and removes the burden of self-funding capital (e.g. external grants)
- Promote and utilise locally and sustainably produced plant based food in all health care services
- Include social cost of carbon to capture benefits
- Apply for funds for clean energy corporations for seed capital to support upfront investments in energy efficiency and other energy technologies
- Influence WA Planning legislation with legislation that reflects the requirements of low carbon footprint and facilitates practice which enable low energy emissions
- Providing telehealth / telemedicine to all regional, rural and remote areas
- Develop better relationships between Health and BoM
- Area health services measure impact of staff and patient transport and incentivise public or electric options
- Mandate sensor lights for health buildings
- Health leaders promote their commitment to climate change action
- Look at ways to drive the uptake of telehealth and remove barriers / explore why uptake is low in some areas (e.g. due to low infrastructure)
- Adopt building wellness standard for healthcare to use Greener Guide for Healthcare
- Reduce waste in all food outlets in hospitals; Need to support (centrally?) through resources, tools, guidance to implement
- Draw on other research in local area service delivery models
- All of these initiatives need appropriate, reliable and stable financing
- Establish a legislative requirement of reductions in greenhouse gas emissions, with clear targets and timeframes for health sector, and supply chain providers
- Take a whole of Government approach, with the State Government leading by example. Need to start with high level KPIs, backed by legislation and policy.

- Children and young people should be the focus as so much is at stake, include in decision making
- Use a straightforward 5 step approach, similar to Cities for Climate Protection: measure, commit, set targets, plan, implement, remeasure and make it iterative
- Use the Health Dept to pilot a structured, adaptable program based on an evidence based approach
- Build knowledge and culture using a small team of specialists and champions from across the sector
- Advocacy: health experts should be highlighting the health impacts (both directly from air pollution and indirectly through climate change) relating to fossil fuel combustion domestically but also exports
- Factor sustainability clauses into employment agreements and negotiations. Avoids the swings and roundabouts of changing government commitment as seen in WA over the last decade. Macquarie Uni research has defined effective models
- Investigate global green and healthy hospitals initiative
- Union members drove uptake of OSH; Opportunity to engage union members in identifying opportunities for improvement and supporting / driving cultural change
- Co-design intergenerational sustainability policies with young people and at-risk cohorts
- Account for export emissions and their health impacts, not just domestic emissions

Ensure that the adaptation and preparedness measures are undertaken to minimise the adverse health effects of climate change on Western Australians?

- Reinvest savings in sustainable development of healthcare systems, use the Green Energy Finance Fund (WA energy funding)
- Work with HSPs to use less water
- Manage heat waves better through reducing cooling costs, public housing stock, water sensitive urban design and greening
- Improvement of early warning systems for climate and extreme weather events with focus on seniors and others at risk
- Make climate and environment health part of core business
- Restructuring of financial services, so we have a supportive financial model. Not activity based funding, because it's not conducive or reflective of strategies which promote sustainability
- Modelling on impacts of adaptation (how much, when and where)
- Write "reduce carbon footprint" into the Strategy for future
- Recognise uniqueness of WA in adaptation challenges and opportunities
- WA to demonstrate approaches targeted to regional and remote areas
- Audit or current bench marks and KPIs
- Modernise health training curricular. Sustainable procurement, education regarding waste and cc and health to include climate change issues and sustainable health care sectors
- Ensure understanding of, and support for, mental health impacts of climate change including remote, farming and indigenous communities
- Improve housing for preparedness and protection of vulnerable people (e.g. social housing)
- Reduce demand on health system through improved urban design that supports mental health outcomes
- Invest and focus on community resilience

- Invest in health system change, infrastructure and prevention
- Improve urban environments
- Promoting the adoption of these measures by demonstrating economic savings
- Develop an evidence based “package of support” for implementing change
- Cooler public open space areas for homeless people and low socioeconomic groups
- New buildings to 5 Star standard
- KPIs for health services; Consider paper light systems, LED lighting; Achievement of KPIs must be linked to renewal of CEO contract or performance bonuses (i.e. CEO is held personally accountable for achievement of KPIs)
- Design new buildings to manage heat and heat island effects
- Revisit adaptation strategies from the WA Sustainability Strategy and WA adaptations strategies;
- Make emergency funding more flexible and available, so it can be accessed even if event does not reach current criteria
- Insurance and risk cost projection for climate events
- Develop a Climate Change Adaptation Plan for the health sector
- Mental health effects of natural disasters and ensuring support after these events
- Continued development of ICT in regional areas both for the circulating of weather event information and to decrease travel / telehealth.
- Working with local governments as they have already done a lot of good work here
- Consultation on what communities need to build capacity and resilience to climate events
- Hospitals analyse their readiness for heat wave events and prepare for these events
- Media strategy and media partnerships that promote understanding of climate science, climate risks, and the measures that households and health service users can take. This should coordinate with communication campaigns to improve community understanding of how to prepare and respond to emergencies like heatwaves. Responses to counter climate sceptic arguments is also needed
- Building and systems put in place to reflect the increased number of extreme weather events (e.g. management plans for hospitals reflecting heat wave plans etc) Make a SU template produced at state level, and require local government and health care facilities personalise it for their demographic. If there is any part of the plan/policy they chose not to include they must produce a statement to SU as to why; The SU should have a climate change disaster unit
- Provide information for the public on preparing for heat waves
- The Adaptation plan should address vulnerable community component to health adaptation plan: how to keep homes cool; how to save power; and change lighting & other energy efficiency measures
- Encouraging citizens to admit that they experience harm rather than expecting them to be strong and resilient
- Reflect health outcomes of climate change in urban planning and development, using data and research
- Outreach programs to help those on low-incomes access energy efficient appliances and climate appropriate housing
- Community-owned solar farms on health land assets
- Agencies with a client population vulnerable to climate change (e.g., communities, justice) to develop heatwave preparedness plans.

