Department of Health

health

Heatwave plan for Victoria

Protecting health and reducing harm from heatwaves

State Government Victoria

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Foreword

Australians are generally accustomed to living in hot weather and are known to be resilient in hot conditions. For this reason, many Australians may be complacent about extreme heat events and don't believe they could be susceptible to heat-related health impacts.

The events of the January 2009 heatwave in Victoria resulted in an estimated 374 excess deaths compared with the average rate in the same week over the previous five years, and serves as a reminder that the impact of heatwaves on human health is real and life threatening.

It is expected that climate change will increase the frequency and intensity of heatwaves in Victoria.

Heatwaves can affect anybody, including the young and healthy; however, there are certain population groups that are more at risk than others. These include people aged 65 years and over, people who have a medical condition and people taking medicines that affect the way the body reacts to heat.

Heat-related illness can range from mild conditions, such as a rash or cramps, to very serious conditions, such as heat stroke, which can be fatal. Heatwaves can also exacerbate existing medical conditions including heart and kidney disease.

To minimise the health impacts of extreme heat, the *Heatwave plan for Victoria* outlines a coordinated statewide response to heatwaves and provides a consistent community-wide understanding of the health impacts of heat and how to stay healthy.

In particular, the plan outlines processes to:

- ensure heat health information and support is readily available to the community, at-risk groups and their carers
- develop partnerships and collaborative arrangements to better respond to heatwaves
- increase understanding of the health impacts of heatwaves on communities and their capacity to respond during heatwaves
- manage public health emergencies during heatwaves more effectively
- develop long-term and sustainable behavioural change to minimise the impacts of heatwaves on health and wellbeing.

The Victorian Government places a high level of importance on ensuring all Victorians, particularly those most at risk during heatwave conditions, are informed, supported and protected from the risks posed by extreme heat. The approach taken ensures information is readily available, to firstly warn organisations and individuals about the approach of heatwave conditions, and then to work collaboratively with a broad range of health, community and emergency organisations to continue providing support and information to assist people during extremely hot conditions.

Hon David Davis MP
Minister for Health

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1 Executive summary

This document is a shared resource to coordinate an integrated response to heatwaves in Victoria and provides a clear understanding of the actions and systems in place to support at-risk groups in a heatwave.

Rising temperatures and greater numbers of more intense periods of heat are forecast to be a part of Victoria's climate.

As demonstrated in the January 2009 heatwave in Victoria, heatwaves can exacerbate existing medical conditions and cause heat-related illness, which may be fatal.

There is no single agency that has complete responsibility for building, maintaining and protecting the health of at-risk populations in a heatwave. As such, it is important that individuals, government and the broader community work together to reduce the health impacts associated with heatwaves and provide support to those most vulnerable in the community.

Building on the findings and recommendations from the evaluation of the 2009–10 heatwave framework, the actions outlined in the *Heatwave plan for Victoria* aim to protect the health of Victorians in a heatwave, specifically those most at risk of heat-related health impacts. The actions in the plan fall under the headings of: planning and preparing for summer; issuing and responding to a heat health alert; when a heatwave becomes an emergency; and after an emergency-level heatwave.

In preparation for summer, the Department of Health will work with other government departments, departmental program areas, local government and health and community service providers to target the most vulnerable groups to raise awareness of the health impacts of heatwaves and how to stay healthy. There is a range of public health messages and communication resources available to educate people on staying healthy in the heat including a poster, brochure, fact sheet and telephone script for phone-based service providers.

When a heatwave is forecast, the department will issue a heat health alert to notify departmental program areas, hospitals, local government, agency partners and health and community service providers of forecast heatwave conditions that are likely to impact on health. Recipients of the alert are advised to monitor local conditions and respond in accordance with their heatwave plans and operational protocols.

The heat health alert, communication resources and the broader coordination of heatwave responses ensure a coordinated approach to stakeholder and community education.

2 Understanding heatwaves

2.1 Defining a heatwave

There is no single internationally accepted definition of a heatwave. The definition is dependent on the impact on health, community infrastructure and services. Clearly defining a heatwave is difficult given factors such as humidity, demographics, urban or rural design issues and acclimatisation. These factors mean that similar temperatures may have a different impact in different environments or communities.

For consistent community understanding in Victoria, a heatwave is generally defined as a period of abnormally and uncomfortably hot weather that could impact on human health, community infrastructure and services.

The Victorian Department of Health has a technical definition of a heatwave based on the minimum temperature threshold that is likely to impact on the health of a community, known as the heat health temperature threshold.

2.2 Heat health temperature thresholds and districts

Based on a range of evidence and information, the Department of Health has identified heat health temperature thresholds for Victoria, above which heat-related illness and mortality increases substantially.

The heat health temperature thresholds are based on information including average summer temperatures, research conducted by Monash University and temperature thresholds used in previous heat health alert systems.

Once forecast average temperatures are predicted to reach or exceed the heat health temperature threshold for a specific weather forecast district, the department will issue a heat health alert for that district.

Calculating the average temperature

The average temperature is calculated from the forecast **daily maximum** (in this case Tuesday) and the forecast overnight temperature, which is the **daily minimum for the following day** (in this case Wednesday).

An example of this calculation is demonstrated below.

Melbourne

Tuesday

Min: 20°C

Max: 38°C

Wednesday

Min: 25°C

Max: 31°C

Average calculation for Tuesday

(38 + 25)/2 = 31.5°C

The threshold for Melbourne = average of 30°C.

The temperature forecast indicates that the threshold will be exceeded.

This calculation will be repeated for each of the seven days included in the daily forecast.

The alert notifies departmental program areas, hospitals, local government, agency partners and service providers of forecast heatwave conditions that are likely to impact on human health (see section 6.1 for more information).

The average temperature for any given day is the average of the forecast daily maximum temperature and the forecast overnight temperature (which is the daily minimum for the following day).

The heat health temperature threshold differs in different areas of the state. Figure 1 shows the heat health temperature thresholds for Victorian weather forecast districts.

