



**Council
to Homeless
Persons**

Climate Change
and Homelessness
Research Project
Report

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*Looking it squarely in the eye:
The relationship between
climate change and homelessness*

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The Council to
Homeless Persons

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Executive Summary

Not a distant prospect, climate change is here now. Increasingly, this process has become a priority concern for government, the non-government sector, for researchers and for the public in general. This concern has a global relevance; no person, country or region will avoid the unpredictable and increasingly frequent extreme events that climate change will bring. Mindful that climate change is an emerging phenomenon with indeterminate features, it is increasingly accepted that its impact will be particularly felt by certain social groups — the poor and disadvantaged, by those in geographically vulnerable locations, and by members of marginal sub-populations.

With support from seven sponsoring organisations the Council to Homeless Persons (CHP) commissioned the current project to examine the impact of climate change on those at-risk populations that CHP advocates to support and assist: those who experience homelessness. Given the nature of this task — the relationship between homelessness and climate change is dynamic and open-ended — a mixed-methods methodology was chosen to structure the enquiry. Being modest in resourcing and very time-limited, the exercise was designed as a formative study.

The first step in data gathering involved undertaking an initial scan of the available literature. This search identified, collated and classified a complex, multi-axial set of materials referenced to 'homelessness' and/or 'climate change'. This process initiated a recursive, non-linear phase of analysis.

Concurrent with an engagement with the literature, a second level of enquiry consisted of consultations with selected informants. This process of data gathering consisted of semi-structured interviews with:

- four individuals who had lived experience of homelessness
- two dedicated climate change experts who had no specific experience of homelessness
- one academic with extensive experience with research into homelessness
- one individual with expertise in the provision of climate change adaptations to the residences of low-income persons, and
- eight advocates, practitioners and managers with extensive experience in the response to homelessness; this varied group had no specific engagement with the subject of climate change.

With the exception of the first group, these interviews were not recorded and transcribed. Notes from all interviews were formally written up and this content thematically analysed.

Material from each interview group was firstly, compared with the content generated in each of the other groups, and secondly, then convened as a single data set. The sum of this content was used to quiz, even interrogate, the details and, in several instances, the categories of information that the above engagement with the literature had constructed.

A final, more directed process of recursively-organised desk-based search was then undertaken to identify, collate, classify and analyse additional material. Mostly, this sub-process led to the refinement and consolidation of themes and findings that had been proposed earlier; less frequently, this sub-process resulted in new ideas being articulated.

* * *

The first of the project's findings was not surprising: there is evidence that climate change has markedly impacted on the *phenomenology* — the subjective experience — of homelessness, and the *physiology* — the health — of those who experience homelessness. That is, more frequent episodes of extreme weather, particularly increasingly high temperatures and periods of intense precipitation and persistent damp, have resulted in *physiological effects* (higher rates of mortality; chronic medical conditions; hospital admissions; fungal infections, and more) and in *phenomenological effects* (a deterioration in the quality of the lived experience of homelessness). Mediating the force of this impact is the particular form that homelessness takes; it is understood 'homelessness' has multiple iterations that encompass remote First Nations communities, those who are subject to primary homelessness, residents of emergency shelters, those in precarious accommodation, and more.

Mindful that there was a tendency to highlight the effects of damp rather than the danger of heat, the results from consultations with those with lived experience broadly, but not completely, complemented findings from the literature. Those with lived experience also pointed to an under-appreciated side effect of climate change: a marked reduction in social connection especially with respect to extended periods of elevated heat.

Only a tentative finding could be made with respect to the current impact of climate change on the incidence of homelessness, given the metrics remain uncertain. What seems clear is that, on the one hand, recent extreme events have had a 'long tail' that has disrupted traditional housing practices.

For example, there has been a struggle to return to their places of origin for many of:

- the 60,000 people who were displaced by fires in 2019-2020 in south-eastern Australia
- the 18,000 people who were displaced by the 2022 floods in the Northern Rivers region, and

- the 700 First Nations people who were displaced from their Kalkarindji homeland in the Northern Territory by flood in 2023.

On the other hand, the majority of those displaced do eventually return to their homes, albeit in a manner that is often untimely. On balance, it would appear that climate change is increasing the incidence of homelessness in so much as it is enlarging the number of citizens in marginal and precarious housing if not the number of those who are experiencing primary homelessness.

The second reference the project set out to examine was 'what will the relationship between homeless and climate change be in 25 years' time?' The research undertaken concluded that, in addition to a heightened *physiological* and *phenomenological* impacts, by 2050 it can be expected that an intensifying process of climate disruption will result in a greater *incidence* of homelessness and a markedly more random character to its *distribution* unless dramatic global action is taken to reduce climate damage.

In the event that this action is not taken, it can be predicted that increasingly adverse weather conditions, particularly prolonged heatwaves, major fires and floods, enduring drought and rising inundation, will result in significant internal population displacements. This expectation, paired with the prospect of displacements from the Pacific region and diminishing housing affordability, will likely also alter the *profile* — or the make-up — of homelessness in Australia.

Preparedness is the key demand in this scenario. Adaptation is having enough dwellings — secure, affordable places — to meet need when currently there is a profound discontinuity between, for example, levels of affordability, building completion figures and the length of waiting lists for public housing. What is needed is therefore a national, multi-generational and co-ordinated mission to mainstream, emphatically concentrate and co-ordinate the response to climate change with respect to the formulation and implementation of housing and homelessness policy. This

commitment is required across each level actor — from the Federal Government nationally, through to local neighbourhood groups.

In this proposition the issue is climate justice. Just as Pacific Island people are not responsible for the sea level rise that afflicts their communities, those with the least adaptive

agency should be protected rather than incur the heaviest penalty for the loss of our 'climate niche' (Lenton et al, 2022). In this context there are ethical, historical and pragmatic reasons for the homelessness sector to align its sense of mission and its everyday business, with the mission to strive for climate justice.

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1. Introduction

1.1 Background

1.2 Aims

1.3 Methodology

1.4 Six different expressions of climate change

1.1 Background

There is an increasingly acknowledged need to prepare for the accelerating impact of climate change. This is especially the case with respect to those who are most vulnerable. In some instances, this need is not being practically respected.

For example, those ideologues who insist that individuals are responsible for their own fate, tend to voice the all-purpose prescription that citizens must be resilient rather than present serious analysis and materially relevant options (Rose and Lentzos, 2017).

In contrast to recycling misleading superficial slogans, many innovative projects have begun to emerge with the practical goal of ameliorating the impact of climate change on those who are most at-risk. These projects in the main:

- focus on a particular cohort, e.g. those who are experiencing primary homelessness, are elderly, are economically marginal, are forced to rely on marginal sub-standard housing, accommodation and shelter etc.
- focus on one expression of climate change, for example, elevated temperature, inundation, and/or
- seek to develop programs and strategies to support target groups to adapt to the impact of climate change.

To complement the above, the current project was designed to have a broad remit. That is:

- rather than focus on one cohort, an attempt was made to offer an examination of each vulnerable cohort of those experiencing, or at risk of, homelessness who will be adversely affected by the impacts and consequences of climate change, and
- rather than select one expression of climate change, the attempt was made to have regard for each expression and manifestation: heat, inundation, fire, flood, storms and droughts, being mindful that there is often an 'overlap' between these manifestations.

It is understood that certain sub-populations will be particularly vulnerable to the impact of climate change. For example, those in coastal neighbourhoods will be less subject to increases in heat than those in hinterland communities. The current project was designed to investigate one particular, and one particularly complex, population in one national location with respect to the challenges that the process of climate change will present: that is, those who are homeless or who are at risk of homelessness in Australia.

To this point, governments at a national, state and territory level have thus far not adequately investigated or understood:

- the implications and consequences of climate change for those experiencing or at risk of homelessness
- the role and impact of climate change as a factor in putting significant numbers of people at risk of homelessness
- the requirement to formulate homelessness policy and design service systems that can adequately respond to the impact of climate change for those experiencing or at risk of homelessness.

Where the current study fits: Filling the gap in policy attention and national research

There appears to be a noteworthy gap in the attention being given to the relationship between homelessness and climate change. This gap is not so much at the immediate, operational level of attention: many local councils, non-government organisations (NGOs) and community groups are both active and innovative in what might be termed the 'homelessness and climate change' space (see 5.0 *What is being done?*). However, at this point, very limited attention has been paid to the relationship between homelessness and climate change in Federal or State Government policy formation and in the priorities of high-profile national research bodies.

For example, in the documentation supporting the development of the National Housing and Homelessness Plan, the impact of climate change is not a fundamental reference point. Yes, in a de-limited manner, climate change is referenced with respect to 'livability', i.e. in the design of new housing, yet there is no call for attention to how extreme temperatures are currently endangering those who are presently homeless, or to how climate extremes will progressively degrade the health prospects of those who may become homeless. Moreover, there appears to be little regard for the impact on 'housing demand' of several key drivers: the impact of immigration on population growth and the prospective impact

of internal and very likely, regional population displacements where these latter groups will be dislocated by the impacts of climate change.

In terms of research, the lack of attention is particularly noteworthy with respect to absence of attention paid by peak bodies to First Nations people. For example, there is no mention of 'climate change' or 'elevated temperature' in the most recent report prepared by the Australian Institute of Health and Welfare (AIHW) on the state of Indigenous housing: see the August 2023 bulletin (AIHW, 2023). This is difficult to understand as multiple studies have demonstrated the dangers presented by elevated temperatures to the health of communities in remote homelands over an extended period: see, for example, Green (2006); Quilty et al. (2023). That the AIHW acknowledges that 'First Nations people have significantly less access to affordable, secure and quality housing' (AIHW, 2019a, AIHW and NIAA, 2020) — and that it is well established that housing quality mediates the impact of climate change — making the above noted inattention all the more inexplicable.

Returning to the National Housing and Homelessness Plan, several submissions to the consultative process did draw attention to climate change. For example, the submission from the Australian Medical Association (AMA) (2023) proposed that:

... the National Housing and Homelessness Plan should consider broader social and community needs and focus on equity and access issues of appropriate housing for communities with diverse needs, including Aboriginal and Torres Strait Islander people, children, and young people, and those dealing with the impact of COVID-19 and climate change.

In this statement the AMA is advocating a clear position: with a deliberately privileging regard for groups that are especially vulnerable, the issue of climate change should be directly considered in policy formation undertaken by the Federal Government that is relevant to housing. It could also be noted that, although it is not the subject of explicit comment by the AMA, the same argument is applicable to the lines of enquiry

pursued by the Federally funded bodies that have been given carriage to undertake headline national research.

The absence of forthright declarations that homelessness and, more broadly, housing quality deserve a dedicated attention vis-à-vis climate change may be a passing phenomenon; perhaps, it is only a developmental delay that is only slowing-up the relevant policy and headline national research processes? For example, the AIHW might be on its way to zeroing in on this subject as well as other key data collection bodies. Whatever the explanation, it seems clear we are not as advanced on this front as other nations.

The public position set out by the United States Interagency Council on Homelessness (USICH) illustrates this point. This is the Federal Government agency dedicated to preventing and ending homelessness in the United States (US) and has stated in its nationally circulated e-newsletter:

the 'climate crisis and homelessness are intimately linked. ... Last year, nearly half of Americans lived in counties hit by extreme weather.' This clear statement was set out

immediately below the stark headline, *'The triple threats facing America: Climate change, homelessness, and housing shortages'* (28.09.2022).

The above bulletin cited multiple examples of the relationship between homelessness and climate change. These included:

- In Arizona, people experiencing unsheltered homelessness accounted for Maricopa County's 339 heat-related deaths in 2021.
- In Alaska, tribal villages have disappeared into the ocean, and towns are barely hanging on as heating bills spike in the increasingly bitter cold.
- In California, hundreds of people have fled cities to live in remote stretches of the Mojave Desert, where they endure life-threatening heat and cold and no running water for miles.

A problem cannot and will not be addressed if it is not recognised. It would serve a pro-social purpose if the competent authorities in this country demonstrated a similar degree of climate change literacy to the above.

1.2 Aims

The challenges presented by climate change with respect to homelessness are well documented, albeit in very general terms: see, for example, Bezgrebelna et al. (2021); Kidd, Greco and McKenzie (2021). The current project sought to build on the material that is already available by adding degrees of specificity. This value adding has been achieved by designing and implementing an inclusive and explicitly situated enquiry.

In designing and undertaking this enquiry it was necessary to remain aware that a key feature of the field of enquiry is that this field itself is significantly indeterminate; the impact of climate change can be broadly mapped, yet this impact is also unpredictable in many of its manifestations.

Mindful that there are multiple layers of uncertainty, the aim of the project was to trace the relationship between homelessness and climate change with respect to five dimensions:

- (i) a defined focus: Australia
- (ii) an inclusive understanding of homelessness
- (iii) a consideration of two points in time: 'now' and '25 years on', say 2050
- (iv) a consideration of each of the distinct, but often related, expressions of the effects and impacts of climate change: heat, inundation, fire, flood, storm, drought
- (v) a regard for Australia's regional context.

1.3 Methodology

The subject ‘homelessness and climate change’ is dizzyingly formidable. This degree of difficulty reflects the fact that:

- (i) ‘homelessness’ is a reference that is subject to multiple definitions
- (ii) ‘climate change’ is not a bounded, linear event; climate change is a phenomenon with no temporal or geo-specific borders (see 2.1)
- (iii) there is a dynamic and emerging relationship between these two references.

Having regard for the above, what was required was an approach that was innovative, ambitious, inclusive and open-ended rather than narrow and linear. In addition, it seemed necessary that the enquiry should be animated by a critical spirit; there seemed little point in simply re-cycling what has been previously documented.

Further refining the search for a study design was the practical issue that the project was modest in its resourcing — 250 hours of project worker time — and needed to be concluded within six months. Independent of the breadth of the task, these practical limitations determined that the study would be a formative qualitative enquiry. In this situation no textbook, fit-for-purpose methodology presented itself. Aware that the perfect is the enemy of the good, an exploratory mixed-methods approach to design was adopted (Axinn and Pearce, 2006). This definition does not discount the quality of inter-subjectivity that might be achieved, but it does register the study’s potential significance; an exploratory study can only yield results that are, at best, suggestive rather than definitive.

The approach involved:

- (i) a comprehensive, multi-stage literature search, inclusive of academic and “grey” source materials
- (ii) consultations with relevant authorities, organisations, agencies and persons.

Data from the above sources was reviewed by a recursive process of classification and analysis.

Project Details

This project undertook to be an innovative synthesis of existing research and new data.

In brief, the project would:

- identify the existing literature that examines the nexus between climate change and homelessness, both domestic and international
- identify what, if anything, governments in Australia and overseas are doing in terms of policy to respond to the imperatives and consequences of climate change for those experiencing homelessness, for those at risk of homelessness and as a risk factor for causing homelessness
- identify in what ways homelessness services, including housing services, have sought to respond to the effects/consequences and implications of climate change, once again both nationally and internationally
- make recommendations and suggestions on how homelessness policy and, in particular, homelessness services can work to mitigate and ameliorate the projected impacts and consequences of climate change for those experiencing or at risk of homelessness and housing insecurity
- incorporate as far as possible the lived experience of homelessness and those who are at risk of homelessness, and tell their stories of the effects of climate change on their wellbeing and their experience of homelessness.

Project Organisation

A steering committee was convened to advise on the project’s priorities and process. This committee consisted of representatives from each of the sponsoring organisations (The City of Melbourne, The City of Sydney, Informit, Jesuit Social Services, The Lord Mayor’s Charitable Foundation, Spatial Vision, Sacred Heart Mission, Noel Murray (*Parity* editor) and Mark Furlong (Project Worker) and met five times between August and December 2023.

Mark Furlong, PhD. was employed as the part-time, paid primary worker/investigator. Mark's qualifications for this role include:

- undertaking the role of investigator for two CHP auspiced research projects which examined the relationship between homelessness and premature death: *The Last Mile of the Way* (2019) and *Every Grain of Sand* (2021)
- acting as consultant to Spatial Vision's *Enhancing Community Resilience to Climate Change: Protecting Vulnerable Populations* (2022-2023)
- recent engagements with the issue of climate change, e.g. publications focusing on the relationship between climate change and mental health (Furlong, M, 2022a, 2022b).

1.31 Literature search

A wide range of written material was accessed. This material consisted of formal academic sources, government, non-government and industry reports ('the grey literature'), popular science texts and articles from public media.

This ambit reflects the fact that project inherently connects, rather than falls within, defined/accepted fields of knowledge. A pointer to the interstitial nature of the project is the breadth of the academic sources that were relevant. The following is a cross-section of, say, 10% of the formal academic sources that were considered:

American Journal of Public Health; Australian Journal of Primary Health; bioRxiv; Climate Dynamics; Environmental Research Communications; European Journal of Homelessness; Journal of Epidemiology and Community Health; The Journal of Health Care for the Poor and Underserved; Geophysical Research Letters; Health and Place; Housing Studies; Homeless in America; International Journal of Biometeorology; International Journal of Environmental Research and Public Health; International Journal of Housing Policy; International Journal of Population Research; Journal of Social Distress and the Homeless; The Lancet Planetary Health; PLOS One; Science Advances.

1.32 Consultations with relevant authorities, organisations and agencies

A limited number of consultations were undertaken. These interviews were with those who had particular expertise in homelessness or were individuals with particular expertise in climate change and adaptation.

Semi-structured interviews were conducted with:

- four individuals who had lived experience of homelessness
- two dedicated climate change experts with no specific experience of homelessness
- one academic with extensive experience with homelessness
- one individual with extensive expertise in the provision of climate change adaptations to the residences of low- income persons
- eight advocates, practitioners and managers with extensive experience in homelessness; this varied group had no specific engagement with the subject of climate change.

With the exception of the first group, these interviews were not recorded and transcribed. Notes from all interviews were formally written up and this content was thematically analysed.

Material from each interview group was compared with the content generated in each of the other groups and convened as a collective data set. The sum of this content of the interviews was used to quiz, even interrogate, the details, and in several instances the categories of information, that the above engagement with the literature had constructed.

A final, more directed process of recursively organised searching was then undertaken to identify, collate, classify and analyse additional material. Mostly, this sub-process led to the refinement and consolidation of themes and findings that had earlier been proposed; less frequently, this sub-process resulted in new ideas being articulated.

1.4 The different expressions of climate change

It is hard to get to grips with climate change: some think of heat, others of inundation, or tornadoes. In fact, climate change has many faces. Before proceeding with the larger exercise, six brief vignettes are set out to illustrate these different expressions:

- (i) Heat: extreme summer temperatures have 90% of Centrelink recipients feeling ill
- (ii) Inundation of First Nations people living on islands in the Torres Strait
- (iii) Fire: the 2019-2020 bushfires in South East Australia
- (iv) Flood: the 2022 Northern Rivers disaster
- (v) Drought: The Millennium drought 1997-2009
- (vi) Storm: the November 2023 Adelaide event.

(i) Extreme summer temperatures have 90% of Centrelink recipients feeling ill

The Australian Council of Social Service (ACOSS) polled 208 recipients of Centrelink payments in January 2023 about their experience of high heat at home, their ability to cool their homes, how the heat affected their physical and mental health, and the costs of their energy bills. *Guardian Australia* reported:

‘Nearly 90% of people on income support payments say the inability to cool their homes in hot weather is making them sick, and even those who have air conditioning avoid using it because it is too expensive, a survey by Australian Council of Social Service has found. Nearly two thirds of those surveyed — 72.1% of whom were renting privately or in social housing — said they were unable to cool their homes down in periods of hot weather. Some 89.4% said they sometimes or always felt unwell in the high heat’ (Convery, 2023).

(ii) Inundation of First Nations people living on islands in the Torres Strait

Guardian Australia reported that, on Saibai Island where ‘homes are already being inundated by king tides, (and) the cemetery has been affected by erosion’, Aunty McRose Elu talked about people being unable to garden because garden patches have absorbed saltwater. ‘We can’t keep vegetables down, it’s not viable anymore, we can’t do those kinds of things anymore’ (quoted in Cox, 2023).

Beyond the impact on food security, inundation is degrading the integrity of the traditional culture. In response to this slow-moving disaster the traditional owners have initiated the first ever legal action on climate change by Indigenous Australians.

(iii) Fire: the 2019-2020 south eastern Australia bushfires

The bushfires experienced in the 2019-20 season burned more than 10 million hectares of land in southern Australia, greater than the combined area burned in the Black Saturday 2009 and Ash Wednesday 1983 bushfires (CSIRO, 2023). 2019 had been the hottest record year for Australia, with the bushfire season starting in June 2019.

In terms of the area of land burnt, wildlife deaths, and damage to the environment — some of it permanent, such as the burning of remnant rainforest, these fires were the worst in Australian history.

(iv) Flood: the 2022 Northern Rivers disaster

Australia has had hundreds of serious floods in the last 10 years that have impacted on homes, on wildlife and on their habitats. The 2022 eastern Australia floods were one of the nation's worst recorded flood disasters with a series of floods that occurred from late February to early May. Twenty-four people are known to have died during the disaster, almost one thousand schools were closed, mass evacuations took place, and food shortages were reported across the region.

The Insurance Council of Australia has reported that 243,000 claims were lodged subsequent to the floods and that (so far) \$6.1 billion has been paid out (ICA, accessed 16.12.2023).

(v) Drought: The Millennium drought 1997-2009

Between 1997 and 2009 much of southern Australia experienced a prolonged period of dryness. Conditions were particularly severe in the densely populated southeast and southwest. The Murray-Darling Basin and virtually all the southern cropping zones were severely affected.

Melbourne had 13 consecutive years of below-average rainfall from 1997 to 2009. The early stages of the drought were largely confined to Victoria and Tasmania, but from 2001 onwards it extended to most remaining areas of eastern Australia south of the tropics, as well as to the southwest. All capital cities except Darwin were affected by persistent, or periodic, drought episodes (Bureau of Meteorology, accessed 16.12.2023).

(vi) Storm: the November 2023 Adelaide event

The news report read: 'A major storm system developing over south-east Australia has the potential to generate not only widespread flooding but also significant damage from violent, rotating supercell thunderstorms that could even spawn tornadoes.' This system dumped a month's worth of rain in an hour on parts of Adelaide. Later, the system headed towards the eastern states with rain and storm activity increasing rapidly ... from northern Victoria to central Queensland' (ABC News, 28.11.2023; accessed 16.12.2023).

In a report titled '*Supercharged Storms in Australia: The Influence of Climate Change*', the Climate Council reported that climate change is fuelling more intense and damaging storms where 'The annual frequency of potential severe thunderstorm days is likely to rise by 30% for Sydney, 22% for Melbourne and 14% for Brisbane by the end of the century' (Climate Council, 2016).

The following diagram seeks to present an impressionistic link between the six 'faces' of climate change with five iterations of homelessness.