Other comments

- Centralised, best practice evidence available for health systems to act on, potentially via a SDU
- Guide for business case to invest in sustainable solutions
- Sustainable Health Unit established within the DoH; Each health service unit should have a person / delegate / officer / executive sponsor which reports to this unit; size dependent, as to if there is a full unit or just representatives; all the savings that a hospital makes goes into a fund which the hospital gets back or can be used by the unit for sustainable developments (e.g. a borrowing fund which hospitals pay back to). WA government loan funds, which are paid back from savings.
- Budgets / funding to account for upfront capital investment in sustainability, which will reduce operational costs
- Green spaces in hospitals, reduce length of stay, financial benefits.
- All health services to employ sustainability officer; Addressing carbon management, water, waste
- Policies which reflect intergovernmental collaboration. Allows for health co-benefit
- Health outcomes vs health care system changes; We need Australian specific data with regards to modelling to prove the financial benefits of climate adaptation and mitigation (aligned with recent WHO review)
- Introduce benchmarks / targets with teeth; NGERs inadequate, targets should be around waste, carbon emissions, water consumption
- Link environmental health to health services - embed officers into all public health units (currently just one in Derby)
- Health system to provide robust, public advice and assessment of health impacts of decisions / development that has a major focus on climate change
- links to planning and wider systems, land use
- Messaging to induce cultural shift that recognises climate change as a health issue (e.g. mentioning sustainability in WA Health slogan / vision, discussions on sustainability throughout health sector); Health professional curricula to include sustainability and climate change. May require guidance from accrediting bodies; public campaigns, advocacy and engagement with the community, could be a role of SDU.
- Promote policies that impact on public health including ambulance services, urban design, reuse of water, waste disposal
- Climate change unit for government should be in Premier and Cabinet
- Health sector projects should include impact on sustainability and climate change as part of summary 'so what's'
- Health to have independent voice on issues related to climate change. Including list of key government sections in health sustainability unit
- Establish enquiry under Public Health Act 2016 into public health impacts of climate change and environmental sustainability
- WA health adaptation plan from 2009 should be updated, use as an opportunity to engage health sector and community in conversation around priorities of climate change adaptation and mitigation. Could be renamed WA Climate Change Mitigation and Adaptation Plan
- Partner with longer term view groups - research, industry, community
- All of government approach to health and climate - all departments have a responsibility, it is too big for health alone
- Healthcare accreditation standards to include evaluation of risk/preparedness for extreme weather events

- Ensure adequate resources are providing to young people who are dealing with health impacts of climate change and of lack of action of this issue
- Good discussion about need for health sector to lead by example vs. more ambitious health advocacy for whole of government, whole of society planning (scenario modelling, health impact assessments). Ideally we need to do both.
- Publish health impact scenarios for WA against different global temperature rise trajectories i.e. 2deg, 4deg, 6deg, looking at health costs including from migration etc etc. this should initially be done as part of an inquiry under the Health Act into the health impacts of climate change. Then the scenario exercise should be repeated periodically, with reference to WA own emissions profile, including fossil fuel exports etc.
- Reconsider business model. If cost savings from reducing energy bill then can reinvest into adaptation plans i.e. don't lose underspend
- Access funding from innovative sources for refurbishment, renewable energy and waste management programs e.g. clean energy finance corporation, sustainable cities
- Considerable and genuine consumer engagement so community understand and have real buy in on these problems

Plenary Discussion Comments

The following comments were made during the plenary discussion.