Figure 1: Heat health temperature thresholds and corresponding weather forecast districts

Mallee District 34°C

Buloke Shire
Gannawarra Shire
Mildura Rural City
Swan Hill Rural City
Yarriambiack Shire (north of the netting fence)

Wimmera District 32°C

Hindmarsh Shire
Horsham Rural City
Northern Grampians Shire
West Wimmera Shire
Yarriambiack Shire (south of the netting fence)

South West District 30°C

Ararat Rural City
Colac Otway Shire
Corangamite Shire
Glenelg Shire
Moyne Shire
Pyrenees Shire
Southern Grampians Shire
Warrnambool City

Northern Country District 32°C

Campaspe Shire
Greater Bendigo City
Greater Shepparton City
Loddon Shire
Moira Shire
Strathbogie Shire

North Central District 30°C

Central Goldfields Shire
Lake Mountain Alpine Resort (Unincorporated)
Mitchell Shire
Mount Alexander Shire
Murrindindi Shire

North East District 32°C

Alpine Shire
Benalla Rural City
Falls Creek Alpine Resort (Unincorporated)
Indigo Shire
Mansfield Shire
Mount Buller Alpine Resort (Unincorporated)
Mount Hotham Alpine Resort (Unincorporated)
Mount Stirling Alpine Resort (Unincorporated)
Towong Shire
Wangaratta Rural City
Wodonga City

East Gippsland District 30°C

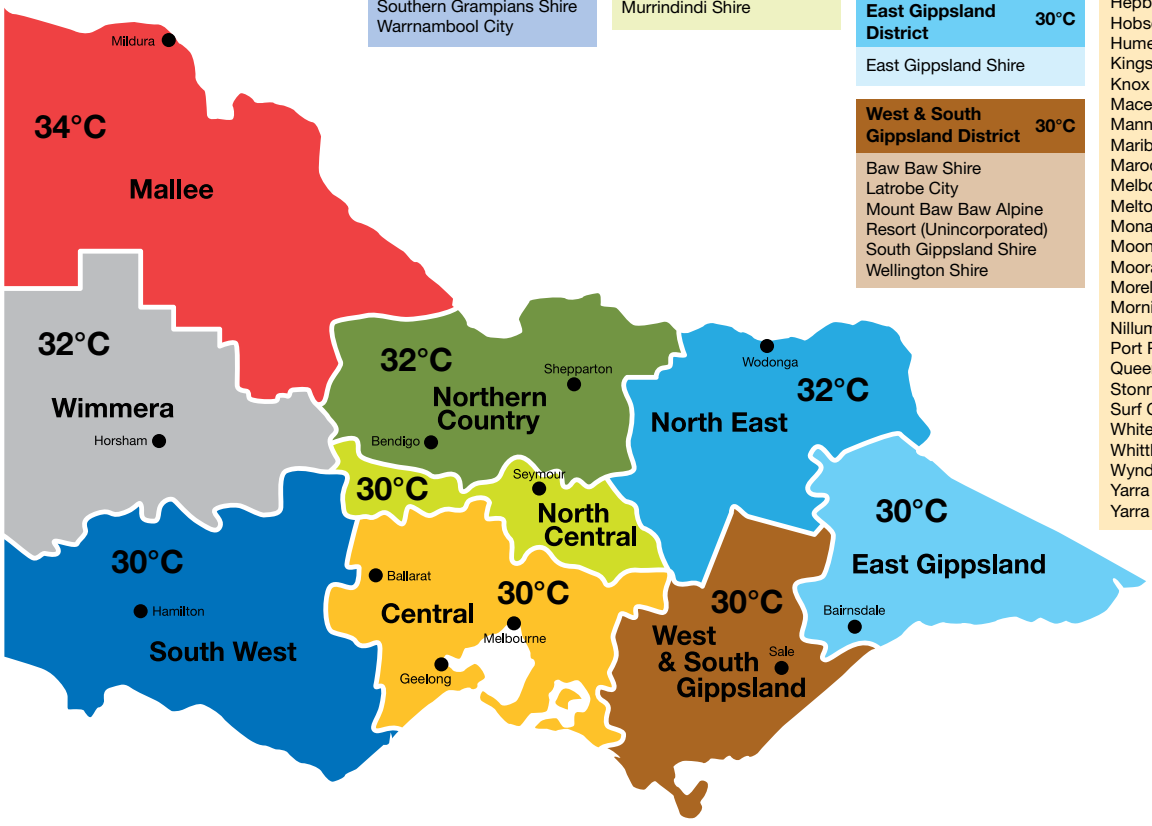
East Gippsland Shire

West & South Gippsland District 30°C

Baw Baw Shire
Latrobe City
Mount Baw Baw Alpine Resort (Unincorporated)
South Gippsland Shire
Wellington Shire

Central District 30°C

Ballarat City
Banyule City
Bass Coast Shire
Bayside City
Boroondara City
Brimbank City
Cardinia Shire
Casey City
Darebin City
Frankston City
French Island (Unincorporated)
Glen Eira City
Golden Plains Shire
Greater Dandenong City
Greater Geelong City
Hepburn Shire
Hobsons Bay City
Hume City
Kingston City
Knox City
Macedon Ranges Shire
Manningham City
Maribyrnong City
Maroondah City
Melbourne City
Melton Shire
Monash City
Moonee Valley City
Moorabool Shire
Moreland City
Mornington Peninsula Shire
Nillumbik Shire
Port Phillip City
Queenscliffe Borough
Stonnington City
Surf Coast Shire
Whitehorse City
Whittlesea City
Wyndham City
Yarra City
Yarra Ranges Shire



The heat health temperature thresholds are aligned with the Victorian Country Fire Authority's (CFA) total fire ban and fire danger ratings districts and the Bureau of Meteorology's weather forecast districts.

3 The effects of heat on health

3.1 Impacts of a heatwave

International and Australian experience shows that heatwaves increase the incidence of illness and death.

Heatwaves rarely occur in isolation. Infrastructure failure or other natural emergencies can add another level of demand on a community and services. For example, power outages will impact on people's ability to run air-conditioners; bushfires will increase vulnerability by reducing air quality; and public transport disruptions will hinder people's ability to reach a cooler location.

It is important to create greater community consciousness about the impacts of heatwave and particularly how to prepare and respond.