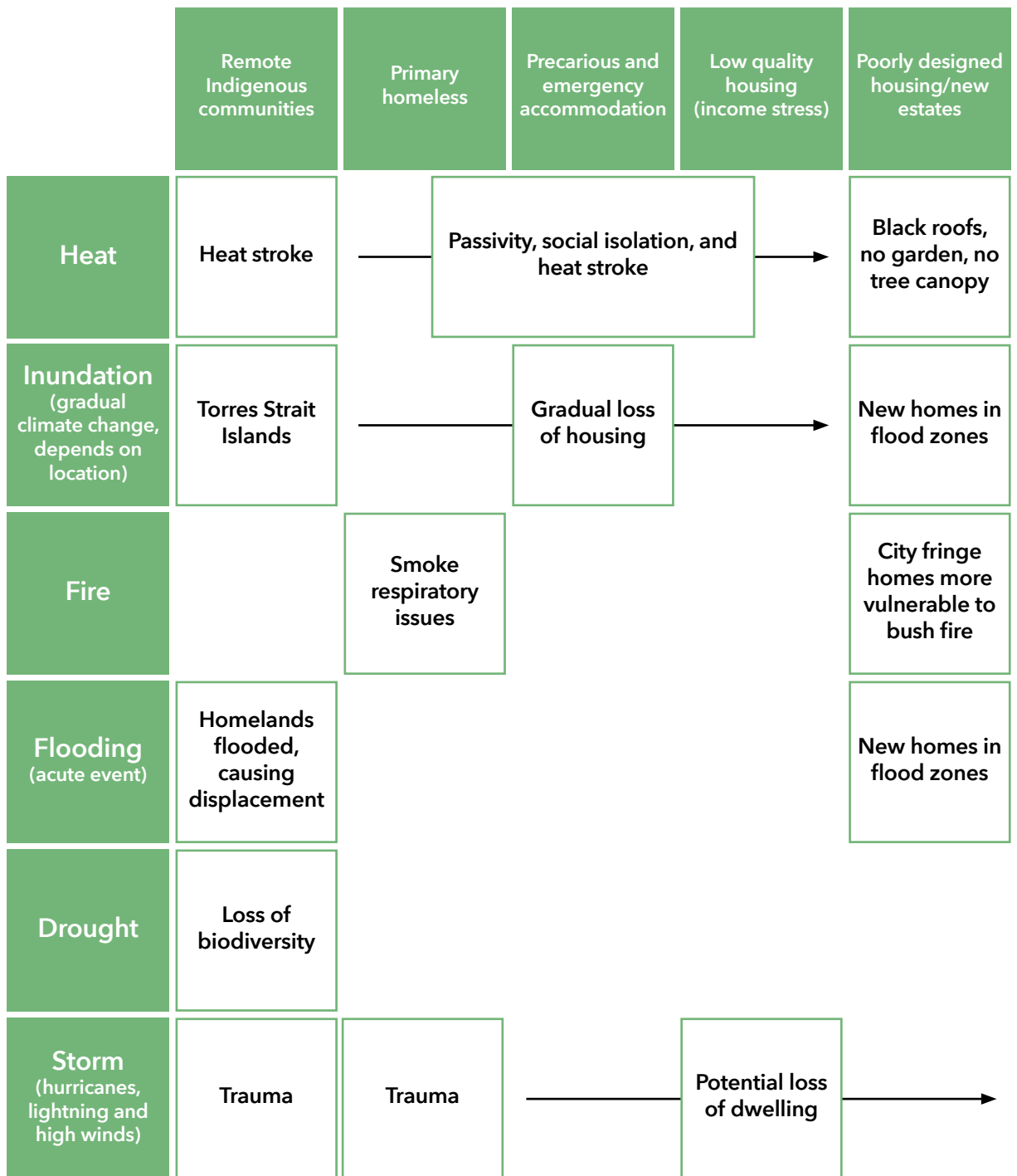


Figure 1

2. The relevant literature

2.1 Framing a subject without boundaries

2.2 Heat has the deadliest effect

2.3 Beyond heat, a brief summary: inundation, fire, flood, drought and storms

2.4 Compounding events

2.5 Insurance issues

2.6 How the relationship between homelessness and climate change is represented

2.1 Framing a subject without boundaries

The brief of the project was to examine ‘the relationship between homelessness and climate change’. The reference ‘climate change’ in this task presents a telling challenge given climate change is an emergent phenomenon without defined temporal or geographical boundaries. It follows that this challenge would be formidable even if the project was a large, intensely resourced endeavour. As the current project is a modest, deliberately formative exercise, the best that can be done is to inspect this reference by way of a limited, practically oriented summary.

Although more circumscribed, the reference ‘homelessness’ also presents complications. For the current purpose, and mindful the Australian Bureau of Statistics (ABS’s) six-level ‘operational categories’ concept has advantages, in what follows we have broadly adopted the Chamberlain and MacKenzie (2014) ‘cultural definition.’ In this nomenclature there are four divisions:

- (i) people in improvised dwellings and rough sleepers: primary homelessness
- (ii) persons in supported accommodation for the homeless: secondary homelessness

- (iii) individuals staying temporarily with other households: secondary homelessness, and
- (iv) boarding house residents: tertiary homelessness.

Included in this definition are the ‘housed-homeless’ — those in insecure, over-crowded, unhygienic and/or unsafe accommodation. However well-accepted, we note that it is not clear how, for example, victims of family violence or children who have been abused — that is, those who are housed but endangered — should be classified.

In the current exercise we have sought to observe the spirit of Chamberlain and MacKenzie’s definition — being mindful the decision has been taken to modify the schema so that:

- First Nations people in homeland locations are given a specific notation
- (ii), (iii) and (iv) are collapsed into the one notation
- permanent ‘poor quality residences’ — those dwellings typically occupied by disadvantaged persons — are separably notated, and

- albeit only summarily, poorly designed and constructed residences in ‘new estates’ are considered as a category given reports that these dwellings may become untenable in the future (Healy and Mellick-Lopes, 2022).

Before considering the directly relevant literature, the immediately following section presents a limited summary of the phenomenon of climate change with respect to one of its particular manifestations: the impact of climate change on the ‘niches’ within which human populations have historically lived (Lenton et al., 2022). This idea — that humans occupy a unique habitat or ‘niche’ — is the key theorisation which will be used to frame the project as a conceptually coherent exercise.

2.1.1 The impact of climate change on the human niche

For millennia a homeostasis has existed between:

- climate regularities (rainfall patterns, temperature variations, etc.), and
- adverse irregular climatic events (droughts, storms, floods, etc.)

Broadly speaking, in this homeostasis, deviations from this pattern have occurred at an acceptable frequency and intensity. Along with other life forms, humans naturalised this pattern as the basis for life niches that were sustainable and amenable. In the last decades the received homeostasis has experienced increasing disruption. This disruption is manifest in the loss of regularities, as it is also evident in an increasing frequency and intensity of each category of adverse climate event: heat, inundation, fire, flood, storm and drought. Nature, it seems, is no longer ‘normal’.

Dynamic phenomena such as climate change do not produce linear consequences: because pattern is being lost, because the climate is becoming more ‘entropic’, it is less possible to accurately predict what the impact of climate change will be in particular locations and with respect to specific points in time. Mindful of this fact, and also recognising that climate change has no temporal or geographical boundary, the trajectory that will come to be traced out is, to marked degree, uncertain. Nonetheless, probabilistic generalisations — trends — can be articulated.

One key trend concerns the increased presence of ‘unprecedented events.’ For example, scientists have recorded a prodigious spike in average ocean temperature in the Arctic Circle. Similarly, as has been frequently reported, mean atmospheric temperature readings that have never been seen before, have been recorded in many places, e.g. in Australia and elsewhere. These particular findings should not be seen as isolated ‘unprecedented’ events as, with respect to each dimension of climate expression — heat, flooding, storms, droughts and fire — a pattern of ‘off the charts’ readings is being documented.

Some argue a pattern of activity that is consistently beyond normal variation cannot be reconciled with the benign image evoked by the term ‘climate change’. Mindful that the term ‘climate change’ might be euphemistic, even counter-articulate, some propose that the terms ‘climate disruption’ or even ‘climate collapse’ present a truer description for what is in process given they capture the dysregulation that is increasingly being experienced. However accurate, the term ‘climate collapse’ presents difficulties. This difficulty deserves at least a brief discussion. See Box 1, “*Climate collapse is a disturbing idea*”.

Climate collapse is a disturbing idea

'Climate change' sounds smooth and non-threatening; the idea of 'climate collapse' is altogether more disturbing. In part, this is because the construct 'climate collapse' is a member of a class of phenomena the philosopher Timothy Morton termed hyper-objects (Morton, 2013). These phenomena are so massively distributed, so powerful and totalising that their complexity defies comprehension. Why is this?

We have been intellectually socialised to assume items and events are located in time and place. Hyper-objects, in this case climate collapse, transcend location and temporal fixedness. This non-specificity defies common sense. Deepening the intellectual difficulty is the fact that climate collapse involves the loss of an embedded pattern. In climate terms that pattern historically involved a steady state — a quality of homeostasis that existed between regular features (the pattern of seasons) and an expected distribution of irregular events (droughts, storms) that occurred at an expected and acceptable frequency and intensity. This state was assumed to be permanent and was naturalised as our frame of reference.

The received structure, our niche habitat, has been disturbed by Anthropocentric inputs over the last 200 years. The resulting loss of pattern — termed 'entropy' in the vocabulary of systems theory — is seen in cascading degrees of disorganisation where the new normal is non-regularity. One in 100-year events are clustering, droughts are defying seasonal averages, and pyro-cumulonimbus cloud conditions are propagating fires.

All this can seem like crazy talk. To really engage with this schema, one must jettison the accepted assumptions that allocate probability. No more can one expect a normal pattern to the seasons and an acceptable distribution of irregular adverse events such as droughts, storms. Again, this seems like madness. What has evolved, and become embedded, over the length of human history, cannot be dismissed without this profoundly disturbing the psyche. That is, the key issue is not intellectual, not abstract, not academic. What is at stake is deeply emotional. The job becomes a matter of not seizing up and becoming stuck in either denial or despair (Furlong, M., 2022a; 2022b).

To the extent it does not prompt despair, if it is acknowledged that climate collapse is the new normal, there is the chance we can actively plan for the future. The current project is designed to contribute to the foundations that support such a chance. Neither grandiose nor self-deprecating, what has been attempted is both modest and worthy given the task is to look practically at the relationship between climate change and homelessness. In such a practical engagement a pivot idea, an organising principle, needs to be identified. This frame is a narrowing reference that can 'hold still' one aspect of the exploding phenomenon that is climate change/climate collapse. 'Niche disturbance' has been selected to serve as such an orienting/anchoring point.

Lenton et al, (2022) propose that climate change will disturb many of the 'niches' that have been the habitats, the sustainable life spaces, within

which human populations have historically lived. For example, this research concluded that climate change:

has already put ~9% of people (>600 million) outside this niche. By end-of-century (2080-2100), current policies leading to around 2.7°C global warming could leave one-third (22-39%) of people outside the niche.

Being 'outside the niche' is a concern whether the presenting problem involves:

- First Nations people in remote areas experiencing temperatures that endanger personal health and the biodiversity upon which these communities depend
- those experiencing primary homelessness living 'roof-less' in city heat-sinks
- disadvantaged residents in public housing estates who have little or no access to cooling

- new housing estates where poorly oriented residences have no eaves, roofs that are flat and dark and where there is little or no garden space where protective canopy might grow
- farming regions untenably confronted by repeated fires, floods or droughts, or
- a Torres Straight community whose island is subject to the slow death of creeping sea-level rise.

At a minimal level, the impact of climate change may 'only' make the experience of primary homelessness less bearable yet, over time, climate change will elevate the degree to which roof-lessness is physically dangerous. Climate change can also have broad-scale, structural effects: nearly 60,000 people were displaced by the fires that occurred in south-eastern Australia during the summer of 2019-2020. This scale of mass homelessness recalls the image of the post-World War Two phenomenon of a mass of 'Internally Displaced Persons'. In the traditional view, in our collective memories, internal displacement was a phenomenon that only happens 'over there', somewhere beyond our continent because of a catastrophe such as a war or famine. No longer is this true.

One of the experts consulted in the course of the project coined a phrase that sought to capture the sense of the difficulties and disasters that the era of climate change introduces. We are living in, and need to prepare for, 'the long emergency' (Wiseman, 2021).

Snapshot Summary

There are many data points to climate change. Many of these are disparate, even contradictory. This makes for a confounding subject that is wickedly hard to comprehend. We get unexpected, prolonged periods of damp, unseasonal storms and spiking temperatures. Then, there are blue skies and days where it seems 'all is well. Nothing abnormal to see here!' But the science is clear. Climate change is dangerous. Entropy is abroad. The historical pattern is gone. This troubling idea tends to 'do your head in' (Furlong, M., 2022a).

2.1.3 The organisation of the literature search

Towards building a disciplined, transparent and reliable information base, 'folders' were progressively compiled between July 2023 and December 2023 for each of the following categories of attention:

1. Heat
2. Inundation
3. Fire
4. Flood
5. Drought
6. Storm
7. Method
8. Lit search: general
9. Towards a report
10. Poverty/inequality
11. Public policy
12. Scoping; partializing; periodizing
13. Climate change has interstitial impacts
14. To be filed
15. Recommendations (possible)

Sub-headings in each of the above folders distinguished between 'academic', 'the grey literature' and 'media reports.' Additionally, several folders had dedicated sub-headings, e.g. in the 'Heat' folder there was 'First Nations' sub-section.

2.1.4 The relevance of two earlier CHP projects

Two recent CHP reports had a direct relevance to the current project:

- *The Last Mile of the Way: Homelessness, Death and Dying: Project Report, August 2019*
- *Every Grain of Sand – Preventing Homelessness Deaths: Project Report, July 2021.*

These projects 'banked' a good deal of data that the current project sought to build on, e.g. Lee et al., 2019 (see below). Several findings advanced in these reports also have a face-value salience for the current project as they presented 'reference themes' that might orient the current enquiry. These themes included:

- The importance of consulting those with lived experience: not only should the process of talking with those who have knowledge be about respect, this process led both earlier projects to access important data that would otherwise have been missed, e.g. it was the unique contributions from those with lived experience that allowed each project to more fully understand why so much homelessness remains non-identified.
- The idea there is an absence of holistic co-ordination between the many 'agents with relevance', i.e. the different levels of government, responsible statutory bodies, various health services, NGOs etc. As documented in both previous reports, this criticism is equally applicable whether the focus is data collection, service delivery, policy formation or public preparation.

- The two earlier reports collated a considerable stock of data on the dangerousness of homelessness. It follows that (much of) this material concerning the 'risks to health' that homelessness occasions might be re-cycled in the current project.
- The under-reporting of homelessness: like the health consequences of homelessness, this was a key focus in both reports. For example, local empirical research undertaken at Melbourne's Alfred Hospital (Lee et al., 2019) found around 10 times as many of those who presented to the hospital's Emergency department were actually homeless compared to those who were recorded as homeless in the hospital record: See Appendix to this note for more details.
- Certain language habits obscure questions of causation and responsibility. The specific instance that both projects investigated was the way the term 'natural' was deployed with respect to cause of death of those who were or had been homeless. This usage, both reports argued, disavowed the possibility of human agency by inserting the assumption that death was due to an 'act of God.' Such a usage routinely renders death unavoidable when at least '... one in three homeless deaths were due to causes amenable to timely and effective health care' (Aldridge, Menezes, Lewer et al., 2019: 49).

As with each input to the project, the above were taken seriously, but not accorded a non-critical relevance in the process of preparing the current report.

2.2 Heat

The hottest year on record

Leading US climate scientist James Hanson said in July 2023: “This year looks likely to be the hottest ever recorded globally, with the summer already seeing the hottest June and, possibly, hottest week ever reliably measured. Conversely, 2023 may in time be considered an average or even mild year, as temperatures continue to climb” (quoted in Millman, 2023).

Amongst the different expressions of climate change, elevating heat presents the gravest danger. For example, a recent *Seniors Online* (2023) headline stated: ‘More people die in Australia from high temperatures than are killed by fires, floods and cyclones’.

During the 2019–2020 fires, the suburb of Penrith in western Sydney recorded a peak temperature of 48.9 degrees. During this period mortality rates spiked, with the elderly the most prominent cohort. Most likely those with inadequate or non-existent accommodation were disproportionately affected, mindful that, as usual, statistics are less comprehensively collected for this group.

Extreme temperatures are expected to occur in Australia and internationally with greater frequency and duration as climate change accelerates. In July 2021 temperatures ‘annihilated’ Canada’s previous heat records: from 45 degrees in Saskatchewan in 1937 to 49.6 degrees in the town of Lyton in British Columbia. ‘(A)t least 486 sudden deaths were reported over five days, nearly three times the usual number that would occur in the province over that period, the B.C. Coroners Service said on Wednesday’ (Warburton and Olmos, 2021).

Poorer people, those who are elderly, those who have existing medical conditions and anyone with inadequate or non-existent housing become especially vulnerable when the temperature spikes. With respect to extreme heat — a phenomenon that is expected to become a more frequent feature of Australian summers — what mitigates risk? The official advice is:

... to plan ahead and consider how you can look after yourself and others when the extreme heat hits. ... For example, you could postpone outings or schedule activities such as watering the garden in the coolest part of the day. If you must go out, take a bottle of water with you (Better Health Channel; accessed 9.08.2023).

However applicable it may be to most people, this advice is untenable to those experiencing homelessness.

2.2.1 The literature on heat

An extensive, and expanding, literature sets out the facts on the phenomenon of temperature rise and its effects. There is also substantial literature on the danger elevated heat presents. The following presents the general case.

It is clear that excessive heat endangers health. A non-technical summary offers an outline of the relationship:

“When the human body is exposed to excessive heat, it attempts to maintain its internal temperature by sweating — which cools you down as beads of perspiration evaporate — and by diverting additional blood flow to the skin, which allows for extra heat loss by convection. The challenge with that is that sweating causes you to lose water, which can lead to dehydration,” says Gregory Wellenius, Professor of Environmental Health at the Boston University School of Public Health.

(... because there is more blood flowing to the skin, there’s) less blood flow going to other areas of the body, other organs — and so your heart has to work a bit harder, and your kidneys have to work a bit harder. Even healthy people can experience consequences from those changes in blood flow and changes in sweating. (Those) with cardiovascular disease, chronic obstructive pulmonary disease and types of respiratory disease, diabetes, and pregnant women (are) at greater risk, Wellenius says, as they have “less compensatory capacity”. But “even the healthiest people can succumb to the impacts of heat” (Lytton, 2023).

When struggling with heat, the tendency is to become less active. This tends to prompt social isolation, has an impact on mood and, if the duration of elevated temperature is prolonged, can impact on mental health and interaction with intimates. As detailed by Goodel (2023) in a series of telling re-constructions, the mortal danger is heat-stroke.

Heatstroke

According to *The Guardian*:

When the body reaches 103F or higher, organs such as the brain, the heart, the gut and the kidneys can become damaged.

A victim of heatstroke might experience abrupt changes in cognitive function and mental state, such as confusion, hallucination and seizure.

A person can fall unconscious and, in extreme cases, go into cardiac arrest. Heatstroke is a medical emergency, and it is important to cool the person and seek help quickly.

“If you’re left with the decision, even if an ambulance is there, of ‘Do we get this person to a hospital or cool them?’, cooling should take priority,” said Robert Meade, an extreme heat researcher at the University of Ottawa.

“The longer the person stays at that elevated body temperature, all of these effects on the central nervous system like endotoxemia are just going to continue to occur.” Endotoxemia occurs when the body becomes so hot that the gut has been starved of blood and oxygen, and the intestinal barrier starts to break down. Bacteria from the gastrointestinal tract can enter the bloodstream. The window in which it can turn fatal is short, and even for survivors there can be long-term health complications’ (Uteuova, 2023).

What is the prediction with respect to heat?

According to the World Meteorological Association, the past eight years were the warmest record. Heat broke records around the world in summer 2022 — first in South Asia and then in North America, Europe, and China — and 2023 is already off to a hot start. Argentina suffered record late-summer heat in March; a heat wave struck India in April; Vietnam, Laos, and Thailand set records in May; the same month, heat left 12 million people under an advisory in the Pacific Northwest and fuelled forest fires in Canada.

And it is only going to get worse. In March, the Intergovernmental Panel on Climate Change predicted that Earth would cross the 1.5°C warming threshold by the early 2030s. Other researchers warned that climate change would cause more frequent heat waves and lead to thousands of deaths. Europe reported over 15,000 heat-related deaths in 2022, and if long-term forecasts hold true, high mortality in more countries is just a matter of time (Jones, 2023).

The following briefly examines the subject of heat as it relates to:

- (i) First Nation people in remote communities
- (ii) those who are experiencing primary homelessness
- (iii) those who live in sub-standard accommodation
- (iv) the financially marginal where access to cooling is compromised by its cost
- (v) the impact of heat on ‘new estates’ — on those locations where dense clusters of residences have not been designed with climate adaptation as a priority.

A selection of each of these bodies of research is set out below.

(i) First Nations people in remote communities

Different populations are impacted, and will be further impacted, by the effects of climate change. Amongst a range of factors, geography, socioeconomics and culture mediate the severity of these effects. Amongst the populations that will be most disturbed are First Nations people living in homeland communities.

Published in a prestigious journal — *The International Journal of Environmental Research and Public Health* — Standen et al. (2022: 7502) summarise the situation faced by these communities. Given its significance and breadth, this report offers a clear indication of the emerging situation:

This study ... linked Aboriginal demographic data to historical and projected climate data to describe the distribution of climate-related exposures in Aboriginal compared to non-Aboriginal populations in New South Wales (NSW), Australia. The study showed Aboriginal populations were disproportionately exposed to a range of climate extremes in heat, rainfall and drought, and this disproportionate exposure was predicted to increase with climate change over the coming decades. Aboriginal people currently experience higher rates of climate-sensitive health conditions and socioeconomic disadvantages.

In an early example of engaged research, Green (2006) concluded that:

Many of these biophysical impacts (of climate change) have direct and indirect effects on the health and well-being of people living in affected regions, especially those who are sensitive to environmental change and who, for various reasons, have a low capacity to adapt. Such people include thousands of Indigenous Australians living in outstations scattered across northern Australia from the Kimberley, through to Arnhem Land, the central deserts, far north Queensland and the Torres Strait.

These communities are disproportionately vulnerable to the impacts of biophysical change due to a number of factors. Many Indigenous people living in remote areas have a heightened sensitivity to ecosystem change due to the close connections that exist for them between the health of their 'country.'

Other reports paint a similar picture. For example, in a study of the projected changes in the frequency of climate extremes over southeast Australia, Harold et al, (2021) make the case that these communities are especially at risk as biodiversity — what there is to eat — is being degraded in addition to the immediate health that comes with climate change. Interestingly, Quilty et al. (2023) stress the importance of 'sociocultural' rather than technical and infra-structural adaptations for this population group.

Heat kills

'Heat kills people. More heat kills more people. And when it's humid our bodies' natural evaporative-cooling mechanism, achieved through sweating, doesn't work. You still sweat, but the water just sits on your skin, refusing to evaporate, as you accumulate heat. When it's hot, your heart has to work harder to pump thicker blood around while trying to get it closer to the surface of your skin in a futile effort to cool your body down. Your other organs are also under pressure' (Bambrick, 2022: 5).

(ii) Primary homelessness

Those who are homeless are especially at risk from high temperatures. Given most of those who are homeless live in cities, what is the impact of increasing temperatures on their 'niche'?

According to the Environmental Protection Agency, the annual air temperature of a city with 1 million people can be 1.8-5.4 degrees Fahrenheit (1-3 degrees Celsius) warmer than its surroundings. An urban heat island, or UHI, is a metropolitan area that's a lot warmer than the rural areas surrounding it' (*National Geographic*, accessed 02.12.2023).

Interestingly, the attempted solution to heat in UHIs can contribute to the problem getting worse: the above report noted that '(t)he energy used in electric fans and air conditioning ends up contributing to an even hotter UHI'. Paradox noted, cities are not always hotter; where rural surroundings are desert, or desert-like, cities can have cooler summer temperatures than neighbouring non-urban areas. This noted, working from satellite data 'scientists measured that surface temperatures in cities were sometimes up to 10-15°C higher than in their rural surroundings' (Euro. Science Hub, 2022). Smargiassi et al. (2009: 659) examined UHIs and concluded: 'The risk of death ... in areas with higher surface temperatures was greater than in areas with lower surface temperatures.'