- Need to have a strong business plan to get everything through the political system;
- The NHS Sustainability Unit generated savings and thus the incentive;
- Some discussion about reframing it is that it tends to be seen as an environmental issue only, but it's about recognition that climate change is an issue in all other areas including health. This is just one of the stories that we can tell people;
- There are challenges in reframing climate change as 'only' a health discussion, it is a whole of Government issue. I suggest health needs to identify what its responsibility is in climate change, which is primarily its own footprint and preparation for what health issues it needs to deal with in future.
- It shouldn't just be reframed as a health issue but we also need to understand that tangible climate action has to be individualised and that the individual person needs to tangibly understand why they need to make a change in their lifestyle. Action doesn't just have to be in the health sector;
- Agree, but health should take a greater lead. It's alright in metro and some regional locations but much harder to do in rural and remote. If goals are in place in the metro and pushed out to rural and remote, it puts them under pressure as it is a whole different ball game;
- I think we're justified in reframing climate change across all sectors;
- Kids want someone to take a lead on this issue with a strong voice. Having the Health department as a lead would be hugely beneficial. Basing it in the environment is a divisive issue.
- An Inquiry under the Public Health Act is a powerful tool and can bring the conversation into an evidence based public discussion. What is WA as an economy tying itself into? A 4 - 6 degree scenario or going in a different direction?
- There are issues in existing legislation that could make an Inquiry a long, slow process;
- Enforceable benchmarks and targets are important but the State government stopped measuring its energy usage 3-4 years ago after staff cuts
- Making CEOs personality accountable is critical;

- Sustainability Unit is a good idea but be careful not to end up in a green ghetto, responsibility needs to be across all areas in the health system.
- An Inquiry would be very useful as long as it is carefully contained; take us back to the bread and butter stuff, what we need to do and where we need to be. Otherwise it could be too big and go on forever, and risks taking it out of health. Need a clear statement to the Minister and Government to mitigate and adapt to;
- In terms of adaptation, we need to apply existing knowledge plus acquire new knowledge; WA has a unique environment that presents an opportunity for a significant research agenda to inform and lead where we are going;
- Co-design needs to include environmental health as some areas do this (Kimberley, etc) but it is not wide spread;
- In the background reading there was a focus on procurement that hasn't been captured here;
- A review of procedures and materials used, including procurement, would be beneficial. An initiative is underway in other departments to look into this to reduce cost and impact without affecting delivery;
- Not much in there about engaging consumers directly, to make a real difference we need community engagement;
- Not just cross-departmental collaboration needed but collaboration across the wider community with many groups and organisations;
- Through the Sustainable Cities fund, the Health department could put in a pilot program somewhere, investment may be available from outside of the system;
- New facilities developments and retrofitting, invest in both at the same time, running in parallel;
- The NHS model worked well as there was legislative backing to do so. Britain in the House of Commons had bipartisan agreement on climate change. If the State can mandate that certain targets are set, it can happen. If we don't have that, it may linger;
- Notion of making savings to invest further through an appropriations process, need consistent funds not waves of funding. Health has a good argument to be made 'special'.

Fiona Armstrong:

- Following the Paris talks, we set about developing a national plan for Australia. QLD asked them to develop one for the State, to be released this year;
- Seize the moment, you have high level support here. Need that high level leadership;
- Warn against separating mitigation and adaptation, the best form of mitigation is adaptation and vice-versa;
- Genuine community engagement is needed, go out and talk to people to get their input into public policy;
- Continue to collaborate, this will accelerate best practice. The recommendations are sound but need to continue to work together;
- Great resources here, support of the Minister is vital. WA is a big state but small population and can be agile;
- Plagiarise the work that we have done through the Climate and Health Alliance! Use work that has already been done.

Appendix G

Forum Participants Survey Responses

Participants were provided with the recommendations generated on the day at the Climate and Sustainability Forum via survey monkey and asked to affirm the recommendations and provide any further input.

Recognise climate change as a health issue, not just an environmental issue; requires leadership across the whole of Government but accept the need for a societal shift in the conversation led by health professionals (allow them the space to have an individual and independent voice)