Australians are accustomed to living in hot weather and, as such, may be complacent about extreme heat events and may not believe they are susceptible to heat-related health impacts. A 2008 United Kingdom report into perceptions of heatwave risks based on interview studies of older people showed that few respondents considered themselves either old or at risk from the effects of heat, even though many had some form of relevant chronic illness; however, they did recognise that some medical conditions might increase risks in others (Abrahamson et al. 2008).

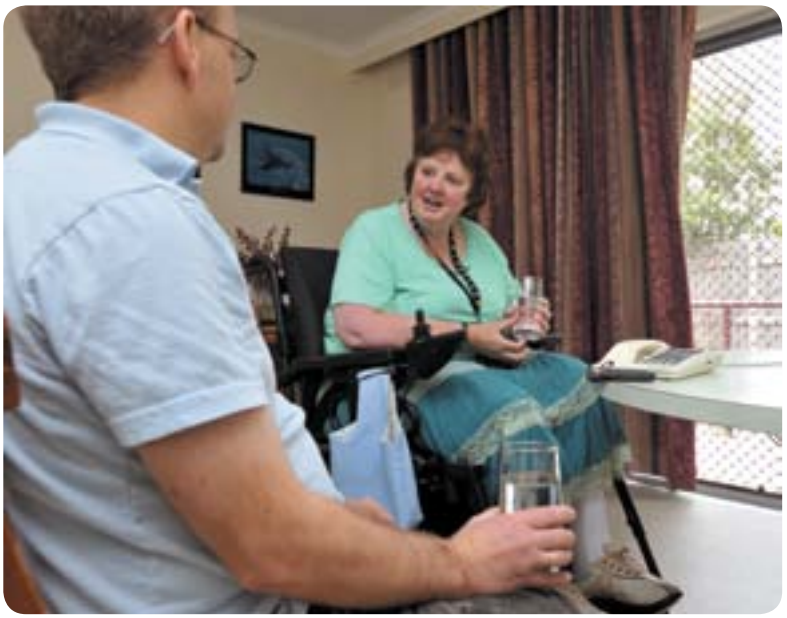
3.2 Heat-related health impacts

The most common causes of death seen during heatwaves are related to: cardiac conditions; asthma and other respiratory illness; kidney disease; diabetes; nervous system diseases; and cancer. According to the chief health officer's 2009 heatwave report, Ambulance Victoria experienced a 2.8-fold increase in cardiac arrest cases during the January 2009 heatwave compared with the same period in previous years.

Although heat-related illnesses such as heat cramps, heat exhaustion and heat stroke may occur in hot weather, other conditions are seen to occur far more commonly. These include:

- exacerbation of medical conditions including heart (cardiac) and kidney (renal) disease
- falls and confusion due to dehydration
- exacerbation of asthma and other respiratory illness
- gastroenteritis, mostly due to poor food handling.

(See section 9 for more information on the impacts of heat on health.)



4 People most affected by heat

Heatwaves can affect anybody and certain circumstances and behaviour can make people more susceptible to heatwaves.

However, there are some population groups that are more vulnerable to its effects than others due to factors such as their age, health, environment, social and economic circumstances, location or occupation.

In the context of climate change, vulnerability is the degree to which a community or an individual is susceptible to, or unable to cope with, the adverse effects of climatic changes. As such, vulnerability is a function of a community or individual's exposure to heatwaves and other climatic variables, their sensitivity to such changes and their ability to adapt.

The following people are likely to be most affected by heat:

- people aged over 65 years, especially those living alone
- people who have a medical condition such as heart disease, high blood pressure, diabetes, cancer or kidney disease
- people taking medications that may affect the way the body reacts to heat such as:
  - allergy medicines (antihistamines)
  - some blood pressure and heart medicines (beta-blockers and vasoconstrictors)
  - seizure medicines (anticonvulsants)
  - water pills (diuretics)
- people who have a mental illness, particularly those on medication (antidepressants or antipsychotics)
- people with problematic alcohol or other drug use such as amphetamines
- people with an illness or infection that causes dehydration or fever
- people with cognitive impairment who may not be able to identify or communicate their discomfort or need for water
- people who have trouble moving around (such as those who are bed bound or in wheelchairs)
- people who are overweight or obese
- pregnant women, breastfeeding mothers, babies and young children
- people who work or are physically active outdoors (such as gardeners and labourers).

Belonging to more than one at-risk group may further increase susceptibility to heat. However, protective factors such as the capacity to care for oneself and having access to a cool place, appropriate care and services reduce the risk of heat-related health impacts.

(See Appendix 1 for a more comprehensive list of people who can be affected by heat.)

5 Policy setting

Relevant policies

The Victorian Government has a legislative framework relevant to heatwaves. These include:

- *Public Health and Wellbeing Act 2008*
- *Emergency Management Act 1986*
- *Taking action for Victoria's future: Climate Change White Paper – The implementation plan*
- *Climate Change Act 2010*
- *Planning and Environment Act 1987*
- *Local Government Act 1989.*

The Public Health and Wellbeing Act strengthens the role of local government through the municipal public health planning process. The Act also requires local government to employ an environmental health officer (EHO), whose primary responsibility is to promote and protect the health and wellbeing of the community. The role of EHOs includes influencing, educating and supporting people to improve environmental and public health outcomes. EHOs have the skills and knowledge to identify and anticipate public health issues that can be applied to emergency management.

Guides that support local government to assist communities adapt to a hotter climate through their municipal public health planning include:

- *Climate change and health: A guide to relevant resources for planning*
- *Urban design and health: A guide to relevant resources for planning.*

The Emergency Management Act, along with the *Emergency management manual,* outlines Victoria's approach to managing an emergency in accordance with the 'all-hazards, all agencies' ethos. While heatwaves are not specifically mentioned, the same processes apply when heatwave becomes an emergency (see section 6.3).

This legislation outlines the responsibility of local government to protect public health in emergencies. Because they are the closest tier of government to local communities, councils have a central role in building community capacity and resilience to prepare and plan for, respond to and recover from emergencies.

Activities such as: engaging and educating communities; building community capacity and resilience; and fostering adaptability are central to both emergency management and climate change adaptation.