Dr Sophie Lewis, the lead author of a major study (Lewis et al., 2017) said Sydney and Melbourne could expect summer temperatures of 50C under two degrees of global warming (Davey, 2017). Not a great deal is known about the health impact of such temperatures, but much is known about the effect of heat right now. Cusack et al. (2013) offer a baseline account of the effect of heat on those experiencing homelessness. Perhaps English et al. (2022: 16565) provide the best summary of the dangers that current levels of heat present for those experiencing homelessness:

Heat-related illnesses are a significant negative consequence of high temperatures and can be life-threatening medical emergencies.

The severity of the symptoms can depend on the pre-existing medical conditions and vary from mild headaches to severe cases that can lead to coma and death. The risk of heat-related illness may be higher for people experiencing homelessness due to a lack of access to cool places and water, and the complex interactions between mental illness, medications and substance use disorder.

As well as outlining the risks involved, the above paper detailed several of the consequences when individuals experiencing primary homelessness are overtaken by heat and admitted

to the emergency department of a hospital. This study was set in Sydney during a heatwave in November 2020. The abstract reads:

Both cases were adult males with known risk factors for heat-related illness including hypertension and schizophrenia (Case One) and Hepatitis C, cirrhosis, and alcohol use disorder (Case Two). These cases show that severe weather can not only be detrimental to homeless people's health but can also cause a significant economic toll, evident by the \$70,184 AUD expenditure on the care for these two cases (ibid).

Further data on hospitalisation risk can be found in the findings from a complex study published in *The American Journal of Public Health* which used detailed socio-demographic data to compare presentations of those populations experiencing homelessness and those not experiencing homelessness during heatwaves. This study found:

... a positive association (with homelessness), with the strongest risk of ED visits during daytime (e.g., 99th percentile, 2 days) heat waves (odds ratio = 1.29; 95% confidence interval = 1.02, 1.64). Patients experiencing homelessness who were younger or elderly and who required a psychiatric consultation were particularly vulnerable to heat waves (Schwarz et al., 2020: 98).

(iii) Those inadequately housed.

Complementing the above, Bambrick (2022: 5) further outlines the health risks for those who are inadequately housed:

Ambulance attendance, hospitalisations and deaths increase with the duration of a heat event and are associated particularly with higher night-time minimum temperatures. Much like our homes, if our bodies can't shed their accumulated heat each night and reset, we begin the next day from a higher baseline.

This later idea introduces the 'wet bulb effect'. Allied to the presence of high temperatures, but also relatively independent, is the danger presented by high levels of humidity.

Humans' ability to efficiently shed heat has enabled us to range over every continent, but a wet-bulb temperature (TW) of 35°C marks our upper physiological limit, and much lower values have serious health and productivity impacts. Climate models project the first 35°C TW occurrences by the mid-21st century. However, a comprehensive evaluation of weather station data shows that some coastal subtropical locations have already reported a TW of 35°C and that extreme humid heat overall has more than doubled in frequency since 1979 (Raymond, Matthews and Horton, 2020).

It is possible to map the areas in a city that are especially hot and, therefore, presumably more dangerous: see, for example, Loughnan, Nicholls and Tapper (2012). As useful as these attempts are, in so much as the assessment of vulnerability concentrates on variables such as where aged care facilities cluster, where there are higher proportions of older people living alone, and/or where there are high proportions of non-English speakers, this attention tends to occlude variables such as 'trust in the authorities', bio-specific attributes (e.g. psychotropic medication) and 'housing quality'.

This latter variable is particularly topical and has been the subject of considerable research and program attention with respect to climate 'adaptation'. That is, programs have emerged that aim to retro-fit physical improvements, particularly air-conditioning and insulation, to poor quality residences of those who are at-risk, such as the elderly, and there have been serious efforts to measure the effectiveness of these actions: see, for example, Loughnan, Carroll and Tapper (2015). Attention is given to these programs in 5: What is being done? and how vulnerability/being 'at risk' is assessed (and might be responded to) in 7.4.

(iv) Those who are financially marginal

A recent Red Cross study found that:

Nearly 90% of people on income support payments say the inability to cool their homes in hot weather is making them sick,

and even those who have air conditioning avoid using it because it is too expensive. ... Nearly two-thirds of those surveyed ... said they were unable to cool their homes down in periods of hot weather.

Some 89.4% said they sometimes or always felt unwell in the high heat, while 29.8% said they had needed to seek medical care for heat stress, with elderly people or those living with disability worst affected. ...

Some 94.5% of people with air conditioning said they avoided using it because it cost too much (Convery, 2023).

Healy and Mellick-Lopes (2022) interviewed vulnerable groups of people in Western Sydney — such as elderly citizens, disability carers and young mothers in social housing — and reported that heat had a compounding impact which tends to make people sedentary, passive, lonely and insecure because it keeps people indoors and isolated. These authors also argue that 'Over the last half century, the balance of Sydney's social housing has been pushed to the west, where it can be up to 10°C hotter than the breeze-cooled coast. Meanwhile, rapid housing development reduces existing tree canopy daily, further intensifying heat.'

(v) 'New estates'

There is an emerging literature on the impact of heat on the new estates that tend to develop on the flatlands fringes of metropolitan cities. For example, a recent media report quoted a NSW academic who predicted that poorly designed, cheaply constructed and badly oriented dwellings in the expanding western corridor of Sydney will become 'ultimately uninhabitable' if the expected rise in summer temperatures is realised (Davies, 2021). This report stated:

There will be whole slabs of functionally homeless due to heat-meets-poverty: the gross differential between coastal and new resi(idential) hinterlands; 'Houses built to the fence line with dark roofs and tiny backyards leave their owners at the mercy of the climate crisis, experts say,'

Dwellings in many new estates — neighborhoods where dense clusters of residences have not been designed with climate adaptation as a priority — will be cocooned within heat islands as they do not have the advantage of elevation or proximity to the cooling effect that residences close to the sea experience. Quoting further from the same report:

‘Australians deserve a better future and if we don’t design for the changing climate, dwellings will ultimately be uninhabitable and we know that is worse in areas of disadvantage,’ says Davina Rooney, Chief Executive of the Green Building Council.

A local expert, Professor Nigel Tapper commented: ‘In areas that are covered by buildings, urban warming occurs that can increase local temperatures by around 4°C. This can take the temperature over the threshold where human health is threatened.’

The problems with new estates on city fringes are, in part, simply geographic; those in coastal neighbourhoods will be less subject to increases in heat than those in hinterland communities. And, at least in part, planning failure is at issue. For example, it is the case that regulations set limits to the extent to which new houses might occupy the land upon which a residence is built. Norms/rules vary, but on average around 30% of a block is supposed to be set aside in order to grow canopy. Yet, it seems that such rules are often not observed by developers or enforced by the local authority. Moreover, it is well understood that, for example, lighter coloured roof tiles are better at reflecting rather than absorbing heat. Nonetheless, as Healy and Mellick-Lopes (2022) point out, the NSW government is resisting mandating lighter coloured roof tiles as a perceived impediment to development. This issue is not restricted to NSW.

Canopy

From a *Guardian* report about a heatwave in Phoenix, Arizona:

Greenery makes a big difference in how a person fares during extreme heat. Shade can make temperatures feel up to 30 degrees cooler, according to Lora Martens, the urban tree program manager for the city’s office of heat response and mitigation. She is leading the effort to spread the shade to more exposed areas of the city, but that isn’t as easy as it sounds.

“The parts of our city that need trees the most are the hardest places to plant them,” she said. Trees struggle to thrive in the hottest areas, especially when landscapes are encased in concrete. The city is also having to balance the increasing need for shade with the decreasing availability of water. It had hoped to hit its goal of 25% canopy coverage, but the drought is making it harder. “We are reassessing that goal with a lighter water future,” Martens said (Canon, 2023).

Summary: The impact of rising temperature

The convention is to measure temperature in the shade; according to Olly Jay, Professor of Heat and Health Research in the Faculty of Medicine at Sydney University, unshaded readings can be up to 15-17 degrees higher than this figure. More, temperature is often only one element in calculating the score on a ‘heat stress scale’; wind and the amount of humidity (the ‘wet bulb effect’ mentioned earlier), in addition to a person’s age, the activity they are engaged in, their health status and medication regime — all these factors have to be considered in addition to the temperature if risk is to be understood (Jay, 2023).

Unlike violent deaths and acute medical episodes, this complicated picture makes deaths due to heat difficult to identify. This understood, the most respected sources have put forward alarming statistics. For example, *Nature Medicine* reported that 61,000 people died during the recent European heatwave (Ballester et al, 2022). A recent media report narrows the lens and scales-down broad statistics into a locality-based account of the situation in Phoenix, Arizona when temperatures remained above 110°F (43.3°C) for 31 consecutive days:

Fifty-six percent of (the 425) who succumbed to the heat last year in Maricopa County, where Phoenix is located, were unhoused. Of the people who died indoors, all of them were living in homes and buildings that weren't cooled. In 78% of cases, AC units were present but not functioning (Canon, 2023).

This same report offered several direct quotes from individuals who were directly affected.

The following offers a personalised description of the experience of outlandish heat and a quote from a 'survivor':

... It's early afternoon and the cloud cover has burned off, leaving sunlight to cook the sidewalks which can reach temperatures of 160°F (71.°1C). Shade is sparse and the stale air is stifling as nurses cart wagons of refillable water jugs through the tents, offering them to inhabitants. They run out quickly.

"It is hell on earth" (encampment resident Michael) Shaw said. "I am pretty tough, but these last few days are everything I can handle." Life on this block is filled with danger and violence and the lure of drugs to dull the pain is constant, only adding to the strain. "I have been robbed and mugged. But the heat," he said, "— it's the killer." (ibid).

This description may sound melodramatic, though likely not to those with first-hand experience.

2.3 Inundation, fire, flood, drought storm

So far, 'elevating heat' has been accorded the lead status. In what follows, the other expressions of climate change have been artificially disaggregated into five folders:

- inundation
- fire
- flood
- drought
- storm

It is clear there is often a profound cross-over between these features, e.g. heat and drought are often co-presences. It is also worth noting that, because the project has a limited scale, it is only possible to present an indicative account of the issues that climate change brings to each of these categories.

2.3.1 Inundation

Inundation is a term that is inclusive of several related phenomena. The most studied, and perhaps the most significant, is sea level rise.

This is an issue in multiple sites. A broad summary was presented by McVeigh (2023): 'Not only is dangerous sea level rise "absolutely guaranteed", but it will keep rising for centuries or millennia even if the world stopped emitting greenhouse gases tomorrow, experts say.' Why? 'The systems causing sea level rise — specifically, the thermal expansion of the ocean and the melting of glaciers and ice sheets due to global heating — have a centuries-long time lag.'

Preiss and Abbot (2023) offer a very local report: 'More than 16,000 properties in Melbourne's Southbank are at high risk of damage from sea-level rises and storm surges within 17 years as climate change exacts an alarming toll on Victoria.' Insomuch as this calculation is correct, if the many coastal areas that are also subject to the predicted sea level rise that will occur over, say, the next 25 years, this will result in a very considerable loss of housing stock Australia wide. Mindful that the personal effect will be mediated by the affluence, or otherwise, of those whose dwellings are affected, this loss of housing stock can be expected to significantly impact on the

aggregate incidence of homelessness nationally. In the light of this risk, at least one research group argues for a 'planned retreat' from the sea coast in 'an Australian case study' (Abel et al., 2011).

Within the limits of the current exercise, it is not possible to convene a thorough account of the effects of inundation on health and housing: see, for example, Hague et al. (2020) for a report on the situation in Sydney, and Harold et al. (2021) for more general examination of the prospects for southeast Australia. What can be offered is a vignette concerning one group that is especially vulnerable: First Nations people living on a coastal area in the Torres Strait. A report (mentioned above) about Saibai Island discussed homes being inundated by king tides, the cemetery destabilised, and people unable to grow vegetables anymore (Cox, 2023).

Many interconnected aspects of life are affected; Fuentes et al. (2010) have mapped the effects of projected sea level rise on sea turtle rookeries. And sea-level rise has effects beyond food security; culture is also disrupted: see, for example, Green et al. (2010).

Considering all the above, it is hard not to expect significant population displacement will occur as sea level rise continues to impact on the liveability of coastal areas within, and beyond, the Australian shoreline.

2.3.2 Fire

Major fires are now a feature associated with climate change internationally and in Australia. For example:

More than 150,000 Canadians have been forced to leave their homes so far this fire season, "the highest number of evacuees from wildfire that we've ever seen over the past four decades," Norton said.

He said Indigenous communities are disproportionately impacted by wildfire evacuations. "Sixty percent of First Nations reserves lie within or intersecting the wildland urban interface, areas where built infrastructure meets the forest." (Allan, 2023).

Catastrophic events in South Eastern Australia in 2019-2020 demonstrated this risk in the local context. In a heavily cited academic report in *Nature Climate Change*, Boer, de Dios and Bradstock (2020) examined in some detail how Australian forests had been subject to 'unprecedented burn' in those mega fires. Another academic report documented that the '2019-2020 mega-fires exposed Australian ecosystems to an unprecedented extent of high-severity fire' (Collins et al., 2021).

In terms of the effect on homelessness, du Parc and Yasukawa's (2020) paper 'The 2019-2020 Australian Bushfires: From Temporary Evacuation to Longer-term displacement' documented the fact that:

Bushfires that raged across Australia triggered around 65,000 new displacements between July 2019-February 2020. They also destroyed more than 3,100 homes, potentially leading to longer-term displacement for thousands of people.

Of interest, the Internal Displacement Monitoring Centre now studies 'displacement' in Australia. Not so long ago, it was assumed these phenomena only happened 'over there'.

Media reports told this story in less formal ways. Smoke was reported to afflict populations living hundreds of kilometres away from the fires, interviewees said the fires had changed the 'meaning' of summer, and the Prime Minister commented that 'I don't hold the hose, mate' when quizzed about being on holiday during the fires. The fires were very public news, and many firsthand stories testified to acts of anguish and heroism.

Several years after the fires, a December 2023 media story offered a topical discussion point, presenting a personal case study of 'where homelessness intersects with fire':

... a toddler's little feet crunch over leaves and dirt, past a rapidly warming tent in a national park encircling Bendigo. The everyday items of children spill onto the dirt — soft toys, a drink bottle, a car seat, a school bag. This tent is home for nine children, aged between almost two and 18 years, their mum Emma and her

partner Dallas. Since losing a rental property in the Wimmera, about three hours away, in July, the family has been unable to secure a new home. "We can't move. We've got nowhere to go," one mother says.

Council to Homeless Persons chief executive Deborah Di Natale says homelessness has changed dramatically across the country, and families living rough like this in Bendigo are not uncommon. "What we used to see before was mainly single people," she says. "But the trend that is emerging is that we're seeing families setting up tents in the bush because there is simply nowhere left for them to go."

As the weather warms up, there's another pressing concern for these families. Fire.

The Greater Bendigo National Park was where Emma, Dallas and their children were living at the start of November, in a free campsite with no running water and little to no phone reception. The clearing is surrounded by towering Box Ironbarks with a single unsealed road for access. The last major fire in the Greater Bendigo National Park was in 2020 and burnt 110 hectares of public and private land (D'Agostino and Bonica, 2023).

Alarming fire warnings were in place for summer 2023–2024 (Wahlquist, 2023).

2.3.3 Flood

As is well remembered, there was a disastrous flood in the Northern Rivers Region of Australia in 2021 which displaced around 18,000 people (Wiki, accessed 06.12.2023). A short time prior to the flood, the Lismore Council sought a \$100,000 grant from NSW's Department of Planning and Environment for a series of works to install rainfall and river height gauges, CCTV cameras and a community flood dashboard. The five-paragraph rejection letter the council received stated that such works were 'premature'. Three days later, on February 28, the biggest flood in modern Australian history inundated Lismore, and the rest of the Northern Rivers (Gilmore, 2022).

The metrics may not be in, but it can be predicted that this disastrous event has impacted on the incidence of homelessness in a rolling, persisting

manner — at least for a period of some years. There are a range of factors contributing to that — the scale of the damage to housing stock, in conjunction with the outright destruction of many houses, the slow pace of repair and construction of replacement stock, and the need for housing for the influx of workers to undertake the work, aside from less obvious impacts which, mean the initial 'flood event' has a long tail that persists in disturbing the ecology of local housing.

The key point is this: a flooding event initially causes a spike in 'primary homelessness', and the consequences of the event then generate a higher number of people in marginal, precarious and inappropriately located dwellings, which notably fall within Chamberlain and MacKenzie's definition of homelessness.

The Lismore disaster may have been the most severe flood to date, but it is also a reminder that acute flooding is a phenomenon that is becoming ever more prominent. Many other examples could be cited. For example, subsequent to a deluge in 2023, around 700 First Nations people in Kalkarindji, Dagaragu, Palumpa, Pigeon Hole and Yarralin, about 500km south of Darwin, were flown to Katherine and then taken by bus to Darwin. These people remained out-of-home — relocated/uprooted — for months (Katherine West Health Board, 2023).

According to the Wiki entry 'Floods in Australia' between February 2020 and October 2023 there were ten major floods in Australia. If each of these was examined for the initial displacements the event caused and a calculation was made of the 'long tail' disruption to housing it occasioned, a metric for the incidence of homelessness could be formulated. For example, in Traralgon — one of the towns impacted by the flash flooding that hit Gippsland in Victoria in June 2021 — 200 homes were evacuated. At this point, it is not possible to know what its impact on the incidence of homelessness, say, six months after the initial event. This much is clear, it is highly unlikely the impact would be negligible.

The above 'X figure' constitutes a metric for only one of the places impacted by one of the ten major floods that have occurred in only the last three years. It follows that the collective Australia-wide

impact of flooding on incidence of homelessness would be significant. Anecdotal reports from the Lismore area support that expectation. For example, Davies (2022) discussed how the Lismore flood has set in train a dynamic set of consequences that continue to negatively impact on housing demand and consumption.

Floods have effects beyond their impact on housing. For example, they result in long-term damp which causes ill health:

It has long been known there is an increased risk of communicable diseases after floods, but a new Australian-led study shows people are also more likely to die from heart and lung disease about three to six weeks after a disaster.

That is likely to be due to reduced access to health services caused by road closures, along with increased exposure to black mould and other contaminants, including pathogens, researchers say. (Davies, 2023)

The US Interagency Council on Homelessness (USICH) noted that what compounds the tragedy of a flood:

is the fact that the more affordable a home is, the more likely it is to be in a flood zone and the less likely it is to be rebuilt after disaster strikes. This is especially true as the price of home and flood insurance doubles in many places, if it's available at all.

The result is a massive loss of affordable housing and a growing diaspora of people experiencing climate-caused homelessness. Retirees, lower income Americans and people of colour — who are already suffering because of racial and economic inequalities created by past and present policies — are especially vulnerable to this type of homelessness (USIC, 2023).

The above does not properly align with the current situation in this country, but it would not surprise to find it becomes more relevant over time.

2.3.4 Drought

Australia has always experienced droughts, but it is expected that they will become more common. Within the limits of the current exercise,

it is not possible to convene a thorough account of their effects on health (or on housing).

However, a summary overview is presented in the much-cited report by Stanke et al. (2013), which noted:

nutrition-related effects (including general malnutrition and mortality, micronutrient malnutrition, and anti-nutrient consumption); water-related disease (including *E coli*, cholera and algal bloom); airborne and dust-related disease (including silo gas exposure and *coccidioidomycosis*); vector borne disease (including malaria, dengue and West Nile Virus); mental health effects (including distress and other emotional consequences); and other health effects (including wildfire, effects of migration, and damage to infrastructure).

The above is an international summary and is inclusive of the effects of drought, where, for example, according to 2022 media reports:

Water scarcity hitting farming and food security are already among the “main drivers of rural-to-urban migration” in Iraq, the UN and several non-government groups said ... (while) the International Organization for Migration said that “climate factors” had displaced more than 3,300 families in Iraq’s central and southern areas in the first three months of this year. Climate migration is already a reality in Iraq.

It is also understood that droughts have produced mass migration in central Africa. What is the situation in Australia? The situation here was, in part, examined by Edwards, Gray and Hunter (2015) who examined the mental health impact of drought in rural and regional Australia.

This report stated that:

... drought does have negative mental health impacts and that those who are most impacted upon are farmers and farm workers. There do not appear to be substantial flow-on effects of drought on the mental health of those employed outside of agriculture. There is evidence that the more severe the agricultural impact of drought the greater the impact on mental health. Farmers who reported that the drought had eliminated or reduced their farm’s productivity to the lowest point ever had significantly higher rates of mental health

problems and lower mental health wellbeing scores than those who did not report they were in drought or reported that the drought had little or no effect. The findings are notable given that recent climate change scenarios suggest that the frequency and severity of drought will increase in many countries (including Australia).

Drought-related terminology is unstable. Some talk of 'aridification', others of 'desertification', but the meaning is clear: whatever term is used to encompass drought, to this point there have been impacts on the phenomenology, the physiology, the incidence and, to a lesser extent, the distribution and profile of homelessness. More, these impacts can be expected to intensify as climate change develops.

2.3.5 Storm

As is the case internationally, Australia has seen an increase in storm frequency and intensity: see, for example, Wasko and Sharma (2015). These storms have exacerbated beach erosion (Castelle et al, 2007) and have caused extensive property damage.

For example, in the storm cell event that struck a small section of the Dandenong Ranges in Victoria in 2021, hundreds of homes were destroyed or badly damaged. How did this happen?

Chris Arvier, senior meteorologist at the Bureau of Meteorology, describes the storm that smashed Victoria last week as "very very unusual". Normally, Victoria's high winds blow from the north or north-west, or sometimes the south-west during winter. On that night they came in from the south-east, off the Bass Strait. It was like attacking the trees from behind. There was also plenty of rain, with 271 millimetres falling on the Dandenongs alone (Cowie, 2021).

Such extreme events are anxiety provoking and can be highly dangerous. If they are sea-related, storm surges — especially if allied with high tides — can cause flooding and coastal damage. Understood as an escalating risk, it is not possible to discuss these events with due respect in the current exercise other than to note intense storms have a marked effect on the phenomenology, physiology and incidence of homelessness.

2.3.6 A brief summary: Inundation, fire, flood, drought and storms

In a very general sense the challenges presented by climate change with respect to homelessness are already established. For example, a recent meta-study concluded that five themes emerged as primary concerns:

- 'risk factors for homelessness/housing precarity
- temperature extremes
- health concerns
- structural factors
- natural disasters, and housing (Bezgrebelna et al, 2021).

Another high-prestige international scoping review combined the results from 26 peer reviewed studies and concluded that climate change will:

- impact homelessness prevalence
- exacerbate the specific vulnerabilities of homeless populations (e.g, chronic illness, exposure, stigmatisation)
- lead to a general deterioration in health and social outcomes for those who are homeless (Kidd, Greco and McKenzie, 2021; 385)

The search term 'health effects of extreme weather' convenes a large set of reports that more specifically summarise outcomes than do the two 'generic' reports quoted above. For example, Weillhammer et al. (2021) state there is (i) the risk of cardiovascular and respiratory mortality increases in extreme heat events and droughts, (ii) an increased risk of mortality in extreme cold events, (iii) morbidity (respiratory and mental health) increases due to wildfires, and (iv) that floods might not be directly associated with mortality, but with mental health morbidity. An older, and heavily cited paper, by Greenough et al. (2001) that focused on the risk of death in extreme events conceded that key 'variables include building codes, warning systems, disaster policies, evacuation plans, and relief efforts'. Numerous additional reports are available in the academic literature that examine this issue.

2.4 Compounding events

A key feature of climate change is the unpredictability of extreme events; these events are not evenly distributed in terms of their location or their timing. Rather, events can, and increasingly do, cluster. This produces what has come to be termed 'compounding events'.