- “Long overdue. Climate change was a recurring theme at the 2017 World Health Congress.”
- “The literature on climate change and health communications is very compelling on the importance of using a health frame to communicate the risks of climate change and the health benefits of climate action: <https://link.springer.com/article/10.1007/s10584-012-0513-6>.”
- “There are a couple of issues wrapped up in this recommendation. One of which is the need for a whole of government response to climate change and government leading by example, which is totally supported. The second of which is the importance of health professionals in driving societal change, which is also fully supported. Some of the discussion at the forum centred round whether there was a primary responsibility for the health sector to drive change, and whether this abrogates the responsibility of all sectors to drive change. The current wording seems to respect the range of perspectives expressed.”
- “Support this recommendation. Suggest the following minor edits: (Replace "led by" with the word "with". And insert the words "as key contributors" after the words "health professionals". (To include the nuance that it is not just the health sector that should take responsibility for driving this shift.) The recommendation would read: "Recognise climate change as a health issue, not just an environmental issue; requires leadership across the whole of Government but accept the need for a societal shift in the conversation, with health professionals as key contributors (allow them the space to have an individual and independent voice)."
- “We can't let other areas of government off the hook - we are all responsible. However Health has a stronger and more powerful voice than any other sector impacted by climate change because it has an immediate impact on people! The environment and long term economic costs have never been able to find a loud voice compared to health. This is why Health needs to lead!”
- “a problem - I agree with Bruce Armstrong. The health side is only part of the issue”
- “I think that it needs to be an 'everything' issue. Environment, social, health, agricultural, justice. Climate change and environmental health will, does - and should - impact everything we do. Aka - "Ecological, cultural, and environmental Justice" and "One Health" Decisions need to be made at all levels and in all departments in regards to Mitigation and Adaptation and it needs to be done with urgency. Because without everyone being responsible, and everyone taking immediate (measured) action - it will end up that no-one will take responsibility, and no action will be taken as it will always be seen as 'not my problem' and 'not fair' for people to 'change' if no-one else is required to do so. The LANGUAGE used is important - The change should not be seen as a loss - but as an opportunity for improvement. Sustainability is ONE step. But we need to then move forward and look at REGENERATIVE movements. Maintaining something that is doing harm isn't **really** sustainable. So looking for regenerative longer term solutions (while more sustainable solutions are being used) is going to be the only solution. We need to think on both a systems level, and a grass roots level, rallying the top and the bottom to make the important connection. Community engagement, and industry leadership, should work hand in hand to make this happen. The privilege and trust we are given as medical professional by individuals under our care is humbling. Our patients share with us their hopes, dreams, fears, and 'nakedness'. And that privilege comes with responsibility to act in the best interest of our patients (past, present and future) and also in the best

interest of society. We should be a voice in this area - we need to step forward and act appropriately in this area. We should take action and be a voice for change.”

- “agreed - and also include consideration of the effects of loss of environment/place in this assessment”
- “Strongly support this recommendation, health professionals can be important in leading changes in attitude and there are clear health consequences of global warming, unsustainable use of resources (and health is a big user), modelling that indicates fertility control is a major issue etc.”
- “Agreed that health does have a role especially with regards to the most vulnerable to extreme heat poor liveability; the disadvantaged, the young and the old and frail.”
- “Understanding of the validity of this proposal for could be enhanced by providing an example”
- “I don’t agree with framing it as a health issue if it’s not going to be framed nationally and internationally as a health issue. Of course it is, but it’s an everything issue. I’d be concerned saying it’s a health issue will let every other sector off the hook. This is a whole of life on earth issue and we need to stop minimising that”
- “I agree with recognising climate change as a health issue but I don't think it can led by health professionals. Health professionals have their hands full with the SHR recommendations. Work with them but have another team deal with it. There was talk about putting together a climate change Unit - they might be better at leading this then health professionals.”
- “add governance bodies - as they are increasing me asked to take responsibility up in this domain led by health professionals and governance bodies.”
- “Agree - health has substantial priorities and has limited ability to impact this directly excepting for advocacy.”

Establish a Sustainable Development Unit within DoH (or independent) to ensure climate mitigation and adaptation policy across all areas/operations, with savings potentially reinvested into health services

- “A similar unit has operated in the UK (under the NHS and Public Health England) since 2008. Again, long overdue. Personally, I'd like to see the unit set-up as an independent and funded by government.”
- “Yes! Also a recommendation of the Framework for a National Strategy on Climate, Health and Wellbeing for Australia:
- https://d3n8a8pro7vhmx.cloudfront.net/caha/pages/40/attachments/original/1498008324/CAHA_Framework_for_a_National_Strategy_on_Climate_Health_and_Well-being_v05_SCREEN_%28Full_Report%29.pdf?1498008324”
- “Strongly support the development of a Sustainability Unit in the Department of Health though the reference to “(or independent)” is confusing. The current wording is ambiguous as to whether the Health Department should establish such a unit of it this was the responsibility of another agency (e.g. DWER?). I would favour wording that reflects, unambiguously, the establishment of such a unit within the Dept of Health and the need for the unit to be supported by a central coordinating body, based potentially in DWER, providing support to multiple agencies.”
- “Support this recommendation. Suggest that it will be more practical for the Unit to be in DoH, rather than independent of it. Suggest inserting the words: “is developed, implemented, and reported on” after the word “policy”. We note reporting and accountability mechanisms will need to be developed.”
- “I would question the viability of an independent unit and the amount of influence such a unit would have. Savings would need to be reinvested in HSPs.”
- “Very Important”
- “I think this is a good idea - but I also feel this could be a slow stem in the system for change. We already have a number of authorities in this area, with a wealth of information available. e.g.: GGHH, CAHA, etc. Waiting for this step before change is implemented could and would be dangerous. As you can imagine the process of development would be lengthy (gap analysis, stakeholder consultation, cost-risk, recruitment, structure, training, etc etc). Perhaps in the first instance a panel is gathered from pre-existing experts who help to advice on health policy changes - But in parallel an independent unit (perhaps with representatives from DoH) is set up for a longer term involvement.”