The *Climate Change White Paper – The implementation plan* acknowledges that local government is at the forefront of the response to climate change and is the critical link between national and state policies and the delivery of effective local action. The state recognises it has a role in supporting councils through new funding commitments through the Local Government Climate Communities Program and *Ready for tomorrow: A blueprint for rural and regional Victoria* in recognition that local councils need to plan and adapt to the changing climate and deliver effective climate change responses.

The Climate Change Act lays out guiding principles for the consideration of climate change issues as part of decision making across Victorian state and local government.

The Planning and Environment Act and Local Government Act are relevant to heatwave by ensuring building codes and the municipal strategic statement foster better urban planning that addresses climate change and promotes heat-proofing the built environment.

The *Our environment, our future sustainability action statement 2006* set out a whole-of-Victorian-Government policy that identified heatwave planning as a priority for state government departments and agencies. Furthermore, it specifically identified community and local government levels as the most appropriate setting for heatwave and emergency planning and responses.

In response to the action statement, the Department of Heath developed the *Victorian heatwave strategy* in 2007, which aimed to:

- provide a framework to support ongoing multi-agency and multi-sectoral heatwave preparedness and response across Victoria in order to minimise heat-related morbidity and mortality
- build the capacity of communities and individuals to self-manage their response to heatwaves
- raise awareness about the impact of heatwaves on illness and death
- develop a system to provide an appropriate level of coordinated support from health, community and emergency services
- commission research to better understand heatwaves
- assist local councils in developing and implementing heatwave plans.

The strategy laid the foundation for developing the *Heatwave plan for Victoria.*

The heatwave framework and evaluation

The Department of Health's heatwave framework comprises the *Heatwave plan for Victoria,* the *Heatwave planning guide,* the heat health alert system, the heat health information surveillance system and communication resources.

The department evaluated the effectiveness of the heatwave framework as part of a revision process. Findings and recommendations from the evaluation have been used to update the various components of the framework.

6 Victoria's heatwave actions

In Victoria there is no single agency responsible for building, maintaining and protecting the health outcomes of vulnerable population groups in a heatwave. Individuals, government and communities across Victoria need to work together to provide support for community members who are most vulnerable to the health impacts of heatwave.

Government and agencies provide a range of services to clients who have specific needs. These people include those identified as being vulnerable to multiple hazards, are geographically or socially isolated, are physically dependant or are unable to make independent decisions due to cognitive or other impairment.

The Victorian Department of Health works with local government and the health and community sector to raise community awareness about the health impacts of heat. The department also provides advice and communication resources to stakeholders to disseminate to their clients.

The department's regional offices utilise their local knowledge, relationships and departmental expertise to advise and support local governments in their region, particularly in relation to developing and revising heatwave plans. The regional offices actively engage with service providers in their region to disseminate information and heatwave communication resources.

In addition to working with local government, the department engages and consults with organisations and services that have direct contact or relationships with at-risk groups or their carers to understand current actions and systems in place to support these groups in a heatwave, and to disseminate communication resources.

These organisations include:

- Ambulance Victoria
- police and fire services
- hospitals, health services and public sector residential aged care services
- community providers such as pharmacies, general practitioners (GPs), community health services and the Royal District Nursing Service
- Home and Community Care (HACC) providers
- peak bodies and organisations that represent these groups such as General Practice Victoria, the Victorian Council of Social Service (VCOSS) and Municipal Association of Victoria (MAV).

(See Appendix 3 for a more comprehensive list of relevant organisations.)

6.1 Planning and preparing for summer

Victorian Department of Health

The Department of Health works with other government departments, departmental program areas, local government and service providers that provide information and services to at-risk groups and their carers in a heatwave to provide advice and support in a range of ways.

The department developed the ***Heatwave planning guide*** to assist local government to address heatwaves at a community level and provided funding and support to councils to develop their own heatwave plans.

The department will continue to provide guidance to councils in relation to regularly reviewing and revising their heatwave plans.

The department has developed a **heat health alert** system to notify other government departments, departmental program areas, hospitals, local government and service providers of forecast heatwave conditions that are likely to impact on human health.

The heat health alert is intended to notify recipients that average temperatures are predicted to reach or exceed heat health thresholds for that specific district. It is not intended to dictate when service providers take action or what actions they should take. Heat health alert recipients are advised to monitor local conditions and respond in accordance with their own heatwave plans, service continuity plans and occupational health and safety (OH&S) plans. The department will regularly update contact details of heat health alert recipients and ensure protocols are current and communicated to service providers and other stakeholders.

In preparation for summer, the department will prepare and disseminate **public health messages** and **communication resources** to stakeholders. The resources include a poster, brochure and fact sheet (all produced in English and 17 community languages), as well as a telephone script template for phone-based service providers.

The department will **contact and consult with stakeholders** to understand their heatwave response systems and assist in ensuring optimum integration with statewide efforts.

In relation to specific at-risk populations, the department has developed:

- a communication strategy to disseminate heat health resources tailored for a range of stakeholders to meet the needs of their clients
- a summer strategy for older Victorians to identify and respond to a range of events that generally occur during summer as well as ensuring service continuity during emergencies such as bushfires and heatwaves, with resources provided to all Victorian aged care services
- the *Guidance for service continuity for community care services in extreme heat conditions*, which outlines general principles of service continuity during a heatwave for community care service providers.

Working with other government departments, local government and agencies

To prepare for summer, local government is encouraged to review and update their heatwave plans using the *Heatwave planning guide* developed by the Department of Health, ensuring that it is ready for implementation in the event of a heatwave. Local government heatwave plans are incorporated into municipal planning processes, which enable planning for all hazards including heatwaves.

Local government and agencies are encouraged to activate their summer preparations, which may include preparing environments, ensuring appropriate staffing levels, and considering staff and client safety in hot weather. This might also include updating individual heatwave plans for clients and vulnerable client lists, as well as preparing a business continuity service plan.

The Department of Human Services' Housing and Community Building Branch offers the 'Keeping in Touch' program to public housing tenants aged 75 years and over. The program offers a weekly contact service for those eligible tenants who elect to take up the offer. As well as checking on their health and wellbeing, the weekly call will include a notification of hot weather expected and tips on keeping cool.