In this report it is not possible to adequately discuss the phenomenon when one extreme event closely follows an earlier extreme event or when there are multiple successive disasters in a short space of time. All that is possible in the context of the current project is to briefly outline one example of what appears to be an increasingly frequent presentation.

The Gippsland area in the east of Victoria experienced intense, and unseasonably early, bushfires in December 2022. In the midst of this fire event, residents were told to prepare for major flooding. As *Guardian Australia* reported:

"It's the first time the Victorian emergency map showed flood warnings and fire warnings for the same area on the same day," says the Wellington shire mayor, Ian Bye.

The fires started on Sunday when a home was lost to a 17,500-hectare bushfire in Briagolong. By midweek, 130 properties in and around Tinamba, Newry and Maffra were issued evacuation orders due to flooding. "We've had floods upon floods in Sale, but to have a fire event that early in the season is extraordinary — and to have them back-to-back is just weird.

It's unheard of," says Bye. As the local state MP, Danny O'Brien, puts it, the area had "fires literally one day, floods the next" (Dumas, 2022).

Damage to homes and infrastructure acknowledged, such close-to-concurrent conflicting events must have an effect on the psyche.

2.5 Insurance issues

A developing issue for those affected by fire and flood, as well as compounding events, is insurance. Simply put, those who are poor, and/or have ended up owning properties in vulnerable locations — on flood plains and in areas prone to fire — are heading towards being 'priced out' of insurance (Wright, 2023). Reporting on the issue in the US, Mahdawi (2023) wrote:

The rising incidence of wildfires means many Californians can no longer insure their property. It's a sign of what's ahead for the whole housing market. "We cannot charge an adequate price for the risk," one insurance company CEO explained in an earnings call. But the scope of this announcement seems unprecedented. The US's biggest insurer halting new policies in the US's most populous state?

If a person does not have insurance, and an acute event destroys their dwelling, this person is likely to have lost everything. Jake Bittle, who wrote

the popular text *The Great Displacement: Climate Change and the Next American Migration* (2022), commented that the insurance issue means that:

... the financial architecture of home ownership is falling apart. These sophisticated systems aren't really built for an era where you're seeing giant disasters every year. You're not really any more protected than someone in the global south who has no formal home ownership structure at all (quoted by Malik, 2023).

At this intersection, homelessness beckons. Mindful that there have always been emergencies, a final note from the US National Alliance to End Homelessness rings true:

When natural disasters strike, people with the fewest resources are most likely to be impacted. (Mello, 2023).

Stimulated by Dorothea Mackellar's charming poem, our national myth is to love a land 'of droughts and flooding rains.' Especially for the disadvantaged, the reality is challenging this ideal.

To be mentioned

It may be relevant to note several books designed for a general readership which focus on the large-scale effects of climate change. These are:

Bittle J, 2022, *The Great Displacement: Climate Change and the Next American Migration*; Simon and Schuster.

Goodel, J, 2023, *The Heat Will Kill You First: Life and Death on a Scorched Planet*, Black Ink.

Schlegelmilch, J., 2019, *Rethinking Readiness: A Brief Guide to Twenty-First-Century Megadisasters*, Columbia University Press.

Wallace-Wells, D, 2019, *The Uninhabitable Earth: A Story of the Future*, Penguin UK.

2.6 How the relationship between homelessness and climate change is represented

The research process identified and reviewed an extensive array of government and NGO reports, academic papers, popular science and general media publications. These sources were understood as relevant insofar as they attended to one or more data points: 'homelessness' and/or 'climate change.' In reflecting on this stock of information it became clear these inputs varied in the manner in which they represented the relationship between these references.

Mostly, how this relationship was understood by the author/s in question was not declared, say, in this medical report on the effect of heat, or in that report on homelessness statistics. In some instances, the writer was explicit, e.g. in Jeff Goodel's (2023) *The Heat Will Kill You First: Life and Death on a Scorched Planet*. Given the relationship between homelessness and climate change is the fundamental concern of the current project it seems important to examine the nature of this relationship. At its base, such an examination centres on questions of representation.

For example, the relationship between the defining references — 'climate change' and 'homelessness' — can be represented using a Venn diagram. Putting to one side the possibility that 'homelessness' and 'climate change' have no relationship, in a basic representation these two references have a defined, but minimal, overlap. This can be visualised as the situation at T1, say, at a nominal 'normal' point in time:

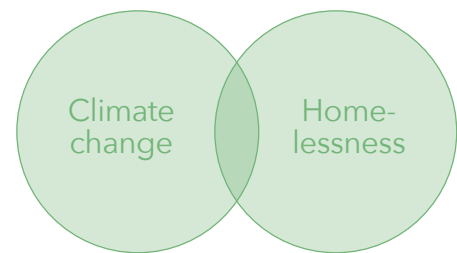


Figure 2

At T2, in a period subject to an acute climate emergency such as a disastrous flood or very major fire, the impact of climate change on the experience and incidence of homelessness is qualitatively more extensive. Figure 2 figuratively represents such an overlap.

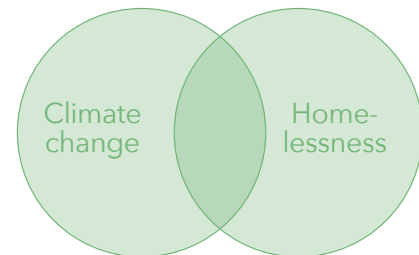


Figure 3

Unlike the static depictions imagined above, Figure 3 seeks to represent a dynamic relationship where there is a defined baseline overlap, but where different points in time — T1, T2, T3, T4, T5 — are articulated in order to allow for different degrees of impact to be represented. This is a more 'realistic' scenario as fluctuations in impact occur in every dynamic relationship.

For example, at T1 the overlap is significant, say, where 'normal' temperatures have become elevated to the extent that the experience of homelessness is increasingly difficult, but is still bearable, whereas at T5 the impact of climate

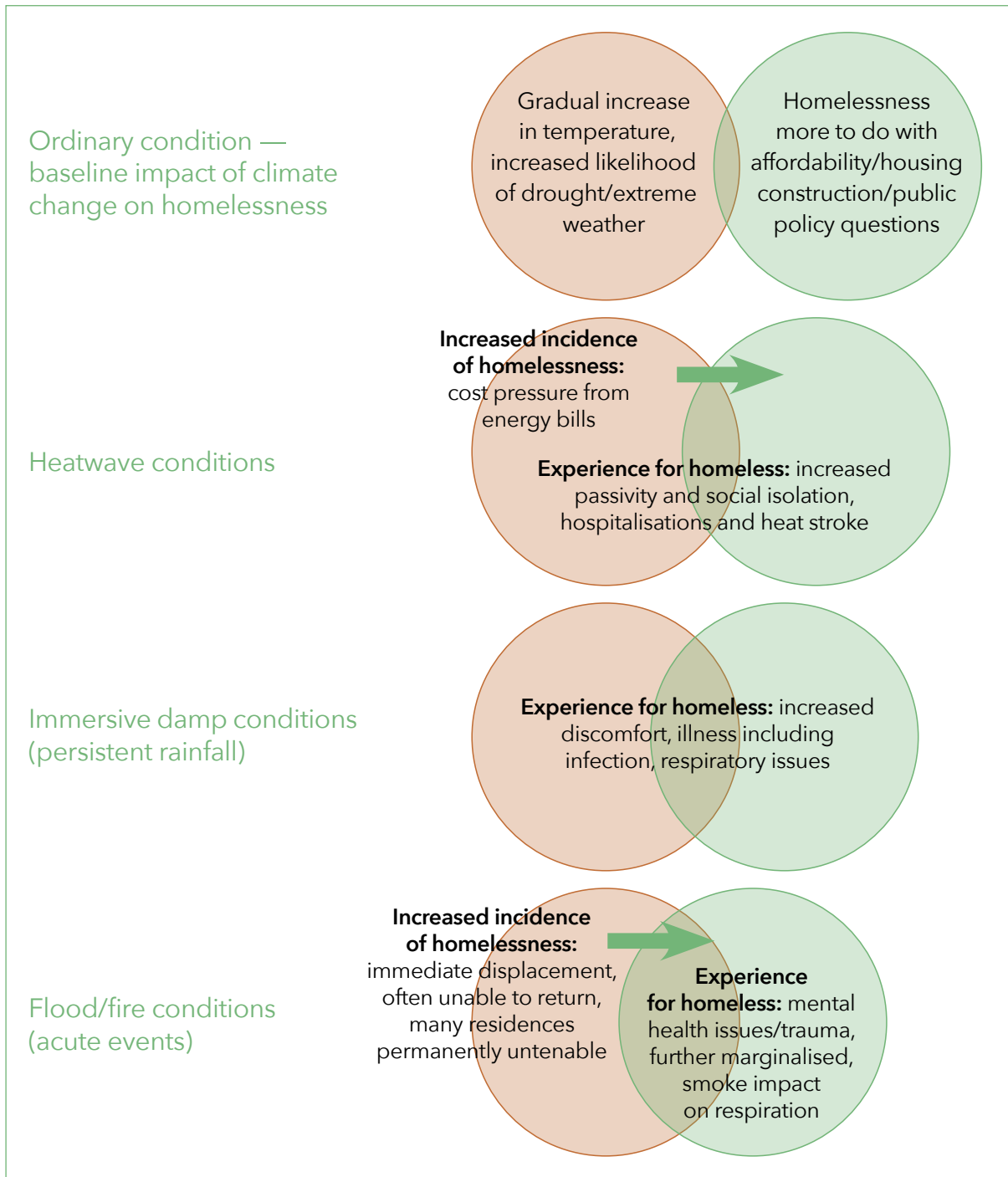


Figure 4

change produces a wholesale homelessness and a traumatic experience of homelessness. This latter scenario is that found in, say, an enduring, nay permanent, state of drought or an acute major flood.

It should be noted that the above imaging could be ‘phase shifted’ several decades forward to, say, 2050. In this depiction, if current predictions for the trajectory of climate change were to be fulfilled, the degree of overlap and the extent of impact that climate change would have on both

the experience and incidence of homelessness could be expected to be far more profound than is presently the case: see *Chapter 6: Twenty-five years on*.

Visual imaging to one side, it is also possible to linguistically represent the relationship between ‘climate change’ and ‘homeless’. This is difficult to achieve; visual representations are more immediate whereas a linguistic analysis tends to be, at least at first, much more elusive. In part, this is because received discourses have embedded

meanings and habituated assumptions that are difficult to identify and draw-out. A comparison that contrasts different language practices is one way to tease out what is embedded from what is logical. The following example compares language practices in the US with those current in Australia with respect to the relationship between 'climate change' and 'homeless' as fields of meaning.

Advocacy groups in the US routinely link homelessness to climate change. For example, a recent publication from The National Alliance to End Homelessness (NAEH) stated:

For people currently experiencing homelessness, climate change is an ever-present emergency. Extreme weather conditions such as winter storms or severe heat have an obvious impact on unsheltered homelessness: for people already living outdoors, extreme weather can mean life or death. Older adults, people with substance use disorders, and those experiencing chronic homelessness are also at a higher risk of adverse health effects from extreme temperatures. These weather conditions result in chronic medical concerns, a higher risk of hyperthermia, and a higher mortality rate (Mello, 2023; italics inserted).

In the above statement the phrases 'extreme weather conditions', 'extreme temperatures' and 'ever-present emergency' are contiguous with — rather than sheared off from — the language practices that one finds in the descriptions of so-called 'natural disasters', such as hurricanes and floods. Historically, such acute events have been sited within the domain of disaster management/emergency services/FEMA type agencies.

Key to understanding what is operating in this usage is the work that is done by the use of the word 'natural' (as in 'natural disasters').

That is, if the use of term natural is not identified and contested, then the field of attention, the context of meaning, is that the acute adverse event is due to 'bad luck'/'God's decision' and therefore could not be avoided. In this train of meaning it is understood that, say, the competent authorities have a role in mopping-up, in assisting with the recovery process, but no overall responsibility.

Alternatively, if the adverse event — whether it is acute, like a fire or hurricane, or the outcome of an incremental process such as desertification or sea-level rise — is attributed to climate change, this summons the competent authorities to take responsibility at a generic level. The organising principle for how meaning and action are constructed in this site is the binary: is this, or is not, an event which is the result of an anthropogenic process?

Unlike the NAEH excerpt noted above, in Australia the naming practice splits off the domain of 'emergency' from that of 'homelessness.' Not only does this naturalise the incidence of adverse climate events, it also relegates the field of 'natural disasters' to what is exceptional and unexpected. This practice also says the effects of these events is beyond and separate to the domain of homelessness policy formation.

Language practices have real consequences in the material world. How is this so with respect to the relationship between climate change and homelessness? If Australia adopted the activist motto 'we are in a climate emergency' this would de-centre the accepted meaning of many 'natural disasters'. Such a change would have the outcome of mainstreaming, and then prioritising, 'housing and homelessness' as a primary mission statement that would guide future action.

3. The Lived Experience of Homelessness and Climate Change

- 3.1 Do you think climate change is real?
- 3.2 Rating damp, heat, etc.
- 3.3 Storm, fire and flood
- 3.4 Personal resilience versus social connection
- 3.5 Summary

Introduction

The project was committed to valorising the knowledge of those with direct experience. This commitment has two dimensions. The first concerns principle; it is proper to honour and respect those who have 'walked the walk', who have had to manage and endure so much that is beyond what is reasonable. These people should be recognised for their hard-won achievement and what their experience has taught them — even as no one would ever wish such an experience upon themselves.

The second dimension is instrumental. If the project is to be as useful as possible, it 'pays' to have the process informed by those who have something that is uniquely theirs to offer. Talking to academics and practitioners, reading the latest books and articles, offers a great deal but it is essential to learn about the impact of extreme weather from those who can speak to

their lived experience of having to bear up to heatwaves, to live in the damp when you can't get dry, to be stuck in edgy accommodation where there's mould and danger. This firsthand data is a key input.

The following chapter summarizes our engagement with people through CHP's Peer Education Support Program (PESP).

This program:

- ... supports people who have been without a home to advocate and speak knowledgeably about the systemic and structural issues behind homelessness ... The PESP team plays a vital role in enhancing understandings of homelessness and developing solutions, while promoting the transformative power of consumer participation in service design and policy making (CHP, 2023).

Following initial correspondence — see Appendix 1 — and facilitated by Cassandra Corrone, Team Leader for the program, a single group meeting took place with the project worker. This discussion employed a semi-structured format: see *Appendix 1*. The consultation was recorded and transcribed. More detail about how these interviews aligned with the project research design is set out in 3. *Project Methodology*. The following summarises the responses of group members to the items — the themes and questions — that structured the interaction. It should be emphasised that the selected qualitative research design encouraged the consultation to be associative. That is, it was decided to allow for a degree of digression from

the item that introduced the segment being discussed; interviews were therefore neither rigid nor unstructured.

It is not appropriate to present biographies of the participants, but it is to be noted that the group consisted of two women and two men with a collective experience of homelessness that includes periods of extended primary homelessness, multiple stays in emergency shelters and boarding houses, couch surfing, living in cars, and poor-quality rentals. Additionally, one had worked as a firefighter, another with the State Emergency Service and another in the military. Several had experience being homeless while having custody of children and/or pets.

3.1 Do you think climate change is real?

There was unanimous agreement within the group: the answer is ‘yes.’ Comments included:

- Actually, 20 years ago there was a report released by the CSIRO on what they called the weirding of the weather, and they said that what’s gonna happen in the future is that our weather is gonna get weirder and everybody just shot him down in flames. I think they are on it.
- At this time of the year, you would normally be in the river, and at the moment you’re trying to keep the rain off your head.
- I was born and raised in Victoria, but I have worked in all states of Australia during my employment. Coming back to Victoria after such a large break, and coming back in as an adult, I’ve definitely significantly found that the weather patterns are really, really different and those seasons have really, really shifted.
- When it comes to climate change, I do know that a lot of ecosystems are being affected and we’re losing.
- I mean, I know Melbourne can have a “four seasons in one” day, but there are now quite a few days where, you know, we’d go through all six in one not just once, but maybe three times in a day.

- Yeah, it just seems like (even) the storms are different.
- So if you push the environment, it’s gonna push back and throughout the history of the Earth, you know, different categories, of course, different effects. You know, if you push something, you gonna get a reaction.
- Yes. The extremes are more extreme; (it’s clear) in all states. The patterns are different.
- Yeah, it’s extremely noticeable if you put a decade on top of a decade on top of a decade.
- So, when you get a cold front come in, it’s really cold and when you get a heatwave, it’s really hot. And, yes, there is a weirding of weather going on for sure.

The growing impact of climate change on homelessness:

- There wasn’t such a climate crisis then, but yeah, at the moment the price is high and (it’s) risen (and impacted on our) the quality of life. No matter what demographic you’re in, (but the) homeless are again at the bottom of the ladder and will be affected dramatically by the climate changes.
- We’ve seen a lot more death and we realised how fragile a human is and how, you know, fragile the body is, yeah, I’ve seen a lot of

death, you know ... (and) we have to deal with it on a daily basis and that's why we realise how fragile things can be.

- Actually, probably the only blessings for the weird weather at the moment (*note: at the time, Melbourne had had a week or so of unseasonably wet and cool weather*) is that my Esky still works for a few more days. Back during winter, I could put ice in it and supplies (for) 5-6 days and be right. So, I could

3.2 Rating damp, heat, etc.

Mindful that acute events, like fire and flood, present an immediate danger, there was a broad agreement that persistent damp was the most troubling general condition to live with:

- Nicks and cuts (must) get dealt with. And I know. So many (less experienced people) don't.
- Even now it's wet and like, three days in a row, I've set my tent and up (and) at the end of the day the tents wet on the outside, not inside.
- '(It's the worst because) winter infections, chest infections ... everything stays wet.
- You get a huge amount of people with foot injuries....(because) a lot of people walk through the flood water, which was filled with sewage. At the drop-in centre in the Cross (there are) a lot of amputees and they usually, you know, don't look after their feet. The floodwaters have bacteria in it now. Hey, you don't need to be a rocket scientist to get that. It's so many little things that just, you know, exponentially pressurise the human body because you know little things, the small things that kill.

(Interestingly, Cusack et al. (2013) is one of the few references from the academic literature that support this point).

The above is not to be understood as a discounting of the impact of elevated temperature. The interviewer followed up the above focus on damp by asking 'The research says heat is the most dangerous. Do you agree?'. The following comments were made:

have sausages and hamburgers and things like that. As it started to get warmer that drops down. A hot day kills the Esky in one day. I'm only on a couple of medications at the moment, but I am meant to keep them cool. They live in the glove box, so we'll see how that goes when the weather's 38 degrees.

The two threads that linked this part of the discussion were 'unpredictability'/'loss of pattern' and 'more extreme extremes'.

- Heat, for me, is deadly. You get de-hydrated, vague. You are in trouble.
- It's difficult. One of the things I do when it's hot, when the weather is really bad, I don't camp in some of the places where I (normally) go. It's sort of because the logistics are really tricky. Some of the campsites are really sheltered but some not a bit.
- Yeah, just on that, there was a report that came out only in the last couple of weeks in the emergency services, a forecast for this summer and there's a prediction that this summer in Australia and the south-eastern states is gonna be the hottest summer in 120,000 years, which is like, what the Hell's going on?

Like they're saying that she's gonna be off the chart. They're saying that in parts of western or north-western Victoria, they're gonna get 52 degrees or something, which is just crazy. And humans aren't designed to survive in that sort of climate out, our temperature range is ...very tight.

- If you really look (rising heat) in the eye, it's pretty scary stuff. Yeah.
- I'll go with Darwin. You know the wet and dry season. It's miserable in the hot, you know, the dry season (but) in the wet season, it is brutal; high humidity, and these are death sentences. When I was in Darwin, they had this pretty cool trick, they used banks. They hop from one bank to the other. They knew every bank. ... you can sit in the reception area, but you get air con. You know, hanging out in the supermarket you get moved along, but banks,

pretty muc ... you are possibly one of their clients or possibly opening an account. ... you know in the other parts of the world, homelessness and weather, you know, the Sahara or in Berlin, you know, in the streets of Berlin, you're homeless, (it's) body bags.

- ... moisture on wounds ... it really takes a long time to heal (or) you know, gangrene. if you're homeless and you stub your toe, that could easily turn into a tropical disease and then gangrene is setting in.
- Oh yeah, (it's) not only physical health conditions, but also mental health conditions where isolation becomes a factor where you're unable to leave your home because of inclement weather. So, I find that, alongside my mental health, if it's cold or it's raining, I will go without. I will also not seek medical assistance during that time.
- During the wintertime was when you just noticed ongoing infections and a lot of chest problems. Umm, a lot of the items that are given out to keep you warm, get wet, so they get discarded and then you need more items to get warm. So, I noticed the impact on people's health as well as their mental state as (named another group member) pointed out, was deeply affected.
- I just noticed really bad deterioration in mental or physical health during the winter months. But on the flip side, I noted during heat waves that that equally affected people's mental and physical health; being dehydrated and (having) nowhere to cool so finding places to cool yourself down would often be, and I'm just speaking about rough sleepers, there'd be public fountains that, you know, you'd just see people swimming in them just to cool off.....
- (re. the damp) I've already got a couple of tents, but I went for my rooftop tent because it gets me up off the wet. So up off the ground, away from the critters and creatures. We've had snakes and a big goanna coming through (unclear). So at the moment it's muddy and wet and I can climb up and put my boots where I put my boots. Climb into my big tent and I'm nice and dry.

(But) I'm not sure how it's gonna go in the heat. I'm sure it's gonna get bloody hot. And of course, if the bushfires come, then we'll see what happens. I got a very simple bushfire plan: 'be somewhere else', so that's how I work.

Cassandra: ... we had a PESP member, Brian is his name, who died at a very young age, he was 42, I think. And generally, that was because when he had a very long period of sleeping rough and because he was exposed to the elements, he ended up getting quite a lot of chest issues, including pneumonia. Never got emphysema, but a lot of lung conditions because of the weather. Now he went through the rooming house system, then he eventually got housed, but once he was housed, the damage was already done to his lungs. He ended up dying of those lung conditions from his period of rough sleeping, which I think was about 11 years, roughly, but that killed him in the end. It didn't matter that he ended up getting a home and had really good supports and had a great experience with PESP.

- And you'd find ways to try and achieve that. Oh yeah, in a rental if it's a really hot day the cheapest way to go about cooling yourself is to have a bath with some cold water in it and perhaps turning the shower on just a little bit to cool ourselves down. Face washes commonly used rather than turning on the very expensive air conditioning, which really only cools a small area in the house that doesn't reach any other area..... And as you can see, I'm wearing a scarf. Cut my hair off so I haven't got neck warmth.
- About food and nutrition, we didn't have any way of heating or cooling stuff, so a lot of the food would spoil in the hotter climates. And of course, when you're trying to balance things over winter, we didn't have cooking facilities a great deal of the time. So, you know, trying to have a nice warm meal to help warm you up over winter was quite difficult to achieve. And that, as an extension, made it very difficult for me to follow treatment programs that had medication attached to them.

.. with different types of treatment — I have those transdermal patches for morphine — so in the extreme cold, my blood wasn't

flowing as well, so I wasn't getting enough morphine, and in the heat, I was getting too much morphine and overdosing and passing out. So, there's a couple of factors in around

that. We're really trying to find a nutritional balance, but when you actually don't have a capacity to heat, cool, refrigerate, you know, it's very difficult.