Introduce enforceable benchmarks and targets for emission levels, waste & consumption and sustainability, linked to health care quality measures, for all health service provision with executives held accountable

- “I like the idea, but who would enforce?”
- “Yes, this comes up again and again as feedback from clinicians, sustainability officers, hospital engineers etc.”
- “Agreed. In terms of benchmarking, there are two potential considerations. One is with comparable health services, and the second is in relation to the State Government's energy, water and waste consumption. The State's public sector accounts for 7% of the State's employed workforce with over 2000 worksites. The Health Department has the opportunity to advocate for the State Government to resume benchmarking for (at least) energy, water and waste across the sector.”
- “Support this recommendation. We note measures have to be implementable and measureable.”
- “Please include water consumption because water is one of the biggest energy users!”
- “This should happen immediately. 'You can't control what you can't measure' - and without hospital/health service Auditing, measuring, recording benchmarking, and KPI targets, there will be no accountability. There are already experts doing this - and information available on what / how / when and why. We should seek assistance from others in this space to achieve this ASAP.”
- “These would need to be sufficiently specific that they can be measured accurately and realistic
- I think there is urgency in identifying benchmarks and targets and HSP's must be accountable for reducing waste and managing consumption. This can be done without without compromising quality health care - and will potentially improve overall health of our communities.”
- “Waste seems to be out of control in the health system driven by questionable imperatives of convenience and cost over more sustainable options.”
- “Having benchmarks and targets makes good sense. You need to measure to then be able to evaluate if it's making a difference.”
- “This can only be achieved with modern infrastructure and therefore needs an absolute commitment for upgrades and upgrades that meet high level standards.”

Invest in green/sustainable infrastructure (solar panels, green space, etc) for health operations, including service provision, new facilities and retrofits of existing facilities (potential for a Sustainable Cities funded pilot);

- “This is important but needs to be supported by a report outlining the business case for sustainability to make it easier for hospitals to allocate funding to sustainability initiatives. Knowing what the savings are in advance would help influence decisions in favour of sustainability.”
- “These factors are important as part of an overall sustainability plan. The plan must come first, though. This is secondary.”
- “Support this recommendation. It is noted that investment decisions should be supported policy analysis, including where appropriate cost benefit analysis.”
- “Green space should be delivered through water sensitive urban design or else it isn't sustainable.”
- “very important - needs incentives.”
- “This is a no brainer. And it needs to be done, again, with engagement in other areas - not only in health industry, but also looking at sustainable development experts. Imagination should be used with utilisation of concept such as 'passive solar design', solar-energy installation/ wind turbines, green spaces and green wall inclusion, water-recycling and run-off utilisation for garden spaces, compost/ food waste usage areas.”
- “Agreed - also focus on reducing resource input.”
- “Definitely - this is a responsibility and if necessary should be enforced by Govt/legislation.”
- “This needs to be factored into the business case for new assets and the savings in operational costs and reduced carbon emissions recognised.”

- “Great - but business case analysis supporting all proposed initiatives should be required to ensure environmental, social and economic benefits for the State. Using industry rating tools, such as the Green Building Council of Australia (GBCA) tool, for new and existing facilities, should be encouraged. The Department of Finance, through Building Management and Works, has a team of architecturally trained analysts who check/assess project applicability of GBCA consultant selected sustainability initiatives, thus avoiding the requirement for sometimes costly certification, where 'credits' can be driven by cost rather than benefits for DoH facilities. IE GBCA 'best practice' 4 Star certification for Fiona Stanley Hospital was quoted at \$1m additional - in house use of the GBCA sustainability tools avoided this cost. This process has been used with some success for all projects delivered by Finance's BMW (under \$100m projects) in the last two-three years.”
- “need to include as also an expectation for organisation DoH contracts.”
- “Would be great if there was funding for this. Agree there may be sources but full upgrades of old infrastructure is needed to manage patients also.”

Review procurement policies and practice to specify emissions and waste reduction in health service provision and the establishment of new facilities