Department of Human Services' high-rise apartment buildings are equipped with electrical generators to operate core functions and elevators to ensure that tenants will be able to safely exit premises in the event of a power outage. The department has also identified and prepared community rooms within a number of housing complexes that can be maintained as cool places available to tenants during heatwave periods.

The Department of Human Services' Disability Services Division provides heat health information to community residential services for Victorians with disabilities. This includes conducting service sector forums to provide advice on managing clients and identifying planning implications to minimise the health impacts of a heatwave.

The Department of Health is working with Disability Services to develop communication resources suitable for people with cognitive impairment.

The Department of Planning and Community Development's Office of Senior Victorians (OSV) is responsible for the development and support of community registers, which provide social support by telephone for older people and those who may be isolated due to a disability. As part of regular telephone contact, community registers can provide clients with information regarding staying healthy in the heat. Victoria Police and councils support the day-to-day operation of these registers.

6.2 Issuing and responding to a heat health alert

Victorian Department of Health

When forecast temperatures are predicted to reach or exceed the heat health temperature thresholds, the department will issue a heat health alert notifying recipients of forecast heatwave conditions (see section 2.2 for the heat health temperature thresholds for the nine Victorian districts). The alert will be sent to departmental program areas, hospitals, local governments and health and community service providers.

High temperatures will also signal the release of public health messages to the broader community through media releases and interviews with the chief health officer and agencies such as Ambulance Victoria and the Bureau of Meteorology. These agencies have agreed to work with the department to provide consistent heat health messages.

The heat health alert will continue to be available on the department's website. The department may also use mainstream advertisements to target particular groups or provide heat health messages when extreme temperatures are expected.

The department will explore other options to provide the heat health alert to the community, such as through Really Simple Syndication (RSS) feeds.

Working with other government departments, local government and agencies

While the Department of Health will provide information and advice, the heat health alert advises departmental program areas, local government and service providers to continue monitoring local conditions and respond in accordance with local heatwave plans and operational protocols to ensure safe service provision and business continuity.

Service providers have a range of relationships with those who are most vulnerable and have actions and systems in place to support these people as well as established communication channels that may be used to share information regarding what to do in a heatwave.

Where indicated in their heatwave plans, local government and agencies such as Ambulance Victoria and the Bureau of Meteorology may instigate community messages through local media or their standard communication channels. Service providers and health professionals may also give clients messages verbally or by distributing community information resources.

6.3 When a heatwave becomes an emergency

It is unlikely that a heatwave alone will be the principal cause of an emergency. However, the impacts of some intense and prolonged heatwaves will require actions through municipal and state emergency management plans.

Circumstances that are likely to require such a response include:

- record-breaking or extreme heat events
- Code Red fire danger days
- power and public transport failures
- extreme demand on health services such as ambulances, hospitals and GPs.

The emergency management response in Victoria is detailed in the *Emergency management manual Victoria* (EMMV). The philosophy of the EMMV is one of prevention, preparedness, response and recovery. The prevention of emergencies or the lessening of their severity is a key concern in emergency management planning.

In a heatwave emergency, Victoria Police will be the control agency. As the impacts of heatwave may include infrastructure, such as electricity generation and distribution or transport failure as well as human health impacts, Victoria Police will play a key role in ensuring appropriate responses are being undertaken by responsible agencies such as health, infrastructure and transport.

The Health and Human Services State Emergency Management Centre (SEMC) provides the structure for the departments of Health and Human Services to deliver the following functions in an emergency:

- public health control
- health functional command
- recovery coordination.

The Victorian Health Emergency Coordination (VHEC) function of the SEMC has several key objectives:

- providing functional command and leadership to the health sector
- analysing the scope, status and likely impact of an emergency on the health and aged care sector
- facilitating the flow of information among its stakeholders
- facilitating resource management initiatives, as necessary.

The SEMC and VHEC functions are on standby at all times and can be activated at short notice in response to an emergency. Following notification of a heat health alert that could have potential for major public health consequences, services and agencies such as hospitals, residential aged care facilities and Ambulance Victoria will implement their plans and responses.

6.4 After an emergency-level heatwave

On the days following a heatwave, the department encourages stakeholders to consider the continued effects of heat on at-risk clients that may impact on their need for support.

The *State emergency recovery plan* details the recovery arrangements and systems that are 'all-hazards' focused to support impacted individuals, families, neighbourhoods and communities in the immediate and longer term after an emergency event.

The Department of Human Services leads the emergency recovery arrangements at state and regional levels, with local government coordinating recovery services at the local level.

In addition to the range of protective and preventive actions established for summer, systems for monitoring the impacts during extreme heat events contributes valuable data and knowledge to inform ongoing heatwave planning.

The Department of Health will use the heat health information surveillance system to track and provide regular reports on the human health impact of heatwaves over the summer by collecting and assessing morbidity and mortality data from a range of hospital, health and emergency services.

7 Communication resources and activity

A crucial step in building Victoria's capacity to cope with heatwaves is improving understanding of extreme heat conditions, the risks posed to human health and the steps individuals, communities and organisations can take to minimise these risks.

Accordingly, communication now aims to actively inform and educate people of the risks to human health posed by heatwaves and the actions that can be taken to minimise these risks.

The following four heat health messages will be used across a variety of formats and by a range of agencies:

- Look after yourself and keep in touch with others.
- Drink plenty of water (if your doctor normally limits your fluids, check how much to drink during hot weather).
- Keep cool.
- Stay out of the sun.

The heat health alert will trigger messages to the broader community through media releases and interviews with the chief health officer and agencies such as Ambulance Victoria and the Bureau of Meteorology. These agencies have agreed to deliver consistent heat health messages with the Department of Health throughout Victoria.

Councils have the opportunity to instigate community messages based on the four key heat health messages through local media or their standard communication channels. Service providers and health professionals may also give clients messages either verbally or by distributing community information resources.

Other summer messages

Government departments, emergency services and agencies provide a range of information and messages including Fire Ready, SunSmart and water conservation messages.

The department has consulted with these stakeholders to ensure heatwave messages are consistent with other summer messages.

The following public health messages will be communicated to the community verbally by service providers and through a range of communication resources (see section 7.3), advising people what they can do to stay healthy in the heat.