3.3 Storm, fire and flood

- I was parked on the Murray one night and the water came up about a metre in about half an hour, so we decided to (go) somewhere else and we went to the Warby Ranges near Wangaratta to get up high. But as far as fire goes, I've been as close to fire as I need to be in an emergency role where I was in a fire truck backing down the road as the flames were melting the windscreen.
- Yeah, it's a big misconception which is often repeated. In bushfires it's the smoke that is building (that) you can't escape, not even if you're in a house which you can seal off. The smoke will kill, make you violently ill. If you're homeless man, both of those are death sentences.

But eight times out of 10, the smoke that kills people and smoke in a bushland area could affect a city 300 miles away with wind. Now we get half a state going up in flames, but again, you know, it doesn't stop on the border... the smoke just travels, you know, ... that really buckles a lot of homeless people, you know.

Interviewer: You might have noticed in Sydney in the last couple of days there's been a very severe series of storms. They had literally tens of thousands of lightning strikes. I don't know if you have followed any of that, but they have had an incredible amount of rain. Have any of you had a direct experience of really being stuck in the middle of a real mother of a storm?

- I'll just quickly say, as I'm from Sydney and it's a city that was built really quick, so they have a really poor sewage system, so (with a) flood you got faeces and dangerous bacteria in the floodwater.

Cassandra: Can I also get you guys to think about rooming houses. When there is no air conditioning, or you have to pay for it. Likewise heating. Who else is impacted on those sorts of things?

You know, one person's got a cold, everybody's got a cold, you know? Scabies. Everyone's got scabies. Oh, you live in that building no matter whose lifestyle or how, we all live it. Everybody's affected and that's the only thing. ...

- Yeah, boarding rooms and share houses. Nightmares, especially when it's weird weather patterns which we are experiencing at the moment.
- I know I am always wearing the same clothes. That's because I've always got a dressing gown on because I don't use my heating and cooling to reduce costs. I've been in this home for seven years now and my weekly house repayments for electricity, gas and water have actually boosted up about \$250 a week since I entered the house seven years ago. And those things now are extremely conscious on my mind all the time. I do not use heating and cooling and other things where I can otherwise put on clothing or do something else to alleviate running those costs up.

Cars/couch surfing

- Just reflecting on when I've been couch surfing, you're often in a place where ... there (is) no cooling or heating available ... you'd often find other ways to either warm up or cool down. but yeah, when you're couch surfing you can't really utilise the heating and cooling systems; you don't feel like you should because it's somebody else's bill.
- If you're sleeping in a car, it's really hard to find a way to cool yourself. (It's) easier to find a way to warm yourself up in a car, but not so easy to cool yourself, like (named other person) pointed out before.

Children

- People with children couch surfing or in boarding houses or in cars, you know, it's a shocking thing for kids, terrible for their mindset and then you're raising three generations of people who think it's acceptable...
- X is a teenager now. The fact is, it's horrid and it's a living nightmare.
- I could imagine what a mother or father would go through watching their kids when they have no control over the situation.
- I was just gonna comment on, you know, in primary school settings they have extreme weather days, so if there's extreme heat or there's a lot of rain or it's extremely cold, they have protocols in place to make sure that the children are kept safe in extreme weather conditions. And it just speaks to me. It speaks volumes about the importance the system places on keeping children safe from the extreme weather events....So having said that, yes, I think definitely when I was couch surfing with my daughter, trying to stay cool or trying to stay warm was imperative (so that she was always kept at as much of a normal temperature body temperature as possible. As (named group member) said,

wearing your dressing gown around is not an uncommon idea. That would often be how me and my daughter would keep warm...

Pets

Cassandra: Pets can mean so much to people, particularly when they don't have a home and when they get a home, and when we can or cannot stay. Sometimes we put them before ourselves, and if we can't keep them at a reasonable temperature that keeps them healthy, then the impact that can have on our own mental health and on the dog's physical health or cat or whatever. That can be a really serious issue.

- I mean in my circumstance, I had to rehouse my pets for the time that I was unable to have them, and then brought them back into my care after I got an exemption in government housing to have them there. But, definitely, the separation that we had to have from our pets was particularly detrimental to my daughter who relied on them. But there were also difficulties from being separated and having to fund someone else to care for them, while we couldn't. So that was, yeah, an awful experience.
- I think I was quoted as someone who said that pet therapy (means) like everybody in the room got their doses. And, I mean the pressure in the room just plummeted.

3.4 Personal resilience versus social connection

Interviewer: 'There's a lot of talk about resilience in the literature and the media. You've heard it — you must be resilient and then it will all be fine. That's not where I'm coming from. I'm wondering whether you might say something about the importance of friends, of social support, of peers. How important is that in getting through the tough times?'

- I'll just say one word: paramount. Yeah, a little spark of hope. It's paramount — get help. You have a family and friends.
- Yeah, I agree. I was with letting people know what I was experiencing (but) my network was quite small and quite intimate with just a few family members and friends that were aware of my situation because there was a great deal of shame in asking for help through the service system and, as a government employee, there was a lot of people that I've worked with in the past that would intersect with those services, so I was keeping that very, very quiet.
- Yes, I was like that the first time when I was home in my van. I didn't talk about it much with everyone. It's a little bit different now 'cos my social media is a little bit more expansive. (Now) I'm going about a different even today.
- When things are tough, and that's when I find friends are important. I mean, they're important all the time, but when you have had a tough week, and at certain times of the year — and we're coming up on one of the tough times. I hate Christmas. It's the one time of year I think about my family, and I can't talk to any of them, so it's very, very difficult, and that's when you find you've gotta have some sort of support mechanism.

You don't know how resilient or how strong or how tough you are, then there come times when you'll have issues, and that's when you can falter. And I had a friend of mine who did that. He never got it into his head that he was homeless, and he tumbled out.

He's been kicked out of his house by his wife, and he never got with it. And week after week, I used to meet him on a Saturday and one Saturday I rocked up and he had the hose from the exhaust in through the back window and he was gone, you know.

Finishing up

Project worker: is there anything that you guys want to say to finish up so it can feel like the conversation has had a chance to come together because we've talked about some pretty tough stuff. Does anybody want to say something to finish up before we before we leave it?'

The following was the only comment that came forward at this point:

- I just wanted to say a quick comment on how when you're without a home, how information is shared across your peers who are also without a home, and how valuable that information is because you can learn places to go where you can find some warmth, or places to go where you can get some air con, which is public places. So, you find out a lot of information by being open with fellow homeless people.

Comment

There was insufficient time to discuss all the topics in the schedule. However, all but one of the proposed items were attended to in the course of the discussions.

The topic that was not discussed was: 'Did you or others experiencing homelessness feel bossed around during COVID?' This question was designed to access opinion on the 'care versus control' dynamic that might arise when, for example, police knock on doors to 'alert and protect' vulnerable residents if a flood or fire is expected. This kind of 'assertive outreach' has been flagged as a potential action that is directed at 'the registered homeless' in the event of, say, a heat warning.

3.5 Summary

Those who have experienced homelessness possess knowledge that even the most experienced homelessness worker can only reach for. Practitioners know about their role and organisations in a way that is beyond the understanding of laypersons. In simple terms, multiple forms of knowledge co-exist: First Nations' people 'know' this country in a way that empirical science cannot; statistical compilations 'know' about, say, populations trends that is often beyond the comprehension of the average citizen.

With respect to the references 'homelessness' and 'climate change' there was agreement between each of the participants in the consultation. From what they knew:

- climate change is real and this process is intensifying
- this is making homelessness more difficult to bear and more dangerous.

These experts were clear. More periods of elevated heat and prolonged damp, more fires and floods, can only make the experience of homelessness darker. Participants also testified to one particular side effect of climate change: a marked reduction in social connection especially with respect to extended periods of elevated heat: individuals 'go to ground' in very

high temperatures. Passivity and inaction are prompted which, in turn, leads to isolation and loneliness. This under-acknowledged side effect has health consequences: see, for example, Cacioppo and Patrick (2008).

One data point that is harder for 'outsiders' to the experience of homelessness to discern is that which concerns anger and hurt. For example, threaded into the comments above are passing references to shame and stigma, to being outcast, to being on 'the bottom rung of the ladder.' Disquiet, alienation, bitterness, and more, are emotions that are natural for those who have been discarded. It is the old story. Where you stand depends on where you sit.

Looking back at COVID-19: A first person point of view

Emergency housing — which had previously been understood as a scarce resource — was very quickly made available for those whose lifestyle posed a threat to the public and not just themselves during the COVID-19 epidemic. 'Funny...!', John noted, 'how they can find a place for us when they are really trying, but the rest of the time - nothing!' The people in our conversation laughed, but the laughter had a bitter edge' (as quoted in Ramsay, 2022).

4. The Material Conditions

4.1 Housing statistics

4.2 Rental affordability

4.3 Population growth: Migration

4.4 Summary

Housing is a key element in the social determinants of health:

‘There are several aspects to housing that impact health, including affordability, stability, quality and safety, and surrounding neighbourhood. Poor-quality housing is associated with various negative health outcomes. Home design and structure significantly influence housing quality and may affect both mental and physical health. Poor housing quality and inadequate

conditions – such as the presence of lead, mould, or asbestos, poor air quality, and overcrowding – can contribute to negative health outcomes, including chronic disease and injury’ (US Dept. of Health and Human Services; accessed 08.08.2023).

The following examines the empirical situation — literally, the material conditions — with respect to housing as a key element in the social determinants of health.

4.1 Housing Statistics

In order to understand the current housing/homelessness situation it is necessary to identify the stock that is currently available. If the task is to understand the situation that is emerging in, say, the next 12-24 months, it is necessary to add the number of dwellings that are currently being constructed to this first figure. The following presents such a ‘big picture’ account of the material situation with respect to housing. All figures are the latest being offered by the Australian Bureau of Statistics (ABS).

(i) Estimated dwelling stock

What is the baseline with respect to the number of dwellings in Australia? As of 14.11.2023 the latest published account with respect to ‘dwelling stock’ is:

- 10,879,349 dwellings at 30 June 2022

- net quarterly growth was 38,535 dwellings (0.4%), comprising 45,522 dwelling additions and 6,987 dwelling removals
- net quarterly growth of houses, townhouses and apartments was 23,456 (0.3%), 6,713 (0.5%) and 8,361 (0.5%) respectively. (ABS 2023a, June Quarter 2022, Released 31/10/2022; accessed 09.10.2023)

(ii) Building Activity

‘Latest release; Reference period June 2023; Released 18/10/2023; Provides estimates of value of building work and number of dwellings commenced, completed, under construction and in the pipeline. Key statistics: In seasonally adjusted terms:

- total dwelling commencements fell 11.8% to 40,720 dwellings
- new private sector house commencements fell 6.6% to 25,162 dwellings
- new private sector other residential commencements fell 19.6% to 14,529 dwellings
- value of total building work done rose 0.3% to \$31.5b' (ibid).

(iii) Building Approvals, Australia

'Latest release Reference period September 2023; Released 1/11/2023; Provides the number of dwelling units and value of buildings approved. Key statistics: The September 2023 seasonally adjusted estimate:

total dwellings approved fell 4.6%, to 13,144 private sector houses fell 4.6%, to 8,338, while private sector dwellings excluding houses fell 5.1%, to 4,553 value of new residential building fell 3.6%, to \$5.83b, while the value of non-residential building fell 7.2%, to \$5.56b' (ibid).

Broad-scale figures offer general outlines, but more detail is available if the above figures are disaggregated on a state-by-state basis, in terms of 'commercial' and 'public/social housing', etc.

(iv) Public and social housing

The following is an excerpt from a front-page article in the *Herald Sun* newspaper, published 15.11.2023:

Victoria's public housing stock has increased by 394 since 2018, with the total number of bedrooms down. A government spokeswoman admitted last night only a net 1,771 had been added "for people on the Victorian Housing Register, including social and public housing" since 2018. And Dept. of Families Fairness and Housing figures show the public housing stock is up by just 394 properties since 2018 — with the number of bedrooms down — despite the state being three years into what was spruiked as being the nation's biggest social housing build.

However politically motivated and sensationalist, the above does point to an underwhelming level of progress in the development of public housing. (Less partisan reports confirmed the above figures, e.g. Kolovos; accessed 09.11.2023). The level of construction pointed to in the above report is well short of the 12,000 dwellings that are currently promised.

Figures for social housing are available on the Australian Institute of Health and Welfare's 'Housing Assistance in Australia' website (accessed 14.11.2023). In this record it is clear that there have been a series of transfers between public housing and community housing categories. Arriving at an understanding of the annual rate of construction of community housing units is confounded by this conflation. Suffice to say, supply continues to come very badly behind demand.

Note:

John's exit to homelessness

'John', a 54-year-old single man with significant medical and cognitive difficulties, was a long-standing client of a major homelessness service in an Australian city. Following an Emergency Department presentation where John was complaining of chest pains and respiratory issues he was admitted and stayed as an in-patient for two nights.

Apparently stable, John was discharged in the late afternoon. The following day John's homelessness service contacted the hospital to hear how his medical condition was progressing and to discuss plans for his discharge. Alarmed to learn John had already been discharged, the service held a great deal of anxiety about John's welfare. Later that same day, John was found dead behind a hedge very close to the hospital.

Given Specialist Homelessness Services (SHS) have no legal status as care-givers, hospital staff had no obligation to inform the service of John's imminent discharge. This 'no comment' status was all the more an issue for hospital staff as John had apparently said 'No, don't tell them. I want to be on my own.'

4.2 Rental affordability

Housing affordability is often measured with respect to purchase price. For those on low incomes the more relevant indicator is rental affordability. Much evidence is documenting a worrying trend: academic reports point to affordability being in decline. Similar reports are also being seen in the media, with increasing frequency of headlines such as:

- 'Sydney is the most unaffordable city for renters', or
- 'The median cost of renting a one-bedroom dwelling now exceeds the JobSeeker allowance in most capital cities' (<https://www.savings.com.au/>).

For the current purpose it is not necessary to re-state what is well established. Rather, a brief summary that focuses on one state can be cited to illustrate what is a national fact: that rental affordability is a deepening problem.

The Rental Affordability Index is prepared annually by SGS Economics and Planning and National Shelter, the latter a non-government organisation (NGO) which aims 'to improve housing access, affordability, appropriateness, safety and security for people on low incomes' (Shelter; accessed 09.09.2023). Premised on the idea that paying more than 30% of one's income on rent constitutes non-affordability, the 2023 report found that rental affordability had markedly deteriorated in the last 12 months.

For example, research in 2022 had found that there were 'corridors' of inner-city suburbs in Melbourne where rentals were deemed affordable, but this category of housing had

'almost completely vanished' in the following 12 months. Currently, to secure affordable tenancies, households were forced to live on average around 15 kilometers from the CBD. Ellen Witte, from SGS Economics and Planning, summarised the implications of this situation: 'What we see now is that households have to live further and further from where the jobs are, and businesses can't find people to work for them.' This, Ms Witte notes, is a vicious cycle where those in the 'building sector, they say we can't find builders to build the houses that we need for the key workers ... so the situation is drastically urgent' (quoted in Eddie: 14.11.2023: 9).

Additional findings from this report include:

- Regional affordability was at its lowest point since the survey began in 2012; just three postcodes were deemed affordable in regional Victoria: Kerang; Nhill and Numurkah.
- Because many affluent inner-city persons had moved to desirable 'sea-change' locations during COVID-19, affordability in these regional locations had deteriorated to the point where the percentage of income required to obtain a rental property is above 38%, e.g. Victoria's Surf Coast Council.
- There are now major workforce interruptions in many locations because rental affordability for hospitality workers is at an historic low.

Echoing what advocates and academics are saying across Australia, Julie Ware, the chief services officer at the Brotherhood of St Laurence in Victoria, described the above situation as reflective of a 'collapse in affordability' (op. cit).

4.3 Population growth: Migration

Like housing stock and rental affordability, population growth is a key driver in the big picture account of supply and demand. By far the largest component in current population growth is migration:

Australia's population grew by 2.2% to 26.5 million people in the 12 months to 31 March this year.... Beidar Cho, ABS head of demography, said: "13 months after international borders were re-opened, net overseas migration accounted for 81% of growth and added 454,400 people to the population in the year to March 2023." (ABS, 2023b, accessed 17.10.2023).

In this period, a year to March 2023, there was a steep increase in overseas arrivals (up 103% from the previous year to 681,000) and a minor increase in migrant departures (up 8.8% to 226,600). The question then arises: does this breakdown apply evenly across the different states?

Through that year, Victoria experienced the largest increase in population (161,700 people) with NSW next with an increase of 156,300 people. Overall numbers to one side, Western Australia was the fastest growing state (+2.8%) with Victoria (+2.4%) and Queensland (+2.3%) close behind (ibid).

Comment

How does the 'big picture' presented above relate to the number of Australians who are currently homeless?

According to the latest figures accessed on the 2021 ABS Census night, the number of people experiencing homelessness was 122,494 (ABS; accessed 06.12.2023). However, his figure is likely to underestimate the actual situation in late 2023. Inasmuch as it is broadly indicative of the current level of homelessness, it is clear there is a striking gap between supply and demand with respect to affordable, appropriately located available housing. Moreover, if the above ABS figures for

building approvals/activity are considered in the context of diminishing affordability and increasing migration-driven demand, there is every reason to expect that there will be an expanding, rather than diminishing, gap that will emerge between supply and demand in the immediate future.

This situation is the more concerning as the above has no regard for the impact of climate change — for elevating temperatures, increased flooding, and so much more. For example, approximately 60,000 people were internally displaced by a single climate triggered extreme event in 2019-2020. That such events are expected to become more frequent, and potentially more disruptive, and that acute events will occur in conjunction with incremental deteriorations, such as drought and sea level rise, the gestalt of these impacts will 'bundle' into a larger cumulative demand for short term and longer-term housing. How will this impact on the reference 'affordable, locally available housing?' It is untenable to expect that this will not become increasingly problematic — unless the 'material conditions' discussed above are positively addressed as a priority public policy concern.

In terms of the national context, it is also important to acknowledge that accelerating inequality is the structural factor that is particularly implicated in terms of material conditions. Although detailed comment is beyond the scope of the current project, an intensifying divide — between generations and between classes — is playing a key role in composing the 'big picture' discussed above. The Grattan Institute's Trent Wiltshire offered a pithy summary: 'It's really clear those most affected over the last few years (by inequality) are low-income renters and the people least affected are outright homeowners' (Barrett, accessed 09.12.2023). Also worth attention is the idea that spiking inequality has consequences beyond the production of housing scarcity: blatant, accelerating inequality erodes social cohesion. One of the headline findings of the Scanlon report was that there is '... a disconnect between the rhetoric and reality of the Australian "fair go":

Australians' sense of pride, national belonging, and social justice is on the decline — and, unequivocally, that “social and economic inequalities are weighing down overall social cohesion” (Scanlon Foundation Research Institute, 2022; accessed 03.11.2023).

Disaffection, like its cousin anomie, fruits in particular conditions. In a secular society, one that espouses egalitarian values, the enemy of mutuality is inequality. A situation where housing for the non-affluent is increasingly unaffordable exemplifies such a context.

4.4 Summary

Even without factoring in the impact of climate change, publicly available figures indicate that homelessness is increasing. Simply put:

- Homelessness increased by 35,761 in the 15 years between 2006 and 2021 — from 89,733 to 122,794 (ABS, 2023). Using the 2006 figure as the baseline, this is a rise of 40%.
- Presumably reflecting the same trend, but examining data over a four-year period, there was an 8% rise in the demand for Specialist Harmlessness Services: ‘the average monthly number of specialist homelessness service (SHS) users grew from 84,800 people in 2017-18 to 91,300 people in 2021-22. This represents a rise of 8%, which is double the current growth rate of new households forming each year’ (Launch Housing, 2022).

At this point it appears that if current building approval numbers — commercial plus community/public housing figures — and considered in the context of:

- the current rate of population growth, and
- diminishing affordability and rising inequality,

it is perhaps not surprising that the incidence of homelessness is on the rise. What is less obvious is that the composition of homelessness is also changing. For example, one of the experts consulted in the preparation of this study — Professor Guy Johnson — reported that his ongoing research is finding that the percentage of those presenting to a SHS who are ‘working but homeless’ has doubled from around 1 in 20 to 1 in 10 over the last two decades (direct communication; 04.09.2023). This change in profile is noteworthy.

There aren't enough shelters in Darwin as rough sleepers face another wet season

You can't avoid monsoonal rain if you are homeless in Darwin. During the wet season there is also the chance of thunderstorms and cyclones. Currently homeless, Trevor Jenkins reflects on his experience:

"I've been through a few wets. I don't know if I could cope with it again. You wake up and you're just soaking wet and then you walk around, and it takes you until 10am to get dry. Then you gotta find dry clothes somewhere. It's depressing, because it just wears on you" (quoted by Fitzgerald, 2023).

Statistics from the last Census 'show 13,104 people are homeless in the Northern Territory — the highest rate of any jurisdiction in the country and almost 12 times the national average ... (and) Indigenous people make up 87% of the Northern Territory's homeless population. Just over half are women, and overcrowded housing remains the biggest driver' (Roussos, 2023).

5. What is being done?

5.1 Introduction

5.2 Operational supports offering practical assistance

5.3 Adaptation: Programs to retrofit existing dwellings

5.4 Cross-sectorial major projects

5.5 National Emergency Management Agency

5.1 Introduction

Those who are homeless manage the best they can in extreme weather conditions; many of the tips and tactics employed by those with direct knowledge were recounted in *Chapter 3: The lived experience of homelessness and climate change*. For example, if primary homelessness is the issue, keep still/go to ground, find a library to sit in, try to commit to your own self-care. Or, if you are a resident of a rooming house or live in social housing, direct your fan to create a cool pocket, cover west-facing windows with blankets or aluminium foil, soak sheets to cover faces and experiment with ways to tolerate heat (or cold) better.

Healy and Mellick-Lopes (2022) interviewed vulnerable people in Western Sydney to learn how they manage. One of the findings was: 'we found people turn to lessons from their parents to find relief from heat.' It is second nature to cope the best one can and, if what has been passed on might help, you do it.

The focus of this chapter is to ask 'What is being done?' by practitioners and their agencies to respond to the problems that climate change is

presenting to those experiencing homelessness. Before beginning this task, as a matter of principle it is proper to acknowledge that those experiencing homelessness are always doing the best they can.

These individuals are already exercising all the agency they can muster. That some of the 'attempted solutions' (Watzlawick et al., 2011) may not always be effective is not the point; when it all feels dismaying, even absolutely hopeless, it can be all too tempting to, for example, 'get back on the dope' (Canon, 2023). More, some perfectly sensible aids have a paradoxical effect that only experts know about: above 40 degrees fans can increase, rather than decrease, heat stress especially for the elderly (Jay, 2023).

Beyond the efforts of those who are homeless, a large number of ongoing programs and innovations can be identified. It is beyond the limits of the project to acknowledge them all, but the following presents an indicative account in a schematic summary.

5.2 Operational supports offering practical assistance

National and international attention has been building towards systematising knowledge of the effective responses that can be targeted for those experiencing homelessness in periods of extreme weather: see for example, the 'Homeless help' website developed by Homeless Link in the United Kingdom (accessed 10.12.2023). Such clearing-house compilations acknowledged, in the indicative account that follows it should be noted that what exists rarely presents a well-defined, clearly organised suite of responses.

That is, no overarching framework governs what is delivered. For example, in the City of Sydney an emergency protocol has been developed, but this protocol operates at a district level rather than being enforced across the state. Only obliquely is it possible to see the intentions, let alone the instructions, of either Federal or State Government. In practice, what is delivered reflects the action of local government, NGOs, particular health services, and many more actors on their own, or in partnership with others, who 'chip in' to offer local, even hyper-local, interventions. These developments are generated by (i) community need, and (ii) local actors being keen to 'get things moving' given the inaction of state and federal governments with respect to responding to homelessness vis-à-vis climate change.