- “Yes, procurement is the biggest source of emissions in healthcare. Standards that obligate health services and health purchasers to include sustainability criteria in procurement contracts. The government should include carbon neutral and grave product stewardship in all its purchasing contracts.”
- “Agreed, as part of the overall sustainability plan. It is noted that Local Governments have taken strides in developing sustainable procurement policies and practices that the Health Dept and other agencies could build from. It is also noted that the State's Waste Strategy is currently under review.”
- “The Union has recommended that a focus on the State Government leading by example is critical to the revamped Waste Strategy and will continue to work with its members on sustainability actions.”
- “Support this recommendation. Suggest inserting the words: “identify and” after the words “and practice to.”
- “Also need to look at power and water usage, not just emission and waste reduction.”
- “include in emissions not just power consumption but also the carbon footprint of: water, food, etc.”
- “I feel this, like the steps on measuring / recording / benchmarking this could and should be done almost immediately and with relative ease. The 5 'r's' of waste - refuse, reduce, reuse, repurpose, recycle can be looked at as a starting point. 1. refusing to purchase product with significant environmental impact and no recycling options and putting forward initiatives for partnerships with industry to assist in production of more sustainable options. 2. reducing inappropriate purchasing through reforming stock / innovatory procedure 3. re-using products where possible (instead of single use items) 4. Partnering with other organisations (animal rescue / third world health initiatives) to re-purpose where possible (e.g. functioning equipment or close to date stock could be donated to organisations of need etc) More focus on in-hospital recycling needs to be made, both in staff and common areas.”
- “As above, completely supported.”
- “The Sustainability of the supply chain is a huge issue for Health and an opportunity to have a broader impact in greening complimentary goods and services.”
- “There has to be a site specific analysis as site variables can result in higher costs than can be justified. GBCA tools encourage sustainable procurement and allow consultants to select appropriate cost effective, relevant initiatives to enhance practical sustainable initiatives while ensuring building quality. Blanket procurement requirements, without taking into account individual sites/circumstances, can result in unforeseen detrimental outcomes. More successful is a targeted 4 Star (GBCA best practice) approach.”
- “That would be great provided adequate funding is provided.”

Codesign climate change adaptation plans and strategies for health and other sectors (including mental health services; support for vulnerable populations such as homeless, children, youth and aged; housing and urban design; and remote, farming and indigenous communities); Engage consumers directly in codesigning intergenerational sustainability policies with young people and at-risk cohorts

- “I support the use of co-design, production and/or creation.”
- “Not just adaptation! Communities need support and can contribute to mitigation plans too. These plans will better achieve their goals and have ongoing community support if they are created together.”
- “Supported with the proviso that staff are also included.”
- “Support this recommendation. Suggest the second sentence is a separate recommendation and should be separated out. It is noted that the scope of the first part of this recommendation stretches from across the health sector to outside to other sectors. We need to make sure that the scope of this recommendation is achievable within and outside of the health sector. For the elements outside the health sector an across government lead coordination role is needed, or several separate agency leads.”
- “Getting community excited about changes and involved in redesign is a fantastic way to assist in positive movement. A 'One health' and 'Planetary Health' approach needs to be taken. Perhaps review and look at 'green spaces' in health - understanding that the health of an individual is intimately linked to the health and robustness of the community, and the health of the green space around them. Hospitals should be HUBS of 'health and community', not just for 'treatment'. We SHOULD have green space, community areas, and a sense of 'wellness' not just 'sickness'. Restoration and regeneration both of 'people' and of the environment. Segregation of populations leads to disconnection and, again, decreases the communication and cohesion between sectors. If future design of community and health spaces looks at integration of these aspects, there could be a real sense of movement and progress. Additionally - looking at it from all approaches will assist in changes in being possible over all areas, and not create inequality for those who may be more at risk.
- Not sure what sort of things were being considered under this heading. What's an "inter-generational sustainability policy"?"
- “This recommendation completely supported. A paradigm shift, where all citizens accept that their consumption has consequences, will lead to improvements in health and well-being. Health professionals can play a significant part to shift societal views whereby all accept the costs personally and globally for consumption of food for example - e.g. reducing obesity for the individual, and sustainable food production that relies less on animal products at a cost to the environment and global warming.”
- “I would stress to work with Local authorities many of whom already leading in developing Sustainability and Climate Change Resilience strategies for their communities or encourage collaboration to do so.”
- “An area specific list of possible actions, responding to local risks and conditions, is recommended. SA has researched and implemented a similar approach.”
- “Yes yes yes - engage consumers”
- “need to give attention to what it means for community based health services. providing services in people's homes - as this modus operandi is on the increase mental health, aged care, disability sectors”
- “It is unclear what this means, but I don't think it is the responsibility of health to lead this.”

Position WA at the forefront of new climate change adaptation research by leveraging our unique remote geography (e.g. patient transport solutions, community based renewable energy, solar generation)

- “Not just adaptation. WA can become a leader in mitigation in the health sector as well.”
- “Supported.”
- “Support the intent of this recommendation. However note that it will take more practical steps to achieve the objective. For example through: coordination of researchers and end users to identify research priorities, and facilitated end user engagement with research projects for their full life-cycle, perhaps through convening an adaptation research and end user committee; and newly allocated (or accessing new) research funds.”
- “reduce water consumption in the health sector as climate change will reduce the availability of water supplies.”
- “Being 'young' and 'small' we have the ability to be 'nimble' in this area. And with the right approach (positive, proactive, and imaginative rather than 'slow' and 'conservative'), we could set the 'benchmark' and lead in this area.”
- “Supported. But let's not forget food production and diet (as per above example); exercise; and the benefits of sustainable living on improving mental and physical health. The opportunities to research the health impact of social connections that would come from building sustainable communities is definitely within WA Health's remit - in collaboration with other departments of Govt.”
- “There appears to be gap and an opportunity to build capacity for WA, UWA Centre for Built Environment and Health research already leads in the liveable communities. “
- “Good suggestion - the WA Curtin University based SBEnrc may be able to assist with research based solutions. Contact Keith Hampson - SBEnrc stands for Sustainable Built Environment national research centre.”
- “Not a priority for health research and requires fully funded trials.”