7.1 Primary public health messages

- Look after yourself and keep in touch with sick or frail friends, neighbours and relatives.
- Drink plenty of water, even if you do not feel thirsty (if your doctor normally limits your fluids, check how much to drink during hot weather).
- Keep yourself cool by using wet towels on your arms or neck, putting your feet in cool water and taking cool (not cold) showers.
- Spend as much time as possible in cool or air-conditioned buildings (for example, shopping centres, libraries, cinemas or community centres).
- Block out the sun during the day by closing curtains and blinds. Open windows when there is a cool breeze.
- Do not leave children, adults or animals in parked vehicles.
- Stay out of the sun during the hottest part of the day. If you must go out, stay in the shade and take plenty of water with you. Wear a hat and light-coloured, loose-fitting clothing.
- Eat smaller meals more often and eat cold meals such as salads. Make sure food that needs refrigeration is properly stored.
- Avoid strenuous activity like sport, home improvements and gardening.
- Watch or listen to news reports that provide more information during a heatwave.

7.2 Supporting public health messages

In addition to the communication resources, a range of secondary public health messages may be communicated that provide recommendations on preparatory and preventive actions people can take to further reduce risks presented by extreme heat conditions, and in the event of a power failure.

Preparing yourself for hot weather

- See your doctor and make sure your medical condition is as well controlled as possible.
- If your doctor normally limits your fluids, check how much to drink in hot weather.
- Improve your aerobic fitness.
- Lose excess weight.
- Undertake regular moderate exercise in warmer weather prior to severe hot weather to enable your body to adapt and cope better with hot weather.

Preparing for a heatwave

- Check that your fan or air-conditioner works well. Have your air-conditioner serviced if necessary.
- Stock up on food, water and medicines so you don't have to go out in a heatwave.
- Store medicine safely at the recommended temperature.
- Look at the things you can do to make your home cooler such as installing awnings, shade cloth or external blinds on the sides of the house facing the sun.

Preparing for a power failure

- Think about what you would do if a heatwave caused loss of electricity or disrupted public transport.
- Ensure you have a torch, fully charged mobile phone or a telephone that will work without electricity, battery-operated radio and sufficient batteries.

Pets

- Ensure your pets and animal companions are also well hydrated and have plenty of shade when they are outside.

7.3 Resources

Information is targeted directly at people most susceptible to heat-related impacts and also provided to individuals and organisations with a direct responsibility to care for these people. They are also distrubuted to others such as pharmacists and GPs, who have a broader health-care relationship with many Victorians most at risk during heatwaves.

7.4 Communication channels

Victoria has a range of established communication channels that may be used as mechanisms to communicate with people who are at risk of heat-related illness. Many of these channels are operated by health and community service providers such as GPs, pharmacies and Home and Community Care (HACC).

The Department of Health provides these organisations with information in relation to staying healthy in the heat for dissemination and discussion with clients.

The department has also developed a telephone script for services that provide services via telephone to assist in the delivery of consistent public heat health messages.

These services include:

- community registers
- Housing and Community Building Branch's 'Keeping in Touch' program
- Personal Alert Victoria
- council client lists
- Seniors Information Victoria.

8 Heatwave planning background

Chief health officer's 2009 heatwave report

An exceptional heatwave affected south-eastern Australia in late January 2009. The heatwave in Victoria was of unprecedented intensity and duration, with maximum temperatures 12–15°C above normal for much of Victoria. Melbourne endured three consecutive days of temperatures above 43°C. This was a period during which Victoria experienced the most extreme temperatures, with many records set for high day and night time temperatures, as well as for the duration of extreme heat.

The chief health officer released a detailed report called *January 2009 heatwave in Victoria: an assessment of health impacts,* which provided an analysis of the health impact of heatwaves.

Key findings of the chief health officer's report on the January 2009 Victorian heatwave

The report found there was:

- a 25 per cent increase in metropolitan Ambulance Victoria total emergency cases and a 46 per cent increase over the three hottest days
- a 34-fold increase in metropolitan Ambulance Victoria cases with direct heat-related conditions (61 per cent in those 75 years and older)
- a 12 per cent overall increase in emergency department presentations, with a greater proportion of acutely ill patients, and a 37 per cent increase in those aged 75 years and over
- an eightfold increase in direct heat-related emergency department presentations (46 per cent in those aged 75 years and older)
- an almost threefold increase in patients dead on arrival (69 per cent aged 75 years and older) at emergency departments
- 374 excess deaths over what would be expected: a 62 per cent increase in total all-cause mortality.

Climate change research

The Department of Health is working on further developing the existing evidence base around the impacts of climate change on human health and vulnerable populations. This evidence informs the department's work with stakeholders to encourage climate change adaptation activities in the community.

Specifically, the department has developed the Climate Change, Health and Vulnerabilities: Integrated Impact Assessment Methodology. The methodology enables the assessment of health impacts arising from climate change on Victorian communities, as well as the subpopulations that will be most affected. This information will help governments and organisations plan and prepare for the impacts of climate change on health, and help communities adapt.

Heat health education strategy for the health and community sectors

The Department of Health has made significant investment in research and strategies to better understand and adapt to the health impacts of heatwaves.

Health professionals and carers involved in frontline care are often best placed to identify vulnerable individuals and provide them with the information they need to protect their health from the effects of heat. However, research undertaken by Monash University in 2008 revealed a lack of understanding of heat-related illnesses among health professionals.

A strategy for heat health education for the health and community sectors has been developed that identifies:

- sectors of the health and community services workforce to be targeted for training
- training mechanisms and delivery modes that may be utilised or adapted for the various sectors
- recommendations to integrate the training into existing professional development structures, undergraduate courses or requirements for the various sectors of the workforce
- an implementation strategy.

The department is progressing towards implementing this strategy.

Local and international experience

Australian experience

Victoria is one of a number of Australian jurisdictions working proactively to manage the risk associated with extreme heat.

Australian states and territories are working with the Australian Government Department of Health and Ageing and Department of Climate Change and Energy Efficiency to determine the components of a national framework to deal with extreme heat events.

International experience

Heatwave planning is well advanced in Europe and the United States due to the heatwaves they experienced prior to the heatwave that occurred in south-eastern Australia in January 2009.