It should also be noted that the distribution of services does not necessarily or often map well in relation to the distribution of homelessness. For example, a cooling pod may be present in location X, but this does not mean those who could well use this service are located where they can avail themselves of this help. Moreover, a heat alert might be activated by a local or a district health authority but this does not mean those who might benefit from this warning are aware of this alert or are able to respond positively to it. Even if the warning 'stay indoors' is heard, this does not mean it can be heeded.

Outreach and crisis support

Frontline SHS providers and council staff play a key role as lead agents. In periods of extreme weather outreach teams have a hyper-local ambit. At times 'assertive outreach' is required. In conjunction with

first-responder services, practitioners have the demanding role of supporting, containing, crisis managing, referring, doing triage, advocating, and much more. In times of extreme heat and cold, when it is profoundly humid or teeming with rain, this essential work is especially exhausting, anxiety provoking and, of occasion, dangerous.

Extreme weather has an extreme impact on the human condition. Frontline practitioners are intimately aware of this connection. 'Business-as-usual' is demanding at the best of times. When there is a period, especially an extended period, of extreme weather there is a real risk frontline practitioners will struggle to survive their work demands. The emerging issue is that these services are having to deal with more and more climate related events.

Crisis response is, of its nature, formidably intense, but if the crises are more frequent, and sometimes these events are compounding where, say, flood is following heat, issues of resource intensification, back-fill, staff support and staff retention, become more prominent.

Material Aid

Many councils and NGOs offer practical support. Although this support — particularly but not exclusively, food, bedding and clothing — is routinely distributed by providers to those experiencing homelessness on an as-needed basis, in periods of acute heat, damp or cold this service is intensified. This was required of the City of Sydney's homelessness team, for example, for the many homeless people who were persistently struggling to stay dry in the extended period of damp that Sydney experienced for many months in 2022. Given the duration of this period, these efforts were exhausting.

Cooling Centres

Councils and some health services also organise cooling centres. Traditionally, libraries and other public buildings have de facto served as places of refuge. More recently, the idea of a dedicated 'cooling hub' has been developed. Perhaps the best example is the recent innovation developed

by researchers at the University of Sydney, St Vincent's Hospital and the City of Sydney to operate and evaluate a mobile 'cooling hub.' This unit will use low-cost technology, including misting fans, to keep around 50 people cool on the hottest of days (University of Sydney, accessed 19.12.2023). The intention is to target disadvantaged areas and individuals.

Heat Alerts

Over a considerable period, there has been action to initiate systems to circulate heat alerts (Nicholls et al., 2008). Such alerts might have a local, district or regional ambit. Those involved are aware that, as much as knowledge is power, a message sent is not necessarily a message received. And, even if the message is delivered, not everyone trusts their public authorities.

Respite Shelters

Amongst a range of ameliorative possibilities, making respite accommodation available seems to present as the highest priority in situations of extreme weather.

5.3 Adaptation: Programs to retrofit existing dwellings

With an understanding that homelessness is not restricted to 'rooflessness', there is an emerging set of local community organisations, major NGOs and local councils who are working on climate change adaptation — on 'reducing the effects of weather extremes' (Bezgrebelna et al, 2021). These initiatives tend to arise 'organically'; there is no repository, no clearing house, that is systemically documenting the number of, and the forms taken by, this emerging development. The following presents several simplified examples of these actions.

Community Groups

There are a number of community organisations with an activist mission who, at least in part, work to improve both the sustainability and the liveability of sub-standard accommodation. These groups retrofit air-conditioning, install insulation, fans, etc. Two examples of this bottom-up action are:

Climate Education

Particularly concerning the dangers of heat some health agencies are developing education programs. These efforts are, in part, directed to the public but a focus has also been on, for example, helping SHS practitioners know more about, say, heatstroke and cooling techniques.

Emergency Committees

In some states, for example NSW, there are local emergency, regional emergency and state emergency committees. According to one report, these committees tend to not have homelessness as a priority in their agenda setting.

Comment

It seems likely that Councils in regions and capital cities have been struck by the accelerated frequency and severity of climate events: as several consultees noted, the 'climate conversation' is generating 'a bit of scrambling', as events are happening more quickly than had previously been expected.

- Goulburn Valley Community Energy Group (<https://gvce.com.au/>)
- Totally Renewable Yackandandah (<https://totallyrenewableyack.org.au/>).

Local Councils

Perhaps most notably in city centres, councils operate and/or coordinate voluntary services offering food, showers and other services. Sometimes, councils are especially active in the event of extreme weather. For example, in Sydney's recent extended wet weather, the key task was to supply dry clothing and bedding. This was an exhausting role as damp persisted for several months.

At a different level of action across Australia, local government is — more or less — engaged also with responses to climate change that go beyond immediate relief. Merri-bek City Council in Victoria is perhaps one of the leaders. Another example

is the Geelong Sustainability pilot program, which aims to retrofit homes to prevent extreme heat-related deaths. The following is an excerpt from a relevant media report:

“On hot days I can’t do much,” says the 68-year-old pensioner, who suffers from chronic lung disease. “I just sit there and read a bit or watch a bit of telly, things that don’t take any effort. When you’ve got an illness like this you feel useless.”

That changed when someone from the council knocked on her door in the Victorian coastal town of Saint Leonards two years ago. They were from a local community group called Geelong Sustainability and offered a solution: a “climate safe room”.

It involved retrofitting a room in her home, alongside 15 other low-income households who had health vulnerabilities, to protect them from extreme weather. The group installed draught proofing, insulation, an efficient reverse-cycle air conditioner and solar panels to reduce the energy bill so it was not drawing energy from a source that made the climate crisis worse’ (Beazley, 2023).

Another, and more complex project is based in Tarnagulla (Upper Loddon) in Victoria. This project involved developing a ‘Resilience Action Plan’ between the Tarnagulla community, RMIT’s Centre for Urban Research, and The Alternative Energy Group (TAEG). The project was funded by the Department of Environment, Land, Water, and Planning’s (DELWP) Virtual Centre for Climate Change Innovation (VCCCI).

Still more ambitious are processes that several large councils have put in place to prepare for an environment that will be impacted by climate change into an extended future. For example, the City of Hobart is well advanced in developing a broad ‘Climate Strategy’ as part of its Climate Ready Hobart planning process. Incorporating structures such as The Hobart Climate Assembly and an articulated ‘Authorising Environment’ statement, this form of action operates at a different level to the provision of direct service to those who are impacted by, but have little means to adapt to, a climate changed environment.

Non-government Organisations

Major NGOs are also developing programs. For example, the Brotherhood of St Laurence (BSL) in Melbourne has developed the Climate Safe Housing project that retro-fits solar, reverse cycle air-conditioning and insulation (BSL, accessed 10.11.2023). Residents in a specified area who have a serious illness or disability, such as multiple sclerosis, motor neurone disease or cerebral palsy, and who have a low-income concession, pensioner concession or Veteran Gold Card, are eligible for the program.

Damian Sullivan, who leads the Climate Change and Energy team in BSL’s Social Policy and Research Centre, was interviewed by the project (02.11.2023). Damian stated that installing solar panels fulfils the twin aims of BSL’s Climate Safe Housing program — ‘mitigation and adaptation.’ This multi-faceted innovation is detailed in Chandrashekeran et al. (2023). Such programs might be auspiced and administered by a single NGO, or in partnership with other agencies and centres.

Moving from retro-fitting to broader and/or mixed goals, there are a number of ‘disaster’ oriented programs. For example, Jesuit Social Services’ Centre for Just Places in Melbourne has formed a partnership with the Eastern Community Legal Centre, ARC Justice and the Federation of Community Legal Centres (Victoria) and has been awarded a \$1.8 million grant from the Commonwealth Government’s National Emergency Management Agency’s Round One of the Disaster Ready Fund (DRF)

This grant is for a brand new project — ‘Reducing vulnerability and strengthening place-based resilience in Yarra Ranges and Campaspe communities.’ This project is said to ‘scale up’ a collaborative action planning process developed and tested by the Centre for Just Places in Melbourne’s west. Julie Edwards, the Jesuit Social Services CEO, said: “This project seeks to recognise where existing and future disaster and climate change risks exist, and will support a network of place-based organisations in the Yarra Ranges and Campaspe Shire to build resilience through collaborative action.” (Jesuit Social Services, 2023; accessed 03.12.2023)

5.4 Cross-sectorial major projects

Given the cooling effect of greenery, several major projects have attempted to advance the provision of canopy and open space to sub-regions (Kelly et al., 2022). These projects often involve major state utilities as well as local councils: see, for example, Furlong, Phelan and Dodson's (2018) *The Role of Water Utilities in Urban Greening: A Case Study of Melbourne, Australia*.

A very ambitious project of this kind was the 'Greening the West Strategy: 2020-2025.' (Greening The West, accessed 10.12.2023). Forged as a complex undertaking between a utility — City West Water and six municipalities (Brimbank, Hobsons Bay, Maribyrnong, Melton, Moonee Valley and Wyndham) the project's webpage states:

- Greening the West is a regional initiative that's about enriching communities in Melbourne's west through the development of green spaces.
- Delivering much more than just aesthetics, green spaces have proven benefits for the environment and for our health. They filter and improve the air we breathe, keep cities cool and provide shade for our houses and streets. They enhance our satisfaction and wellbeing when we live, work or play in them. They give us space and opportunity to connect with each other and with nature. Yet often in developing areas, green spaces aren't prioritised.

- Melbourne's western suburbs are some of the fastest growing in Australia. They receive less rainfall than other parts of Melbourne meaning they're drier and can experience warmer daytime temperatures. As the population increases, so too does pollution, heat stress and pressure on the environment.
- Urban greening in the west is a low-cost strategy that will bring high impact results — environmentally, economically and crucially, for the health and wellbeing of the residents who live there.

Larger scale programs

In the main, the above are local initiatives. A different, higher-level engagement is evident in the partnership between The Community Housing Industry Association (CHIA), The Australian Council of Social Services (ACOSS) and the Clean Energy Finance Corporation. In conjunction with the Department of Climate Change, Energy, Environment and Water (DCCEEW), banks/finance organisations and the Australian Renewable Energy Agency (ARENA) an effort is being pursued to investigate how to finance energy performance retrofits for lower income households including those living in social and affordable housing (Community Housing Industry Association; accessed 10.12.2023). Very likely, it is only if initiatives of this scale are furthered will it be possible to go beyond worthy, but local and essentially opportunistic, instances of program development.

5.5 National Emergency Management Agency

The National Emergency Management Agency (NEMA), a federal agency, describes its role as being to 'coordinate a coalition of organisations and lead engagement to understand the impacts of disasters and increase community resilience and adaptive capacity' (NEMA; accessed 10.12.2023). NEMA,

'provides 'disaster assistance', for example, 'As Queensland's bushfire emergency continues, more Queenslanders whose homes have been impacted by the bushfires can now access help through the Personal Hardship Assistance Scheme and Essential Services Safety and Reconnection Scheme. Support is being provided by the Albanese and Palaszczuk Governments through the Disaster Recovery Funding Arrangements.'

The above is not all that NEMA does:

'In conjunction with the University of South Australia (NEMA) has created a Mateship Manual

that 'outlines four conversation steps on how you can support people impacted by disaster. These four steps are:

- Ask R U OK?
- Listen with an open mind
- Encourage action
- Check in (NEMA; accessed 10.12.2023).

Interestingly, the Mateship Manual distinguishes between a 'natural disaster' and an 'emergency.' This is topical as NEMA has 'declared' 29 disasters on its home page as of 07.11.23. Might climate change be understood as a disaster, an emergency or a natural occurrence?

6. Twenty-Five Years On

6.1 Introduction

6.2 Climate predictions

6.3 Homelessness in 2050

6.4 'Housing quality' and 'adaptive capacity'

6.1 Introduction

The Federal Government released a costing for the financial impact of climate change in August 2023. Treasury chose a date 40 years off — 2063 — as the anchor point to moor the calculations that this report set out.

How did this responsible body come to select this particular date? Perhaps, it is simply a convention in estimate formulations. If so, most in the public would not know this and would expect that 2063 represents a calculation for, say, the point when climate change will have completed its trajectory or when science predicts that climate change will have peaked. It could be that the selected date was arbitrarily chosen for no better reason than it seemed a 'reasonable compromise' between, say, 2030 — which seems too close — and what the IPCC has termed the 'near-point' of climate change — 2100? Interestingly, the headlines generated by the report — for example, 'Nation faces \$420 billion loss as climate crisis grows' (*The Age*, 24.08.23) — concerned the size of the suggested figure rather than the non-transparent premise that was used to arrive at the calculation.

As the current project also wants to 'time shift' the consideration of the relationship between climate change and homelessness forward, the question of dates also arises. Technical issues to one side, in engaging with this question it is clear

that — because climate change is an ongoing process — whatever point in time is chosen sets up a faux endpoint. A snapshot image can be developed, but this picture cannot represent an endpoint conclusion.

As discussed in Chapter 2, climate change is an indeterminate phenomenon; it has no temporal boundary. Climate change will not unfold as a linear, sequentially regular phenomenon. Rather, the roll-out of climate change will demonstrate features that are unpredictable, compounding, and multi-dimensional in character. This means that, at distinct punctuation points — say, 2035, 2050, 2075 — it will have broadly stated, qualitatively unpredictable expressions.

This project decided to look to 2050 as an important future date because it has been put forward by several respectable bodies as a nominal time point in their modelling: see, for example, *Climate Change in Australia*. This date also has the advantage of being around one generation distant and is therefore a point that can realistically be imagined. Before venturing towards how homelessness might intersect with climate change in 2050, an outline account will be presented of the predictions that have been put forward concerning what the climate might look like in 25 or so years.

6.2 Climate Predictions

Assumptions are built into any forecast. In the current case, these include a future based on different proposed scenarios, e.g. the 'hot and dry' trajectory; the 'damp and cold' trajectory. Even more basic, different scenarios for temperature increase have been put forward, e.g. the IPCC scenarios base their different long-term models on warming scenarios of:

- 1.5°C.: 'most optimistic'
- 1.8°C.: 'middle of the road'
- 2.7°C.: 'intermediate'
- 3.6°C.: 'high emissions'
- 4.4°C.: worst

In Chapter 4, Future Global Climate: Scenario-based Projections and Near-term Information (June-Yi and Marotzke, 2018), of *Climate Change 2021: The Physical Science Basis. Working Group I Contribution to the IPCC Sixth Assessment Report*, the following is put forward:

Compared to the recent past (1995–2014), GSAT (global surface air temperature) averaged over the period 2081–2100 is very likely to be higher by 0.2°C–1.0°C in the low-emissions scenario SSP11.9 and by 2.4°C–4.8°C in the high-emissions scenario SSP58.5. For the scenarios SSP12.6, SSP24.5, and SSP37.0, the corresponding very likely ranges are 0.5°C–1.5°C, 1.2°C–2.6°C, and 2.0°C–3.7°C, respectively. The uncertainty ranges for the period 2081–2100 continue to be dominated by the uncertainty in ECS and TCR (very high confidence). Emissions-driven simulations for SSP58.5 show that carbon-cycle uncertainty is too small to change the assessment of GSAT projections (high confidence). {4.3.1, 4.3.4, 4.6.2, 7.5}

At first, the above may be hard to understand. Simply put, what is predicted by 2100 is that — assuming a broadly middle path of emissions — the temperature rise will be between 1°C and 2°C if a somewhat low emissions path is followed, or between 2.4°C–4.8°C if the high-emissions scenario eventuates. Moving to a closer horizon, we need to bear in mind that temperature increase

will not be evenly distributed, and the Australian continent is expected to be particularly vulnerable to climate change.

Given this variety, and that key bodies have made forecasts for the future of climate change based on differing assumptions, Spatial Vision, one of the partners in the current project, has provided guidance in identifying those assumptions with the soundest credentials for the current purpose. These include:

1. Chapter seven in the CSIRO and Bureau of Meteorology's *Climate Change in Australia Information for Australia's Natural Resource Management Regions: Technical Report*. This chapter (Projections: Atmosphere and the Land) presents projected changes to Australia's climate based on the results of the CMIP5 (Coupled Model Intercomparison Project phase 5) models and other relevant information. For changes to mean temperature, rainfall, wind speed, solar radiation, relative humidity and potential evapotranspiration (PE), ranges of regional average change are presented based on 10–90th percentiles of the empirical distribution of the CMIP5 models. Changes are presented for 20-year time slices centred on 2030 and 2090 relative to the simulated climate of 1986–2005 and for selected RCPs (Representative Concentration Pathways, usually RCP2.6, RCP4.5 and RCP8.5). The changes can then be applied to observed climate data for use in impact assessments.
2. The Bureau of Meteorology and CSIRO's *State of the Climate 2023* report. This seventh biennial report draws on the latest national and international climate research, encompassing observations, analyses and future projections to describe year-to-year variability and longer-term changes in Australia's climate. The report is a synthesis of the science informing our understanding of Australia's climate. It includes new information since the last report in 2020, such as that published in the 2021 *Sixth Assessment Report by the Intergovernmental Panel on Climate Change*

(IPCC). The State of the Climate report is intended to inform a range of economic, environmental and social decision-making by governments, industries and communities.

Climate Change in Australia (CCIA)

This body is a joint venture of the CSIRO and Bureau of Meteorology. The bi-annual report produced by this body is the most authoritative available local resource. The summary findings of the latest report, outlined below the heading 'Australia is already experiencing the impacts of climate change', are set out below.

Temperature

Australia's climate has warmed by about 1.47 (± 0.24) °C since national records began in 1910, leading to an increase in the frequency of extreme heat events.

This long-term warming trend means that every decade since 1950 has been warmer than preceding decades.

Australia's warmest year on record was 2019, and the eight years from 2013 to 2020 all rank among the ten warmest years on record.

Rainfall

Despite the large natural year-to-year variability in Australian rainfall, underlying long-term trends are evident in some regions. For example:

1. The southwest and southeast of Australia have experienced drier conditions, with more frequent years of below average rainfall, especially for the cool season months of April to October.
2. Cool season rainfall has been above average in western Tasmania during recent decades.
3. Northern Australia has been wetter across all seasons, but especially in the northwest during the northern wet season (October to April). However, rainfall variability remains high.

There has been an increase in the intensity of heavy rainfall events in Australia. The intensity of short-duration (hourly) extreme rainfall events has increased by around 10 % or more in some regions over recent decades.

There has been an increase in extreme fire weather and in the length of the fire season across large parts of Australia since the 1950s, especially in southern Australia.

Sea surface temperatures around Australia have warmed by 1.05 °C since 1900, with eight of the 10 warmest years on record occurring since 2010.

Warming of the ocean has contributed to longer and more frequent marine heatwaves.

Global average sea level has risen by around 25 cm since 1880; half of this rise occurred since 1970.

Rates of sea level rise vary across the Australian region, with the largest increases to the north and southeast of the Australian continent.

A downward trend in maximum snow depth has been observed for Australian alpine regions since the late 1950s, with large year-to-year variability. Downward trends in the area covered by snow, length of time that cover persists, and the number of snowfall days in Australia have also been observed.

The observed long-term reduction in rainfall across many parts of southern Australia has led to reduced streamflow, although with considerable interannual variability.

The Trajectory of Climate Change: Elevating Temperatures

An outline summary of the predicted future for heat is offered by Mellick-Lopes et al. (2020):

In Australia, we are looking toward 50-degree summer days in our capital cities by mid-century (Lewis et al., 2017; IPCC, 2018). Increasing urban heat is a particular concern for Western Sydney, as the locus of population growth and economic activity moves west, creating a demand for new housing, infrastructure and services.

This situation requires an intergenerational mindset and new tools and resources for thinking through the compounding social and environmental implications of increasing heat, population and building density in Australia's third largest economy.

Such a clear statement is at some tension with the accepted idea that predictions are scenario dependent. For example, like the IPCC, the most recent CCIA report offers multiple scenarios with different temperature predictions for each:

'The timing of reaching global warming levels depends on three factors:

1. global greenhouse gas and aerosol emissions
2. the strength of the response to greenhouse gases (known as climate sensitivity) and
3. climate variability.

The world may temporarily reach +1.5 °C in the next few years and may be steadily at or close to the +1.5 °C global warming level sometime between the late 2020s and the 2050s, depending on these three factors' (CCIA, accessed 10.12.2023).

What the CCIA does say is:

- 'Australia has warmed by more than the global average (land and ocean), and similar to the global land average: 1.44 ± 0.24 °C since 1910 and likely around 1.6 °C since 1850-1900, with the coastal regions warming less than inland; .
- The annual temperature of Australia and most regions within Australia is now consistently warmer than the range it would have been in a pre-industrial climate, this is known as climate change 'emergence', and
- The annual temperature of Australia's hottest year on record, 2019, was roughly what we expect to be the average temperature in a +1.5°C world' (CCIA, accessed 10.12.2023).

Many would argue the CCIA is overly conservative in its statements as it has reason to be ultra-defensible in its operations. Other bodies do not

have to be so careful. For example, the Australian Conservation Council predicts that in 2050 'almost all areas across Australia will experience longer and hotter summers, with temperatures increasing by an average of 2.32°C.' (accessed 20.12.2023).

The Australian Conservation Foundation's website disaggregates this generic prediction:

- '99% of locations are projected to experience heating temperatures, with some areas' average daily maximum temperature increasing between 4° and 4.8°C.
- The majority of areas will lose the winter season all together — spelling disaster for Australia's Alpine regions, which rely on a stable climate and winter tourism.
- Thredbo in the NSW Snowy Mountains is one area that is forecast to see 4.8° of warming by the year 2050, which means a longer and hotter summer and no recognisable winter.
- Inland urban suburbs are also badly impacted. By 2050, Penrith in Sydney's western suburbs will experience an 11% increase in the average maximum daily temperature — which means summer will be 2.7° hotter with a staggering 86 more days over 30°C'.

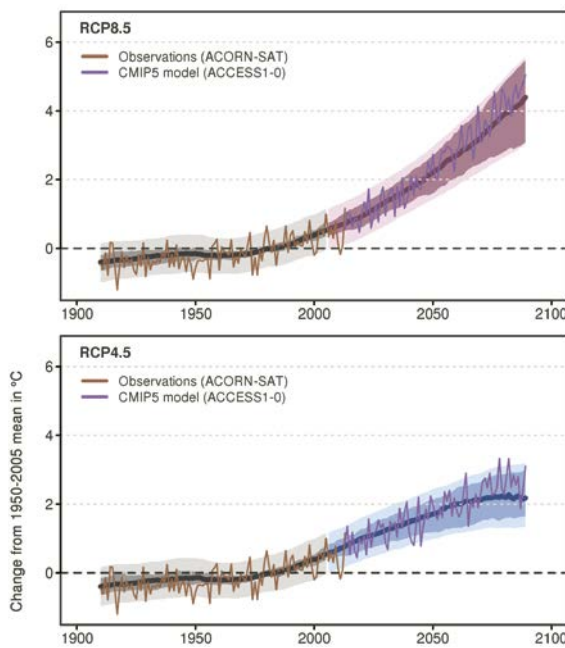
What is a 'sensible summary?' In 2022, South Australia's Department for Environment and Water's published its latest Guide to Climate Projections for Risk Assessment and Planning in South Australia that showed the likely effects of climate change by modelling different greenhouse gas emissions scenarios:

Climate trends projected for South Australia to 2050 indicate:

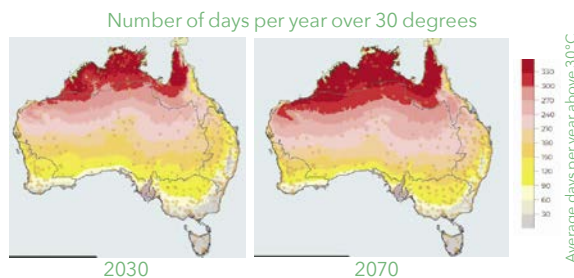
- higher temperatures
- warmer spring temperatures
- hotter and more frequent hot days
- declining rainfall
- lower spring rainfall
- more intense heavy rainfall events
- more dangerous fire weather.