Establish an Inquiry under the Public Health Act into the health impacts of climate change to build the evidence base and show Ministerial level leadership

- “Good idea!”
- “Nice idea, but I suspect a difficult sell.”
- “yes”
- “The CPSU/CSA does not currently have a position on this issue. If this recommendation is adopted, the union would work with its delegates and members to develop its position and make a submission at the relevant time.”
- “Support this recommendation. Other recommendations from the Climate and Sustainability Forum could be used to inform the Terms of Reference for the Inquiry, (and a Sustainability Unit).
- Suggest that this should be broader than just health impacts - and should explore possible mitigation and adaption measures.”
- “I am worried that this could be a monster if it gets too big. A compact targeted inquiry could be useful.”
- “As well as health impacts more generally. Urban air quality is poorly monitored and the health/ social impacts of projects not well assessed in WA.”
- “Supported - This Inquiry should consider the individual's health outcomes; and the impact of board population health measures as a result of the climate changes we are now experiencing. Climate change has resulted in reduced bio-diversity; increased disruption to global weather patterns and with this comes risk to water and food supplies, that will definitely have serious impacts on the health of individuals and communities.”
- “Good suggestion but needs to be an immediate response - timely actions are essential to get the message out.”

Develop mechanisms and processes for cross-departmental and community wide collaboration (e.g. Health and BoM)

- “Yes. This must underpin the work or it will not benefit from the insights that multidisciplinary collaboration can bring.”
- “Supported. As per previous answer – strong cross-sectoral linkages will aid the department in tackling climate change, as noted previously tackling climate change needs a whole of government response and for the State Government to lead by example. The only suggested change to the wording would be to extend the examples given to include a State agency (such as DWER) as well as a federal agency (BOM).”
- “This recommendation does not specify the purpose for developing mechanisms and processes.”
- “Support this recommendation, but it will be stronger if the purpose is specified, (E.g. by inserting something like: “to help implement the other recommendations above”).”
- “This should be business as usual.”
- “Needs more definition of objectives and key partners to collaborate with, include DWER, DPLH...etc
- excellent suggestion: BOM have climate change briefings based on specific WA local conditions; I previously attended one at CSIRO a few years back”.
- “Health should not have to lead on this”

Advocate for external legislation to include climate change and health impacts (planning legislation, urban design, reuse of water, waste management etc.), including transitioning to a low carbon society (domestic and export emissions)

- “Yes! Advocating for the implementation of a national strategy on climate, health and well-being would help jurisdictional efforts and provide national consistency and learning.”
- Agreed and supported.”
- “Suggest switching the word “external” with “other state based”, to help clarify the recommendation is focused on state government legislation. Support this recommendation.”
- “yes . again Health has a loud voice in these debates”
- “this is important but will take time”
- “important - see earlier comment”
- “Supported. Health professionals can substantially challenge social behaviours and are a group who can educate as well as lead by example. Legislation is necessary as expecting big business to take responsibility has not proven to make the difference required.”
- “Ditto above comments, health impacts and adaption and mitigation strategies need to be part of the Government's response to Climate Change”
- “ASBEC has an industry researched and supported initiative to upgrade existing National Construction Code requirements to ensure lower water and energy use for new buildings. Existing building monitoring of energy use and publication of performance should be introduced at a State level. Testing of building sealing should be initiated for health buildings - along with checks to ensure fresh air content and environmentally healthy air quality. Policy mandating minimum performance standards/action, similar to maximum energy use requirements for federal offices a few years back, should be considered. MJ per sq m per annum is one measure of energy use.”

Any other comments regarding recommendations we include in the report to the panel?

- “Suggest WA Health (and all WA hospitals and health services) join the Global Green and Healthy Hospitals network to assist in implementation sustainability initiatives, learning from the global network, overcoming challenges, and accelerating their pathway to zero emissions healthcare.”
- “really need to consider mental health impacts related to the built environment and ability to cope with change and crisis.”