International experience and heatwave planning processes assisted in the development of the Victorian heatwave plan.

Combined international learnings, such as those from the World Health Organization, recommended general principles and core elements of heat health action plans, including:

- agreement on a lead body
- accurate and timely alert systems
- a heat-related health information plan
- a reduction in indoor heat exposure
- particular care for vulnerable population groups
- preparedness of the health and social care system
- long-term urban planning
- real-time surveillance and evaluation.

The World Health Organization has also published a resource: *Improving public health responses to extreme weather/Heatwaves – EuroHEAT,* which is available at <http://www.euro.who.int/__data/assets/pdf_file/0009/95913/E92473.pdf>.

9 Additional information on heatwaves and health

9.1 Urban heat islands

The 'urban heat island' (UHI) effect occurs in urbanised environments where built areas become warmer (particularly at night) than the surrounding rural areas. This is due to common construction materials absorbing and retaining more of the sun's heat (Loughnan, Nicholls & Tapper 2009). Metropolitan Melbourne regularly exhibits a distinct UHI effect (Morris & Simmonds 2000), as illustrated in Figure 2.

The graph illustrates Melbourne's heat island effect on night time temperatures in March 2006 and the variability due to urban form and development, rather than climate change. The UHI effect adds to the warming from heatwaves.

The form and intensity of the UHI varies both spatially and temporally depending on the local meteorological conditions, geography and urban development.

For this reason, many people who live in regional areas believe they are less susceptible to heat-related illnesses, which is not the reality. There are many factors that affect an individual's ability to cope in extreme hot conditions including health, demographic profile and regular contact with people.

9.2 How the human body is affected by heat

Regulation of body temperature

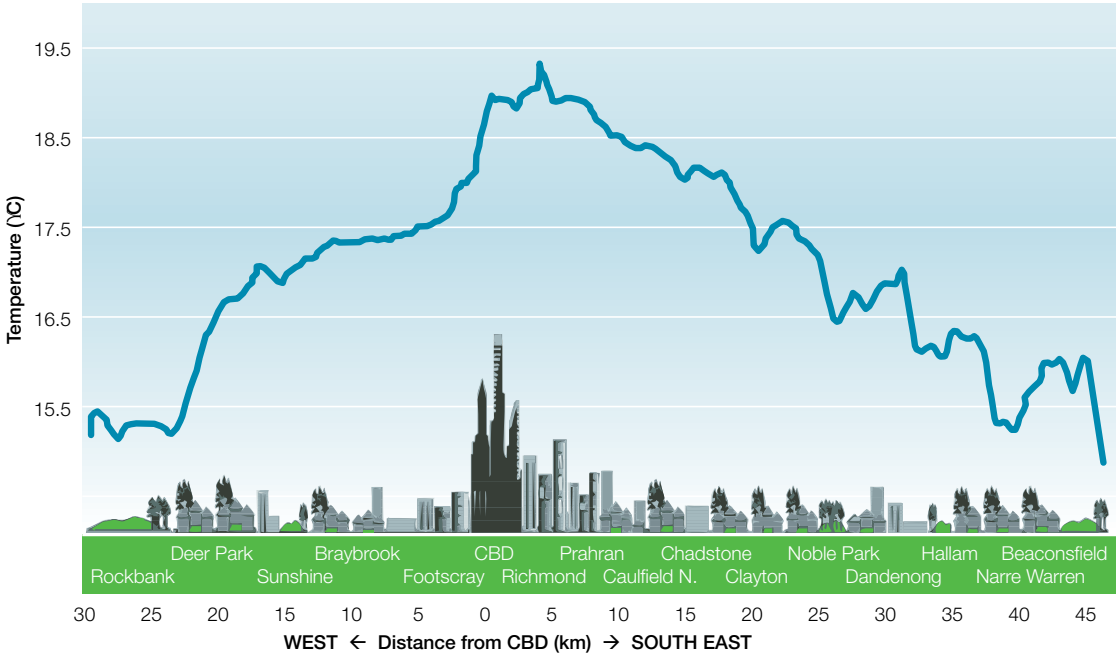
Sweating reduces body temperature by evaporative cooling. Even when the body sweats to its maximum capacity, the body may still gain more heat than it can lose. This leads to a rise in body temperature. An excessive rise in core body temperature affects the brain's ability to control body temperature, resulting in a decrease in sweating.

For optimum bodily functioning, body temperature needs to remain within a narrow range. Normally, body temperature varies over the course of the day.

The human body generates heat from muscle activity and metabolising food. During exercise, heat production can increase 10-fold and raise core body temperature. The body can lose heat to the environment in cooler circumstances and gain heat from hot surroundings.

The temperature of the skin determines heat loss or gain. Skin temperature is determined by the flow of blood to the skin. Evaporation of sweat from the surface of the skin, and in small amounts of water from breathing, urine

Figure 2: Spatial variability of the Melbourne urban heat island (1 am, 23 March 2006)



Source: Coutts, Beringer & Tapper 2010

and waste products, contribute to cooling the body. When the environment is hot, sweating is the only means by which the body can lose heat. It is possible to sweat up to 1,600 millilitres per hour and up to 15 litres per day. More humid environments make it more difficult for sweat to evaporate and cool the body.

In a hot environment:

- the skin becomes flushed as blood vessels open
- sweating increases
- breathing is more rapid
- the appetite is suppressed automatically by the brain to reduce heat from the metabolism of food
- individuals become lethargic to reduce heat-producing muscle activity.

Important factors contributing to regulation of body temperature in hot environments include:

- fatty tissue conducting heat poorly, leading to greater heat build-up for obese people
- heat from the skin may be trapped by excessive layers or thick clothing
- the rate of heat loss is increased by wind or fanning
- water conducting heat away from the body better than air.

Regular exercise in warm weather increases the efficiency of sweating and aerobic fitness and is a longer term way to improve the body's ability to adapt to extreme heat events. This in turn improves people's tolerance to high temperatures and is considered an effective longer term way for people to acclimatise themselves for hotter conditions.

Dehydration

Exercise in a hot environment frequently results in dehydration because thirst does not match all fluids lost by sweating. Even mild dehydration is associated with increased risk of injury, heat stress illness and poorer performance of complex tasks.