It said a mid-range scenario is representative of a global temperature increase of 1.9°C to 2.9°C by 2100 (compared with 1986–2005), while a high-range scenario represents a 3.6°C to 5C global increase over the same period’ (Premier of South Australia press release; accessed 20.12.2023).

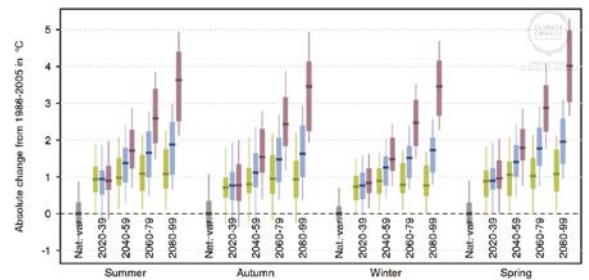
Unlike mainstream politicians, authors such as Goodel (2023) and Wallace-Wells (2019) do not have to be careful and, in fact, have an incentive to be dramatic. This understood, their predictions make the premier’s look euphemistic.



Temperature increase in Australia likely to be around 2 degrees by 2050. By 2070 it could stabilise around 2 degrees or jump to 4 degrees.
<https://www.csiro.au/en/research/environmental-impacts/climate-change/climate-change-information>

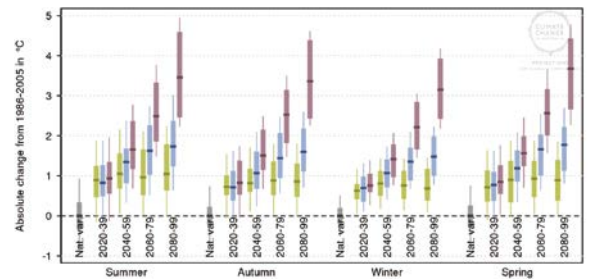


Projected change for Southern and South-Western Flatlands (Perth) for Annual daily maximum near-surface air temperature from 1986–2005 in units of degrees Celcius.



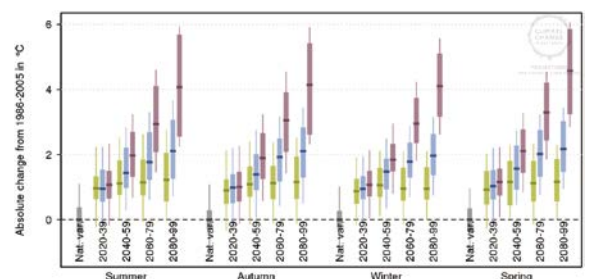
Perth

Projected change for Southern Slopes (Melbourne) for Annual daily maximum near-surface air temperature from 1986–2005 in units of degrees Celcius.



Melbourne

Projected change for Rangelands (desert) for Annual daily maximum near-surface air temperature from 1986–2005 in units of degrees Celcius.



Desert

Beyond the above account of expected temperature rise, within the confines of the current project it is not possible to outline the expected future trajectory of the other relevant climate expressions: inundation; fire; flood; drought; storm (nor the increasingly problematic class of phenomenon known as ‘compounding events’). Suffice to say, each of these expressions can be expected to become ever more problematic towards 2050.

6.3 Homelessness 2050

Estimating Homelessness: Census is the latest report from the Australian Bureau of Statistics (ABS) on estimates of people in Australia who were experiencing homelessness or marginally housed (ABS, 2022). This report is the 'baseline' with respect to the incidence of homelessness. Looking beyond this baseline, what can be predicted?

With respect to predictions, it is clear that socio-economic factors are crucial, but are impossible to anticipate with any degree of precision. For example, it is unclear what the employment rate will be in 2050, what the cost of living will be, what housing affordability will be, and much more. Similarly, figures for housing construction and occupancy statistics will be crucial in any predictions but are unknowable at this point. Housing policy cannot be expected to be linear, nor is it known what the rate of 'internal' population growth will be or how immigration policy will proceed.

It seems very likely that those who are 'precariously housed' will expand as a sub-population, but this is also not certain. Arguably, the only 'given' that can be discussed is the effect climate change will have in terms of internal displacement and, to a lesser extent, regional displacements.

That is, there is currently a clear trend that seems unlikely to be reversed. This trend is apparent in reports from the Internal Displacement Monitoring Centre. Australia is currently experiencing more disasters and more intense displacements than it once did. For example, of the 243,000 people displaced in the 15 years between 2008 and 2022, almost 80% of these displacements occurred in the last five years (IDMC; accessed 19.12.2023). Given that extreme events are becoming more frequent, it can be confidently predicted that this trend will intensify.

That is, it can be confidently predicted that, because climate change is a threat multiplier, more acute events (storms, fires, floods) will

occur in the context of the effects of long-term processes (sea-level rise, drought, inundation). These events can be expected to accelerate the scale of internal displacement. If issues related to insurance (see 2.5) continue to be problematic, this will only heighten the prospect of greater homelessness. The prospect of greater regional displacements seems very likely and is definitely part of the most likely picture.

The Pacific Region

Climate collapse is having effects globally. No nation or region or demographic group will be exempt. Like a mobile in a child's nursery, each element in the climate is connected. It follows that the effects of climate change are also connected and will act in ways that are reciprocally causative. Inter-dependence is the key idea and future Australian predictions need to have regard for the international context: population displacement beyond Australia, say, in Nigeria and Sudan, will result in mass refugee flows. More relevant, the Pacific and, to a lesser extent, south-east Asia is 'our' region. For example, there will be population displacement due to inundation in the Solomon Islands, Tuvalu, the delta of Bangladesh and Bangkok.

Migration from the Pacific: A sign of things to come?

In November 2023 the Australian Government agreed to grant Tuvalu residents special immigration visas in 'ground-breaking' treaty due to sea level rise making the island uninhabitable (*SMH* 11.11.23).

In November 2023 the Australian Government agreed to grant Tuvalu residents special immigration visas in 'ground-breaking' treaty due to sea level rise making the island uninhabitable (*SMH* 11.11.23).

6.4 'Housing quality' and 'adaptive capacity'

Australia is expected to be subject to a doubling of the magnitude of (heat) extremes compared with the global mean change (Lewis et al, 2017). This will be very problematic as cities, such as Sydney and Melbourne can expect 'summer temperatures of 50°C under two degrees of global warming' (Davey, 2017).

The acceleration of climate change may slow or, even more optimistically, decisive mitigation action may stabilise the climate. Nonetheless, given the broad-stroke climate change trajectory outlined above, it can be expected that climate change will have a compounding impact on the phenomenology, physiology, incidence, distribution and profile of homelessness in Australia.

In this context the threat posed by climate change-related health hazards, particularly heat, is a standalone fact. What mediates the degree to which these hazards present as a serious danger? It was argued earlier (7.3 *The construct of vulnerability*) that 'housing quality' was central to this matter. That is, if a person is literally without a home they have no buffer — the 'quality of their housing' has zero value. As a result, those who are housed in badly designed and constructed and/or over-crowded dwellings will be at an increasingly high rate of risk.

What else does the literature say? Concentrating on the neighbourhood level, a report published in the prestigious *Environmental Health* journal concluded a key factor is '*adaptive capacity*.' (Yu et al., 2021). In the broader literature this conclusion is echoed whether the focus is on:

- the national level (Climate Council; accessed 18.12.2023)
- state level (Saavedra and Budd, 2009)
- city level (Mees, 2017)
- local government level (Bajracharya et al.; Baker et al, 2012)
- neighbourhood level (Laukkonen et al, 2009)
- a particular index group such as those who are homeless (Dodman and Satterthwaite, 2008).

Public authorities are aware that a combination of policies that support both mitigation and adaptation are necessary but, at the individual level, those who are in a position to adapt are less likely to become ill or to die. And, if the individual has little or no chance to adapt — to move to a better place; to improve cooling by retrofitting the house; by having choices about the kind of dwelling they live in — their prospects deteriorate.

What might be termed 'adaptive agency' is in short supply in many quarters. However, innovative programs have emerged and have been found to be effective. For example, Loughnan, Carroll and Tapper (2015) demonstrated that heatwave resilience in older people can be significantly improved if the quality of their housing is improved. In effect, there is close-to-consensus in the literature that the task is to maximise 'adaptive agency' where possible and, if this is not possible, to intervene to ensure adaptive options are available to those who have little or no effective agency and/or material resources.

7. Discussion

7.1 Climate change endangers social connection

7.2 Complex partnerships

7.3 Co-ordination

7.4 The construct of 'vulnerability'

7.5 The politics of language

7.6 Is climate change the business of homelessness services?

Six themes are highlighted below. These themes emerged as persistent threads, but with different degrees of clarity, throughout the process of the project. An overt discussion of each is intended to add to the transparency of the report.

7.1 Climate change endangers social connection

In the consultation with those with lived experience, at one point the project worker asked: 'I'm wondering whether you might say something about the importance of friends, of social support, of peers. How important is that in getting through the tough times?' The first response was:

I'll just say one word: paramount.

Yeah, a little spark of hope. It's paramount.

In the last minutes of this consultation, participants were asked: 'Is there anything that you guys want to say to finish up so it can feel like the conversation has had a chance to come together because we've talked about some pretty tough stuff. Does anybody want to say something to finish up before we leave it?' The following was the only comment offered:

I just wanted to say a quick comment on how, when you're without a home, information is shared across your peers who are also without

a home, and how valuable that information is because you can learn places to go where you can find some warmth, or places to go where you can get some air con, which is public places. So, you find out a lot of information by being open with follow homeless people.

The above quotes reflect a clear theme in the consultation with those who have lived experience: these people attach a special meaning to the contact they have with their peers. Exchange with others in the same situations, these people said, provided survival information, camaraderie, crisis support, and more. Unfortunately, one of the effects of climate change is that those who are homeless tend to, very understandably, go to ground, or hunker-down, when conditions are inclement. This response is especially, but not exclusively, relevant when the temperature spikes.

In these situations, minimising exertion becomes the defensive option. The result of this reflex is passivity and inaction; this response is well documented (Healy and Mellick-Lopes, 2022). Unfortunately, a by-product of being self-protectively inactive is that contact with others is reduced. Tellingly, this endangers the viability of the very social niche that these people say is so important to them. This increases vulnerability. Why is this? It is second nature to withdraw when conditions are oppressive.

It is understood that, to get by, one tends to stay still rather than reach out; there is a tendency towards isolation when self-care becomes the priority. Put together, these elements produce loneliness. And, feeling alone, standing apart, is a health hazard in and of itself. This is not just what consumers say, it is backed up by hard science: 'loneliness (is) on the list of risk factors for ill-health and early death right alongside smoking, obesity and lack of exercise' (Cacioppo and Patrick, 2008: 108).

7.2 Complex partnerships

The term 'resilient communities' has considerable currency in discussions concerning climate change. The term conjures images of neighbours spontaneously uniting to fight a bushfire or to hold back a flood. As inspiring and reassuring as this image is, it is important to recognise that people do not always 'work together.' This is all the more the case in situations of inequality and atomisation. In locations where social cohesion is strained, trust and camaraderie tend to become outliers. The following vignette goes some way to illustrating the issue of alienation.

This understanding was echoed by one of the consultees:

Oh yeah, when you're unable to leave your home because of inclement weather ... isolation becomes a factor (and this affects) not only physical health conditions, but also mental health conditions.

Unlike face-to-face exchanges, in inclement conditions online interaction is less demanding of effort and, presumably, such activities will be less inhibited than those involving actual physical movement. This noted, pacified by heat or damp all interaction diminishes, but this is especially the case with those that involve face-to-face contact. These exchanges have the possibility of actual physical touch — what Sharp (2009) refers to as the ascendant value that is 'co-presence.' This, it can be argued, makes face-to-face contact especially vulnerable to the impact of extreme climate.

Locals defy police: Vignette X

A resident in a Housing Victoria medium density unit in South Melbourne noticed what they thought was a gas leak and contacted 000. Following a timely response, the relevant emergency service team arrived and identified that a high-pressure gas pipe had ruptured. This team concluded there was an immediate risk of explosion. Following their protocol, this unit contacted the local police with the view that police alert all residents in the vicinity that they needed to immediately evacuate their homes.

A stalemate ensued as residents defied the police order to leave their units. During this period, it became clear that, as a group, the residents believed the local police could not be trusted: 'It is a trick. They want to get us out so they can get in. They (the police) have long had it in for us. This is a conspiracy ... they want to harass us again ... plant gear (substances) ...

to search without warrants, to make it hard for us, maybe get some arrests. You can't trust them. End of story. We are staying put'

Despite the risk, the senior member of the on-the-ground emergency team directly negotiated with those in the immediately implicated household so that his (small) team be allowed to attend to the leak. This task completed, there was a return to the status quo: the residual antipathy that existed between police and the residents.

The above vignette speaks to the impact of the embedded antipathies that can exist between 'officials' and 'locals.'

Rather than doing the real work of analysing and critiquing such a situation, it is exactly in contexts of embedded social injustice where the idea of 'resilient communities' is disingenuously preached. That is, if one hears a spokesperson advocate that what is needed is 'resilient communities', when what is actually needed is structural change.

This 'resilience' usage unites a faux message — 'Don't worry. We will be fine if we work together'; the idea of 'community as the spray-on solution' (Bryson and Mowbray, 2005) — with a moral instruction: Citizen — you are ordered to be resilient! (Rose and Lentzos, 2017).

In the real world what is needed is for people and organisations to work together: it is lame to prescribe 'resilience' but:

True resilience lies in a feeling of togetherness, that we're united with those around us in a shared endeavour (Bruce Daisley, ex-Twitter VP; as quoted by Spicer, 2022).

In this sense, working together involves developing forms of practical partnership. As discussed in Chapter 5: What is being done? many of the programs that are emerging to meet the climate change challenge involve agencies/organisations coming together to achieve a common goal. As worthy as this is, the question needs to be asked: how realistic is it that, to do something positive, requires constant highly sophisticated, multi-party consortia?

Two examples are set out below of projects that entail such a high degree of difficulty:

Example 1: In concert with The Alternative Energy Group (TAEG) from RMIT's Centre for Urban Research, the Tarnagulla (Upper Loddon) project was funded by the Virtual Centre for Climate Change Innovation (VCCCI) within what was then known as the Department of Environment, Land, Water, and Planning's (DELWP) in Victoria.

Example 2: is as or more sophisticated in its auspice and its source of funds: The 'Reducing vulnerability and strengthening place-based resilience in Yarra Ranges and Campaspe communities project' also involved a partnership between Jesuit Social Services, the Eastern Community Legal Centre, ARC Justice and the Federation of Community Legal Centres.

Each of the above projects definitively serves a worthy purpose. Each is indicative of a commitment and a forward-thinking capacity that could only be realised because the actors involved are highly skilled. That given, there remains an issue: to what extent do such complex, one-at-a-time partnerships present a generalisable model that could be used to build towards a tenable, broadacre response to the challenge that climate change presents? Each has to be a real challenge to initiate and manage as there are different auspices and lines of accountability.

Evoking images of sporting teams and enduring relationships, the word 'partnership' sounds very positive. Yet, it seems fair to say that voluntary, geographically limited programs with narrowly defined eligibility criteria, and which have an uncertain degree of community buy-in, cannot undertake the work that needs to be done.

Without a cohesive form of central co-ordination, contingent on the need to form opportunistic partnering arrangements, such projects seem certain to remain a 'piecemeal' response to a systemic set of issues however worthwhile each may be. Much is being done by NGOs, councils, community groups and, in some measure, by elements within local, state and federal governments — mindful that these initiatives tend to be elective, unevenly distributed and un-coordinated.

7.3 Co-ordination

Co-ordination can be a key issue. For example, quite distinct from the responsibilities undertaken by state governments, local councils, NGOs, health authorities, community groups, etc, five Federal Government ministers have portfolios that have direct relevance to the aims of this project:

- Julie Collins, Minister for Housing, Homelessness and Small Business
- Chris Bowen, Minister for Climate Change and Energy
- Murray Watt, Minister for Emergency Management
- Claire O’Neil, Minister for Home Affairs (including NEMA)
- Linda Burney, Minister for Indigenous Australians.

This complex set of actors (and their departments) meet at a busy nest of intersections. Reflecting on the spaghetti-junction that these conjunctions

form recalls one of the ‘reference themes’ that was carried into the current project from CHP’s earlier research on premature death (CHP, 2019; 2021):

... there is an absence of holistic co-ordination between the many ‘agents with relevance’, i.e. the different levels of government; the responsible statutory bodies; various health services; NGOs; etc. As documented in both previous reports, this criticism is equally applicable whether the focus is data collection, service delivery, policy formation or public preparation.

Pointing to the likelihood there are problems with co-ordination is not to imply there can ever be simple solutions. Very likely ‘co-ordination’ is a wicked problem. Given the complexities involved in addressing the problems that arise with respect to homelessness and climate change, it perhaps requires a joint sense of mission and an abiding authorising authority.

7.4 The construct of ‘vulnerability’

Many attempts have been made to conceptualise and assess vulnerability. For example, Jesuit Social Services prepared a complex, nuanced report — *Dropping off the Edge: Understanding Entrenched Location-based Disadvantage* (2021) — that documented at a local scale the challenges particular communities face; the Social Vulnerability Index developed by the School of Global and Population Health at Melbourne University is another example: see Li, Toll and Bentley (2023a; 2023b). As worthy as specific examples may be, it is important to note that the term ‘vulnerability’, and its close cousin ‘at-risk’, have little definitional stability. That is, these terms are rubrics within which there are multiple definitions and implications for action. An example makes this clear.

Following the 2009 Victorian Bushfires Royal Commission, and the 2010-11 Victorian Flood Review, the Department of Health and the Department of Human Services (later replaced by the Department of Health and Human

Services) were designated as the lead agencies for establishing a policy to protect vulnerable persons: ‘The purpose of the policy is to improve the safety of vulnerable people in emergencies, through supporting:

- emergency planning with and for vulnerable people
- developing local lists of facilities where vulnerable people may be located
- developing local lists of vulnerable people (Vulnerable Persons Registers) who may need consideration (tailored advice of a recommendation to evacuate) in an emergency and make these lists available to those with responsibility for helping vulnerable residents evacuate’ (Victorian Government, 2018).

For the purposes of the policy a vulnerable person is defined as someone living in the community who is:

- frail, and/or physically or cognitively impaired, and
- unable to comprehend warnings and directions and/or respond in an emergency situation (ibid).

In the above, 'vulnerability' has been attributed to have a certain character in a designated context — a fire or flood emergency. More, a class of response is at issue: advice to be given about, even potentially a compulsory act of evacuation.

An entirely different approach to vulnerability is to map the areas in a city that are especially hot, and therefore, which generate greater cases of vulnerability: see, for example, Loughnan, Nicholls and Tapper (2012). This assessment of vulnerability concentrates on variables such as where aged care facilities cluster, where there are higher proportions of older people living alone, and/or where there are high proportions of non-English speakers. This attention tends to occlude variables such as 'trust in the authorities', bio-specific attributes (e.g. psychotropic medication) and 'housing quality'.

This latter variable is particularly topical and has been the subject of considerable research and program attention with respect to climate 'adaptation.' That is, programs have emerged that aim to retro-fit physical improvements, particularly air-conditioning and insulation, to poor quality residences of those who are at-risk, such as the elderly. Moreover, such interventions have been seriously evaluated: see, for example, Loughnan, Carroll and Tapper (2015). Attention is given to these programs in 5: What is being done?

Rather than recycling the term vulnerability, in the recent literature on homelessness a number of alternative frames have been suggested. These include:

- 'complex needs' — a 'travelling concept, which provides foundation for interventions in different locations' (Dobson, 2022)
- 'multiple complex needs' — a combination of homelessness, substance use, offending and/or mental ill-health' (Harland et al, 2023)
- 'multi-dimensional precarity' (Chan et al, 2023)

- mapping the 'riskscape' (Martino and Bentley, 2023).

Conceptual suggestions to one side, the prior question must be: 'vulnerable to what?' Is it cyber-crime or bacteria that is the worry? Is it body image dysphoria or wage theft that is the danger? If the issue is 'being endangered by the impact of climate change' it is clear that the quality of housing — the degree to which housing does, or does not, 'climate proof' the individual — is the referent.

Housing quality may be primary, but additional variables are also relevant. Some of these are broader ('the liveability of the suburb', 'the quality of community connection'); some are bio-specific (age, medical history and medication used, degree of mobility; etc.); some are demographic (socio-economic status, ethnicity, living alone, etc.). These mediating factors acknowledged, if there is a dwelling, it is the condition of this residence — the quality of the build, and the appropriateness of a dwelling's residential design — that is the variable that is most relevant to the matter of 'climate readiness' (Healy and Mellick-Lopes, 2022).

Research on the social determinants of health buttresses this point:

'Housing quality refers to the physical conditions of a person's home as well as the quality of the social and physical environment in which the home is located. Poor-quality housing is associated with various negative health outcomes. Home design and structure significantly influence housing quality and may affect both mental and physical health' (US Department of Health and Human Services; accessed 08.08.2023).

In terms of 'climate-proofing' the most-to-least vulnerable classes of housing could be scaled into a hierarchy. This idea is tentatively explored below:

- (i) First Nations people in remote homelands
- (ii) primary homelessness/rough sleepers
- (iii) inadequately housed
- (iv) precariously housed
- (v) permanently housed but
- (vi) in financial stress, and

- (vii) in vulnerable locations vis-à-vis heat, flooding/inundation, storm and fire
- (viii) permanently housed and economically buttressed but in vulnerable locations vis-à-vis heat, flooding /inundation, storm and fire
- (ix) Permanently housed, economically buttressed and living in relatively stable locations vis-à-vis heat, flooding / inundation, storm and fire.

Interestingly, there is a marked absence of accessible, centrally located material that documents the quality of housing; that is, the attributes that combine to determine a residence's vulnerability to extreme heat. This data concerns, but is not restricted to, attributes such as insulation, household orientation, the presence (or otherwise) of air conditioning, and whether the materials that were used in the construction are appropriate. Councils are a potential source of this detail but, as far as the current project was able to discern, this detail may or may not be compiled at a council level but, if it is aggregated, it is certainly not publicly available.

As the current project is 'one lap in a relay' of knowledge building, the baton could be passed to each local government body to proactively collect data on housing variables. That is, to a significant degree local government has a potential access

7.5 The politics of language

The issue of language arose as a prominent issue in the two earlier CHP projects (2019; 2021). Far from an 'academic issue', each of these reports examined how certain language practices have a decisive effect in shaping a field of understanding, and therefore the actions that are deemed appropriate in this field. The key theme identified in these reports was: do certain language habits obscure, even misconceive, questions of causation and responsibility?

Both projects investigated deaths amongst those experiencing, or who have experienced, homelessness. In each report conclusive statistics were cited to the effect that homelessness is dangerous and reduces life expectancy to around

point to data related to housing quality that is not available to the current project (or to others) as these instrumentalities can potentially compile a considerable, albeit incomplete, data set related to housing quality from the categories of information that they collect in the process of calculating rate notices for individual residences.

An important final point should be made. In the earlier cited Victorian Government '*Vulnerable People in Emergencies Policy*' (2018), it was stated that:

Recommendation 67 of the 2010-11 Review of the Victorian Floods Warnings and Response suggested that that the definition of a vulnerable person and associated policy(ies) be applicable across 'all hazards'.