- “Include Climate Change into the State Public Health Plan as a priority for Local Governments when preparing their Local Public Health Plans.”
- health services need to look at their integration with other industries (agriculture, food production / use, education, department of parks and wildlife, transport. etc) and see this as a 'whole'. Reviewing how we could interact with other departments to promote a 'one health' approach / planetary health approach - allow hospitals and health networks freedom to be imaginative and create initiative in this area - consultation with experts in this area should be encouraged. a lot of information is already there - look at the CAHA National Approach document - look at promoting 'health change' in hospital networks that will feed in to the other areas, for example: reducing food waste in health systems and choosing more environmentally aware options (composting -> use on gardens, encourage or use a plant based diet in hospital networks and partner with farmers in the area to reduce the carbon cost of food in health + have positive health outcomes, partner with transport to assist in encouraging staff use of public transport, partner with wildlife and environmental organisation for green spaces / reusing and donation of stock etc).”
- “Health professionals influence behaviours of many people. Health is a big employer and business, therefore needs to act responsibly and educate staff about the impact of climate change and what measures they can take personally and as part of the workforce and their communities. I support each of these recommendations.”
- “There seems to be a failure at quite a high level in government to grapple with the Climate Change issue in a comprehensive way. Hopefully health can provide the imperative for greater action.
- Suggest broad health and environmental list/range of possible initiatives included as an appendix - refer to Norman Disney and Young document (available on line) and American previously published documents on emission savings/ energy reduction possible in health facilities”
- “The need to engage properly, in an ongoing way with community and consumers. This needs to be a cross benches and ideology approach. The 3 year cycle has to stop.”

How has participating in this forum impacted your thinking about this area and can you see any actions you are now able to implement?

- “AHCWA can advocate on behalf of the forum to our 22 Aboriginal Community Controlled Health Service, regarding the recommendations. No 6 – Co-design with key stakeholders No 7 - AHCWA Mappa can help in this area.”
- “Have started discussions with my organisation and networks. Long road with many way stations!”
- “Yes, helping to spread our network of support to WA.”
- “It has helped me understand the health sector and its stakeholders better, and provided recommendations for further consideration.”
- “Refocus on next steps from a health viewpoint.”
- “It makes me feel more secure that there is support for action to address social impacts from climate change.”
- “It has brought the importance of acting on these issues back to the forefront of my mind. Local Governments are fairly proactive on climate change and sustainability issues but it is important that they are seen as a health issue too. I can influence this by continuing to advocate to the Department of Health for this to be included in the State Public Health plan, and in my interactions with LGs.
- very encouraging”
- “I am encouraged and enthused by the participation. I feel invigorated in moving forward. I would love to see real imagination and initiative in this area - and if we can assist in this, we could see positive change. I will push forward in my communication with the health area network I am in to help encourage sustainable changes - to join GGHH, to employ an environmental officer, to encourage recycling and review waste management, to reduce food waste and look to more plant based diets in hospital service, to consider re-purposing / donating stock and equipment and to educate and foster

the 'grass roots' of the hospital toward change.”

- “It’s made me think about health and building resilience to climate change in a more connected way.”
- “Enthused that the sustainability conversation is again on the agenda for WA State Government.”
- “The forum was great, it’s a concern I’d be very happy to help spread and share. People do care about this, we just need some clear consistent messaging.”
- “Made me aware of how health can impact and make a difference to the climate. I had previously not made the connection. It changed my views on it.”
- “It has given me further authority and motivation to put the issue on the agenda in my organisation.”

Any final comments for the working group?

- “Well done!”
- “when implementing change, make sure the rural and remote changes are achievable, as these areas differ from metro”
- “Thank you for all the hard work and effort you have put in!”
- “Thank you for holding this event. It has identified important priorities and recommendations. I hope we can ensure that practical measures can be implemented as result of the recommendations identified.”
- “great work!”
- *“Great job with the roundtable, I hope it leads to climate change and environmental issues becoming a priority for the WA Government.”*
- “Act quickly, with imagination, passion, and proactive thinking. Consider regenerative approaches, not just 'sustainability'. Look at interaction with other industry (transport, agriculture, energy). Encourage community engagement. Take consideration - for the health and well-being of the generation of now, and the future.”
- “This is important work, but WA Health and other Govt Departments must show leadership and invest in strategies to manage climate change for a sustainable future. We are an affluent country - we are obliged to show leadership.”
- “Well done! Would have loved to see more consumers though!”

Appendix H: Relevant Sections of the Public Health Act re Recommendation 3

Part 15 – Inquiries

Section 228. Chief Health Officer may conduct inquiry

- (1) The Chief Health Officer may, on the Chief Health Officer’s own initiative or at the request of the Minister, conduct an inquiry into any matter relating to public health.

Section 229. Preliminary matters

- (1) Before conducting an inquiry, the Chief Health Officer must — (a) inform the Minister in writing of the Chief Health Officer’s intention to do so; and (b) state in writing the terms of reference of the inquiry

Section 238. Reports

- (1) As soon as is practicable after completing an inquiry, the inquirer must prepare a written report relating to the inquiry and give the report to the Minister.
- (2) The report must include — (a) the inquirer’s findings and conclusions from conducting the inquiry; and (b) any recommendations that the inquirer wishes to make arising from the inquiry and the reasons for those recommendations; and (c) any other matters prescribed by the regulations.
- (3) As soon as is practicable after receiving the report, the Minister must cause a copy of it to be laid before each House of Parliament.