Mild to moderate dehydration increases work for the heart. It also reduces fluid available for sweating, circulating to extremities or flushing the kidneys.

9.3 Heat-related illness

Heat-related illness occurs when the body is unable to adequately cool itself. Heat-related illness can range from mild conditions, such as a rash or cramps, to very serious conditions, such as heat stroke, which may be fatal. Prevention is the best way to manage heat-related illness.

Heat cramps are muscle pains or spasms, usually in the abdomen, arms or legs. They may occur as a result of strenuous activity in a hot environment because the loss of salt in sweat affects muscle relaxation. Heat cramps may also be a symptom of heat exhaustion.

Heat exhaustion is a serious condition that can develop into heat stroke. It occurs as result of dehydration, with poor blood flow affecting the brain and heart. Warning signs may include:

- pale complexion and sweating
- rapid heart rate
- muscle cramps and weakness
- dizziness and headache
- nausea and vomiting
- fainting.

Heat stroke occurs when the body is unable to control its core temperature and prevent the temperature rising rapidly. Widespread organ injury may occur, but the immediate effects are usually seen in the brain with unconsciousness, fits, altered behaviour, confusion or symptoms of cerebrovascular stroke. The symptoms may appear the same as for heat exhaustion, but the skin may be dry with no sweating and the person's mental condition worsens. They may stagger, appear confused, have a seizure, appear to have a stroke or collapse and become unconscious. This is a life-threatening emergency.

Table 1: Heat-related illness

Illness	Symptoms	What to do
Heat cramps	• Muscle pains • Spasms in the abdomen, arms or legs	• Stop activity and sit quietly in a cool place • Increase fluid intake • Rest a few hours before returning to activity • Seek medical help if cramps persist
Heat exhaustion	• Pale complexion and sweating • Rapid heart rate • Muscle cramps, weakness • Dizziness, headache • Nausea, vomiting • Fainting	• Get the person to a cool area and lie them down • Remove outer clothing • Wet skin with cool water or wet cloths • Seek medical advice
Heat stroke (a life-threatening emergency)	• Same symptoms as heat exhaustion • Dry skin with no sweating • Mental condition worsens, confusion • Seizure • Appear to have a stroke or collapse • Unconsciousness	• Call an ambulance • Get the person to a cool area and lie them down • Remove clothing • Wet the skin with water, fanning continuously • Position an unconscious person on their side and clear their airway

Appendix 1: People affected by heat

Heatwaves can affect anybody. The following population groups may be susceptible to heat-related illness:

- people aged over 65 years, especially those living alone
- people who have a medical condition such as heart disease, high blood pressure, diabetes, cancer or kidney disease
- people taking medications that may affect the way the body reacts to heat such as:
  - allergy medicines (antihistamines)
  - some blood pressure and heart medicines (beta-blockers and vasoconstrictors)
  - seizure medicines (anticonvulsants)
  - thyroid medications (thyroxine)
  - water pills (diuretics)
- people who have a mental illness, particularly those on medication (antidepressants or antipsychotics)
- people with problematic alcohol or other drug use such as amphetamines
- people with an illness or infection that causes dehydration or fever
- people with cognitive impairment who may not be able to identify or communicate their discomfort or need for water
- people who have trouble moving around (such as those who are bed bound or in wheelchairs)
- people who are overweight or obese
- pregnant women, breastfeeding mothers, babies and young children
- people who work in hot environments or are physically active outdoors (such as gardeners and labourers)
- people with health conditions that impair sweating including people with heart disease, dehydration, extremes of age, skin disorders (including sunburn, prickly heat and extensive scarring from burns), congenital impairment of sweating, cystic fibrosis, quadriplegia and scleroderma
- people who are unable to acclimatise
- homeless people
- people who are dehydrated
- people of low socioeconomic status
- people who live alone or socially isolated
- people with low cardiovascular fitness
- non-English speaking people who may not be able to understand heatwave announcements or have reduced access to appropriate health or support services.

Appendix 2: Heat health alert distribution and provision of guidance

The heat health alerts will be disseminated to state and Commonwealth government departments, departmental program areas, hospitals, local government, health and community service providers and peak bodies.

The alerts will contain information based on the most up-to-date forecasts and will be tailored to include specific details for that event. An electronic copy of the *Staying healthy in the heat* brochure will be attached to any alerts issued by email.

The alerts will be issued through the department's Requests & Incidents Emergency Management System (RIEMS) as an email and, in extreme circumstances, the system has the capacity to issue alerts by SMS.

The heat health alerts will also be made available from the department's website as a downloadable file and through subscription to a Really Simple Syndication (RSS) feed, which is a mechanism for organisations or individuals to subscribe to receive heat health alerts.

Appendix 3: Government and agencies

The following list includes government departments, program areas and agencies that advise and/or provide support to at-risk Victorians in relation to heatwave.

Department of Health program areas and services

Acute health

Aged care

Ambulance and emergency programs

Better Health Channel

Community health services

Health emergency management

Health Prevention and Population Health

Health Protection

Home and Community Care (HACC)

Mental health and drugs

Rural health

Rural regions

Subacute services

Other government departments, local government and agencies

Aged and Community Care Victoria (ACCV)

Ambulance Victoria

Australian Government Department of Health and Ageing

Australian Red Cross

Bureau of Meteorology

Country Fire Authority (CFA)

Department of Education and Early Childhood Development, Maternal and Child Health

Department of Human Services, Child Protection, Family and Early Parenting Services

Department of Human Services, Disability Services

Department of Human Services, Housing and Community Building

Department of Planning and Community Development, Office of Senior Victorians

Fire Services Commissioner

General practitioners

Health and Human Services Emergency Management – departments of Health and Human Services

Hospitals and health services

Information Victoria

KidSafe

Local government (peak body: Municipal Association of Victoria)

NURSE-ON-CALL

Office of the Emergency Services Commissioner

Personal Alert Victoria

Pharmacists (peak bodies: Pharmacy Guild Australia and Pharmaceutical Society of Australia)

Royal District Nursing Service

Seniors Information Victoria

The Victoria State Emergency Service

Victoria Police

Victorian Council of Social Service (VCOSS)

WorkSafe

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