If the phrase 'all hazards' in the above statement is interpreted narrowly, the ambit of state responsibility remains limited to (so called) 'natural disasters' such as fire and flood. Alternatively, if 'all hazards' is understood more broadly to include the multiple examples of what anthropogenic climate change has caused, the ambit of state responsibility is considerably enlarged. (This possibility is returned to in 8.3 *Climate justice*). That the phrases 'all hazards' and 'natural disasters' might be subject to different interpretations introduces the next discussion theme — 'the politics of language'.

50 years and multiples the risk of early death between three and seven times (Morrison, 2009: 877). As reported in both projects, this well-established fact was brought into sharp relief by a recent, and formidably robust, study that found '... one in three homeless deaths were due to causes amenable to timely and effective health care' (Aldridge et al., 2019: 49).

Insomuch as this finding is accepted, a question arises: if these deaths could have been avoided, what coronial disposition is attached to them? The simple answer to this question is that these deaths are not understood as deaths that are worthy of attention and are rarely the subject

of investigation. Rather than noteworthy, and potentially problematic, these deaths are most often *de facto* classified as 'due to natural causes'.

In this usage the word 'natural' is formally deployed with respect to a high order medico-legal category — 'cause of death'. Within this category there is a binary: either the death is regarded as anomalous (murder; state negligence, etc.), or it is not. In the latter disposition the 'event' is understood as one that is beyond human control. It is an 'act of God.' The effect of this disposition is to render the death unavoidable and to disavow the possibility that human agency might be relevant.

The meaning that is derived from this interpretation has gravitas as it generates, and legitimises, a public understanding. The coronial finding that a death is a 'natural death' has the real-world consequence of declaring that the community in general, and its authorities and official delegates in particular, are off the hook. Don't worry. No one is to blame.

In everyday practice, the above has a material effect. In relation to the premature deaths of those experiencing homelessness, two points arise:

- *Accurate statistics cannot be collected:* many of those who die while they are homeless are not recognised as such in the official documents that are required to be completed in the processing of a death. This tendency to individual omission has an aggregate outcome; when each item of individual documentation is gathered with other data points, the resulting set underestimates the true total.
- Particular to the possibility that the 'cause of death' might be investigated, there are several discursive 'switch-points' (Rose, 2000) in the overall process which tend to rout the classification of a death towards it being seen as natural. How does this work? The responsible authorities, particularly the police, must initially make the preliminary judgement that a death is either 'non-reportable' or 'reportable' where the latter has a formal impact if it is entered; this latter classification steers the processing of a death towards, but not necessarily realised as, one that requires coronial investigation.

- Often, this decision-making expresses an assumption: if first responders or, later in the process, gateway staff who control entry to the formal coronial procedures, think there is nothing suspicious, that there is no evidence of 'foul play', the default option is to say 'there is nothing to see here'. This generates a system-wide tendency to act on the basis that the death is natural rather than to pause and ask: if not overtly violent or criminal, might there be 'causes amenable to timely and effective health care' (Aldridge et al., 2019: 49) that could have been the subject of intervention? With respect to the deaths of those who are homeless this practice often results in a *misattribution of cause*.

Much is left out in the above: see CHP (2019; 2021) for a comprehensive account. What is relevant to the current project is the possibility that identifying, and then actively reviewing, customary language practices can play an important role in the investigation of empirical phenomena. This kind of review is often termed a discursive analysis (Gee, 2004). Albeit very briefly undertaken, a number of instances of habitual language practices are briefly examined below.

Natural disaster

The use of the term 'natural' in the coronial disposition 'natural death' closely resembles the manner in which the term 'natural' is employed in the phrase 'a natural disaster'. In addition to certain geological events, such as earthquakes, the rubric 'natural disaster' is commonly used to classify storms, droughts, and so forth. Mindful there have always been such events, it is now understood that climate change has increased, and is expected to accelerate the intensity and frequency of these events. The development of this understanding has seen the terms 'anthropogenic' and 'Anthropocene' gain significant prominence as these latter terms contradict the premise that events should be related to as if they are the product of divine will/providence.

Climate change scientists and advocates prefer the latter terms as they centre attention on human causation and, therefore, on the possibility of, and the moral force that should drive, attempts at mitigation. Unless identified and contested,

the use of the term 'natural' in the description of landslides, floods, and so forth, may act as an 'auto-legitimator' of what should or might be better coded as anthropogenic in origin.

The terms 'climate change' and 'global warming'

'Climate change' is the term governments and the media prefer when describing the changes that are unfolding. Some argue that this term is inappropriate as it misrepresents as linear and gradual what is really a 'second-order' transformation (Fazey et al., 2018). This criticism is radical and seeks to acknowledge that a major qualitative, rather than incremental, change is afoot. This, it is argued, is needed to trigger sufficient awareness to mobilise a wholesale response. Those holding this position prefer terms such as 'climate disruption', 'climate disturbance' or even 'climate collapse'. To a limited extent, this issue was mentioned in the section 'Framing a subject without boundaries.'

The term 'climate change' has been preferred in this report. The decision to follow general practice was taken mindfully; it preferred in order to assist the accessibility of the report. Arguably, this decision warrants the same criticism scientists and activists direct at those who minimise the risks posed by the current climate transformation.

A related issue was identified by Jeff Goodel (2023) in his discussion of the term 'global warming'. He argues that the term insinuates a false premise: that the changes that are occurring are incremental and minor. Goodel makes a serious point, but does so lightly, commenting that there might even be advantages to global warming — like 'better beach weather' (Goodel, 2023). He also points to the way the term 'hot' has come to be associated with 'attractiveness'.

How the 'presenting problem' is framed

That there can be material consequences in how the term 'natural' is used/mis-used explains the importance of how an issue is framed. For example, Tony Davies from Social Futures presented a paper at the 2022 National Homelessness Conference on the people who were displaced as a result of the 2022 floods in the Northern Rivers region. He said In this presentation, the 'presenting problem' was the people who had been forced from their homes, and the cause — how this 'presenting problem' was formulated — was that there was an adverse weather event — a so called 'natural disaster'. In this framing, the same 'presenting problem' could have been a focus in a very different venue such as an Emergency Management conference or at the offices of FEMA. The practical matter in question is one of responsibility and jurisdiction. Simply put, 'Whose problem am I?'

7.6 Is climate change the business of homelessness services?

As with climate change in general, there is a risk that the hard-won respect for the importance of addressing homelessness per se, and the role SHS have long played, might be discounted if 'climate change' becomes the focus of attention.

Particularly early in the work of this project there were animated discussions about its scope, priorities, etc. One point of view was that there was a risk that dramatic scenes from fires, storms and floods might 'crowd out' the attention that should remain on those who SHS have traditionally served — the rough sleepers who have no 'thermal control' and who 'do not have a voice'. This point of view held that 'inundation is not an issue ... we should only look out for those who haven't got (socio-economic) resources' and not over-emphasise acute events. 'Disaster management' is a job for the government bodies who are responsible for the homelessness that is created by disasters such as fires and floods. As such, it was argued that this form of homelessness should not be a close concern of the current project.

This point of view was troubled by the concern that those who have been traditionally left out would only be further marginalised if the hard-won attention that homelessness has currently secured would be endangered, wedged out of focus, by the drama-scapes created by disaster stories.

Over time the Steering Committee came to a non-binary position. For example, one of the consultees to the process — someone with

long standing and very public commitment to the sector — noted in her interview that, in natural disasters, one of the roles that SHS workers can undertake is an early advisory one. This person relayed the story of what occurred in the crowded relief centres that were set up following the Northern Rivers floods where some very young people were exposed to intravenous drug use by those longer-term homeless folk who had been folded into the groups who were recently displaced. This could have been avoided if the emergency management people had had access to the advice of experienced SHS workers.

It is clear that, although unevenly distributed, climate change is here now. As discussed in several places in this report, one example of the impact of this phenomenon is the very large number of people who were displaced in the last few years as a result of two 'natural' disasters: 60,000 by the 2019-2020 fires in south eastern Australia, plus 18,000 by the 2022 Northern Rivers flooding. These figures will inevitably be matched, if not exceeded, by the succession of adverse climate events that can be expected in the coming decades because climate change is an intensifying process. This situation will likely challenge the traditional understanding of homelessness over, say, the next 20 years.

The drama and media focus generated by acute events has the potential to disrupt the place/domain that the sector has occupied, but it does not have to. Climate change is everybody's emergency.

8. Wrapping up

8.1 Climate change is everybody's core business

8.2 Coordination and carriage

8.3 The changing volume and composition of homelessness

8.4 Homelessness and climate justice

8.1 Climate change is everybody's core business

The research is clear: to work towards adaptation — that is, to deal with the effects of climate change — it is necessary to:

- (a) be crystal clear about the risks individuals/groups/locations are facing
- (b) be well briefed about the actions that have the best chance of being protective, and
- (c) not act alone (Wiseman, 2021).

The premise, the starting point, in the present case is to look squarely at the relationship between homelessness and climate change. According to the US National Alliance to End Homelessness:

Extreme weather conditions such as winter storms or severe heat have an obvious impact on unsheltered homelessness: for people already living outdoors, extreme weather can mean life or death. Older adults, people with substance use disorders, and those experiencing chronic homelessness are also at a higher risk of adverse health effects from extreme temperatures. These weather conditions result in chronic medical conditions, a higher risk of hyperthermia and a higher mortality rate (Mello, 2023).

In the above, it is understood that homelessness takes many forms. A person might be jostling for a place in a shelter, living in a car, about to be evicted, damp (or over-heated) in a boarding house, holed-up in an inner-city squat, crowded in an uncooled house in a remote part of Australia, camped on a wooden pallet trying to stay above the run-off from Darwin's monsoonal rain, in an abandoned container or alone in a public housing high-rise. In whatever form homelessness takes, the point is that it needs to be acknowledged that climate change is impacting on the material conditions, the lived circumstances, which make up the reality of this person's homelessness. More, it can be expected that the degree of this impact, the multi-dimensional extent of this influence, will steepen as climate change intensifies.

In addition to physiological and phenomenological impacts, by 2050 it can be expected that an intensifying process of climate disruption will result in a greater incidence of homelessness and a markedly more random character to its distribution. Data that is currently available makes this clear. For example, reports from the Internal Displacement Monitoring Centre document a steepening trend towards more

disasters and more intense displacements; of the 243,000 people displaced in the 15 years between 2008 and 2022, almost 80% of these displacements occurred in the last five years (IDMC; accessed 19.12.2023).

Even without the impact of climate change, it is well-established that homelessness reduces life expectancy to around 50 years and multiplies the risk of early death between three and seven times (Morrison 2009: 877). Once the impact of climate change is factored in, this danger is significantly heightened because climate change is a 'risk multiplier' (Wiseman, 2021). That is, in effecting the 'human niche' (Lenton et al., 2022) climate change not only makes the experience of, and the health risks associated with, homelessness worse, the process of climate change itself will generate more homelessness.

In so much as an understanding of homelessness is not restricted to 'rooflessness', that is, if homelessness is understood to be inclusive of those in precarious housing (inadequate, insecure, over-crowded, etc.) accommodation, there is an emerging potential convergence between:

- community organisations with an activist mission who, at least in part, work to 'climate change adaptation', and
- homelessness advocacy and service organisations whose traditional mission has not been indexed to climate change and climate advocacy.

That there might be a rallying point conjunction between these two energies has an overt logic, but it also presents complications. For example, a pairing is progressive in that the broader target populations of the latter are well served by any actions of the former that advance the living

circumstances of the disadvantaged. Such actions are being undertaken by a range of actors.

In addition to community groups with a climate action masthead, these actors include local councils, e.g. Merri-bek City Council in Victoria: see *Chapter 5: What is being done?*

Such an emerging pairing might also be challenging if it was understood to downplay the sector's historical focus on 'homelessness in and of itself' that SHS organisations have traditionally badged themselves to. That is, this pairing has the potential, or it may be seen to have the effect, of subsuming homelessness within the larger rubric of 'climate change' in such a way as to diminish the immediacy of, and the priority accorded to, those who are currently homeless.

It might be said there is a similar tension present in the possibility that organisations and services whose masthead is 'disaster management' might develop a far more active relationship with the homelessness sector. This possibility is inherent in the fact that many of those who are homeless are not registered as SHS clients. At a logical level, such an alignment makes good sense as there is a certainty that population displacements following adverse climatic events, such as major floods and fires, will increasingly occur and will produce examples of homelessness.

More, non-acute incremental effects, particularly droughts and the process change that is sea-level rise, will also result in demographic effects on the incidence, distribution and profile of homelessness.

With some frequency such displacements are not amenable to 'residents' being able to return quickly or, in some cases, ever to the original accommodation. It might be asked: should such outcomes be the 'business' of SHS?

8.2 Coordination and Carriage

A multitude of initiatives and innovations are emerging in response to the demands presented by climate change. Many examples of this welcome phenomenon were identified in both the consultations and the desk-based research undertaken by the project; given they were far too numerous to cite individually, a cross-section is documented in *Chapter 5: What is being done?*

What was also identified in the research was the fact that there is no consistency, or clear line of sight, between what is happening, and/or what should happen, with respect to the relevant actors. Much is being done, but what is being done is (mostly) neither coordinated nor universal in its implementation. Actions are (mostly) spontaneous and local, even hyper-local, and opportunistic rather than evenly distributed and centrally authorised. This key difficulty was examined earlier in two discussion themes: see 7.2 'Complex partnerships' and 7.3 'Co-ordination.'

This situation recalls one of the 'reference themes' that was carried into the current project from CHP's earlier research on the premature deaths of those who experience homelessness (CHP, 2021):

... there is an absence of holistic co-ordination between the many 'agents with relevance', i.e. the different levels of government; the responsible statutory bodies; various health services; NGOs; etc. As documented in both

previous reports, this criticism is equally applicable whether the focus is data collection, service delivery, policy formation or public preparation.

Climate change is a 'wrap-around' fact. Ideally, the response to this fact should be one that effects coherence. An image that speaks to this need is the hologram. This form of organisation insists there is an 'all on the same frequency' relationship between the parts (Morgan, 1998). Mindful of the need for an authorising environment, the issue of carriage — 'who has responsibility?' — is, in this image, a collective and a hierarchical continuity.

At the federal level, the adoption of the adaptation mission would, for example, result in a sustained impact on:

- the development of, and subsequent iterations of, the National Housing and Homelessness Plan
- the assumptions built into, and operation of, National Housing and Homelessness Agreements
- the focus of the Clean Energy Finance Corporation.

More generally, each level of actor, and the lines of connection between them, would progressively work to services the same mission.

8.3 The changing volume and the composition of homelessness

The volume and the composition of homelessness in this country is changing due to two independent, but functionally connected, drivers:

1. Increasing non-affordability in the housing market. A powerful signal of the seriousness of this issue is that ongoing research being undertaken by Professor Guy Johnson is indicating that the percentage of those presenting to a SHS who are 'working but homeless' has doubled from around 1 in 20 to 1 in 10 over the last two decades (direct communication; 04.09.2023). Given
2. The impact of climate change. Broadly speaking, the volume and the composition of homelessness will be subject to:
 - (i) incremental impacts: a proportion of those who are vulnerable to impacts, particularly increasing heat, will become homeless; for example, if a resident is unable to pay a power bill because

the housing market is continuing to be increasingly non-affordable this percentage can be expected to rise further.

a heatwave has led to this person/ household running their air-conditioning for extended periods this can lead to ending tenancy/occupancy.

- (ii) acute impacts: a proportion of those who are vulnerable to acute impacts, particularly fire and flood but also desertification, will not be able to repair, re-build or re-locate as they are insufficiently capitalised; for example, in the Northern Rivers floods a significant number, but far from the majority, of those whose homes were destroyed did not have insurance. As insurance becomes

ever more expensive or, even worse, unavailable in 'disaster prone' locations this problem will intensify.

It follows that, in combination, the above is beginning to disrupt the received understanding of homelessness in Australia. If, as expected, one, or both, these drivers intensify over, say, the next 25 years this has the potential to re-model the profile, and will challenge the distribution and the nature of received roles and responsibilities of those in the sector. That is, the emerging claims for attention that will arise as a consequence of internal and external displacements are likely to disrupt the domain that the sector has historically occupied, both conceptually and practically.

8.4 Homelessness and Climate Justice

Climate change will, more or less, effect everyone's 'home'. Putting regional displacements to one side, in terms of probability, the degree to which a group is at risk can be rated. As outlined in 7.4, scaled into a hierarchy, the most-to-least at-risk are:

- (i) First Nations people
- (ii) primary homelessness/rough sleepers
- (iii) inadequately housed
- (iv) precariously housed
- (v) permanently housed but
- (vi) in financial stress, and
- (vii) in vulnerable locations vis-à-vis heat, flooding/inundation, storm and fire
- (viii) Permanently housed, economically buttressed but in vulnerable locations vis-à-vis heat, flooding/inundation, storm and fire
- (ix) Permanently housed, economically buttressed and relatively stable locations vis-à-vis heat, flooding/inundation, storm and fire

Inspecting the above, those who are poorest will be most affected by, and will have least insulation from, climate change; for financial reasons particular sub-populations have a lesser access to quality housing. Insomuch as

there is agreement on the above, attention can be focused, resources allocated and priorities determined. That is, adaptation to climate change has to be a national mission, not a matter that can be delegated to those at the lowest level of the material hierarchy with the least adaptive agency.

Wenta, McDonald and McGee (2019) make the case that adaptation to climate change is fundamentally an issue of equity. This issue, they argue, is within the proper jurisdiction of legal authority:

'... the influence of adaptation law and policy on the distribution of climate impacts is often overlooked in studies of socio-ecological resilience to climate change (and) ... environmental justice scholarship helps to address this gap in the literature relating to adaptation law and resilience. Drawing on existing literature, (we advance) four principles to promote resilience and justice through climate adaptation laws. Climate adaptation laws must:

- (i) prepare for, and respond to, change
- (ii) address the distributive effects of climate change and adaptation
- (iii) promote participation in adaptation processes, and
- (iv) cross sectors and scales.

In this interpretation those who are most vulnerable to the impact of climate change are owed co-ordinated, multi-dimensional, multi-generational support and advocacy. This argument is the stronger inasmuch as the term 'climate change' is a euphemism for 'climate emergency.'

For example, older people have:

been highlighted as a high-risk group with respect to heat wave mortality and morbidity'. This understood, if housing for this group is 'adaptive and resilient' this provides 'protection during periods of extreme heat' as such arrangements mean daily maximum living room temperature was not significantly correlated with outdoor temperature, and daily minimum living room temperature was very weakly correlated with outdoor temperature'..... (the relevant) 'house characteristics' (included):

- age of the house
- number of air-conditioning units
- pitch of the roof
- home insulation, and

- number of heat-mitigation modifications made to the home (Loughnan, Carroll and Tapper, 2015: 1291).

In so much as the above can be approximated for those who are homeless/precariously housed it follows that mortality and morbidity will be reduced and quality of life preserved. This point introduces a final comment.

The deaths of the homeless are often defined as 'natural' when many of these deaths have been found to be preventable (CHP 2019; 2021). Tragically, such a misreading renders these deaths unremarkable. That a travesty of this nature is tolerated recalls a confronting idea put forward by Achille Mbembe in his book *Necropolitics*. Mbembe writes that necropolitics concerns the capacity to define who matters and who does not, who is disposable and who is not.

'Citing examples of plantation slavery and apartheid South Africa, Mbembe points out that the power of necropolitics is not so much about the intentional or direct murder of individuals as about the ways that certain kinds of bodies, certain kinds of people, are exposed to death (as quoted in Ramsay, 2022).

However hard it is to hear, there is considerable truth in that idea.

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Appendix 1

Letter of invitation to those with lived experience

Dear

Hi, hope you are good. Cass has let me know you are OK to meet to talk about homelessness and climate change. What follows is an invite to, and some background for, our meeting at 10.00 on Friday December 1st.

As Cass has explained, CHP is currently undertaking a research project on the above topic. This report will look at the impact of the extreme weather that climate change is producing. It will also try and think into what the bigger impact will be in, say, twenty years' time when it is expected there will be even more heat and storms, floods and droughts, than we get right now.

If it is to be useful, the project needs to be informed by those who have direct experience. Yes, we are talking to academics and practitioners, and we are reading the latest books and articles, but we want to learn about the impact of extreme weather — and what might be done to help — from those with direct experience of homelessness. What does this mean?

It is important we register what you have to say about what it is like having to bear up to heatwaves, to live in the damp when you can't get dry, to be stuck in edgy accommodation where there's mould. Your firsthand experience will be a key input.

The areas I would like to hear about are:

1. Looking back, what comes to mind when you think about what was hardest? Was it heat or cold, humidity or storm, uncertainty about what was coming next, abrupt change, damp — what was the scariest, the most dangerous, the most upsetting, when it came to weather?
2. Given climate change is going to intensify weather extremes, when you look into the future what will it be like to be without a secure home?
3. Looking back, and looking forward, what do you think could help?

Please have a think about this: on the condition that everything remains anonymous, I would like to record our discussion. It's up to you. If this does not suit, I am happy to take notes and not record anything.

Lastly, as you should expect, you will be paid the standard fee for the service you are providing to the project. We recognise you as 'project consultants.'

Please be in touch if you wish to discuss anything.

Regards, Mark

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Appendix 2

A very preliminary idea: Plotting relationships between variables

The report has been concerned with five aspects of homelessness:

- (i) the phenomenology of homelessness: what is the 'lived experience?'
- (ii) the physiology of homelessness: what is the health impact?
- (iii) the incidence of homelessness: what are the numbers?
- (iv) the distribution of homelessness: 'where are they?', and
- (v) the profile of homelessness: who are they?

Attention has also been organised around six expressions of climate change:

- heat
- inundation
- fire
- flood
- drought, and
- storm

Types of homelessness have also been a focus. Mindful that the last of the following is not a current example of homelessness in any sense — it was put forward as a possible future candidate — the project has explored the situation of:

- First Nations people in homeland communities
- those experiencing primary homelessness
- those in shelters and rooming houses
- disadvantaged people in precarious housing
- those residing in new estates

The relationship between these sets could be plotted in a number of ways.

For example, a calculation could be made:

- in terms of impact: is the impact 1, 2, 3, 4 or 5 on a Likert scale; high/medium/low, etc., and/or
- in terms of time: immediate / medium term / long term; in terms of designated time sections.

It is not possible to engage with the idea of plotting within the confines of the current project beyond several preliminary speculations.

What follows uses 'types of homelessness' as a filter in plotting the relationship between 'climate change expression' and 'aspect of homelessness.' For example, in considering the relationship between 'heat' and 'phenomenology' (lived experience) a variable that must be considered is the type of homelessness that is present.

Several points can be made:

- the phenomenology and physiology of homelessness will be impacted by rising temperatures — especially for those who are First Nations people in homeland communities and those who are experiencing primary homelessness
- fire and flood cause displacements which will initially impact on the incidence of primary homelessness, but may also prompt 'secondary' homelessness insomuch as marginal and precarious housing often increase subsequent to the initial event
- over time the incidence and distribution of homelessness will be impacted by longer term processes of inundation and drought
- the profile of homelessness is likely to be most impacted by socio-economic factors (such as housing affordability) but acute events, such as fire and flood, and longer-term processes, such as inundation and drought, will also play a role.

The following table could be 'populated' if the above idea seemed worth exploring.

	Heat	Inundation	Fire	Flood	Drought	Storm
Phenomenology ('lived experience')						
Physiology						
Incidence						
Distribution						
Profile						

The summary:

- *Lived experience*: Heat
- *Physiology / health*: heat
- *Incidence*: Fires and floods; initial displacement; longer term effect of increasing marginal, precarious housing have more impact
- *Distribution*:
- *Profile*: inundation; drought



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