

Heatwave Guide for Local Government in South Australia

**A guide for Local Government
to prepare for, respond to and
recover from heatwaves.**

Acknowledgements

This Guide has been prepared by the LGA to support councils in their provision of emergency management services. It has been prepared with reference to the Local Government Emergency Management Framework¹.

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1 Introduction

Heatwaves have caused more deaths than any other type of natural disaster¹. During a heatwave, everyone is at risk of heat-related illness.

Councils need to consider the potential for heatwaves to impact the community, disrupt services and operations and the community members that use them, impact the health and safety of outdoor workers, and have adverse impacts on the condition of infrastructure.

During days of extreme heat, demand for community services can change as people seek suitable activities or facilities. Increases in visitation to public swimming pools or libraries are often experienced. At the same time, some services may be limited or reduced. On days of extreme heat, councils may decide to cancel community bus services to minimise health and safety risks, reduce outdoor maintenance work or cancel community events.

Days of extreme heat in summer often coincide with days of high fire danger. Many councils in South Australia reduce or postpone community services such as waste collection or road maintenance on catastrophic fire days.

Climate change is causing heatwaves to be longer, hotter and more frequent². January 2019 was the hottest January on record, including the hottest day on record in many South Australia towns on January 24. 2019 had a record 18 days with a maximum temperature over 40°C in Adelaide (Kent Town)³.

As the climate changes and heatwaves become longer and hotter it will become harder for councils to meet current community expectations relating to service delivery and facilities operation unless climate and heat risks are taken into account and Processes are adjusted. Heatwaves affect people, assets and the environment and addressing heat-related risks requires an integrated whole-of-council approach.

¹ Coates L, Haynes K, O'Brien J, McAneney J and de Oliveira FD. 2014. Exploring 167 years of vulnerability: an examination of extreme heat events in Australia 1844–2010. *Environmental Science & Policy*. 42:33–44. <https://www.sciencedirect.com/science/article/pii/S1462901114000999>

² Climate Council, 2020, *Hottest of the Hot: Extreme Heat in Australia*, <https://www.climatecouncil.org.au/resources/hottest-of-the-hot-extreme-heat-in-australia>

³ Bureau of Meteorology, 2020, Daily maximum temperature (Kent Town), <http://www.bom.gov.au/climate/data/index.shtml>

2 Purpose of the heatwave guide

Introduction

This guide provides information to help councils understand what they can do to help look after their communities, their staff and their assets before, during and after a heatwave.

It is not intended to be prescriptive, provide all the answers or replace the need for councils to develop their own tailored heatwave plans and arrangements.

It contains suggestions to support councils consider heatwaves during planning and operational tasks. It provides key references to guide input and provide further detail.

Many councils use slightly different terminology and responsibilities for heatwave-related responses lie in different functional areas. This guide refers to generic council functions noting that not all issues will be relevant to all councils. Councils should use this guide considering their local community, local environment and organisation and how their unique or different circumstances may influence the decisions they make.

This guide has been prepared in two parts.

Part 1 – heatwaves, warnings and emergency management provides an overview of related roles and responsibilities, heatwaves impacts, climate change considerations and the heatwave warning system introduced in 2019.

Part 2 – heatwave guidance provides key considerations for councils focusing on preparing for, responding to and recovering from heatwaves. This part provides guidance across a range of generic council functions.

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Part 1 – Heatwaves, warnings and emergency management

3 What is a heatwave?

A heatwave is three or more consecutive days of high maximum and high minimum temperatures that are unusual for that location⁴.

The minimum temperature is important as starting from a high minimum will result in earlier and unusually prolonged high maximum temperatures, increasing the impact of a heatwave.

This objective definition for heatwaves has recently been developed by the bureau of meteorology (BoM). Heatwaves are calculated using the forecast maximum and minimum temperatures over the next three days, comparing this to actual temperatures

over the previous thirty days, and then comparing these same three days to the 'normal' temperatures expected for that location. This provides a value called the excess heat factor⁵.

There is no temperature maximum that defines 'extreme heat'. Extreme heat refers to unusually hot temperatures in any location. A single day of extreme heat will have an impact and this impact escalates with successive days of high temperatures.

What is the excess heat factor?

The excess heat factor (EHF) is a measure of heatwave intensity that considers for each location how hot a three-day period is compared to the long-term record and how hot it is compared to the previous 30 days⁶.

Using this calculation considers people's ability to adapt to the heat. For example, the same high temperature will be felt differently by residents in Coober Pedy compared to those in Mount Gambier, who are not used to the higher range of temperatures experienced in Coober Pedy.

This means that in any one location, temperatures that meet the criteria for a heatwave at the end of summer will generally be hotter than the temperatures that meet the criteria for a heatwave at the beginning of summer.

A heatwave day is any day when the EHF is positive, and three levels of severity are defined as described in Table 1 (below).

⁴Bureau of Meteorology (2019) *About the Heatwave Service*, What is a heatwave?

<http://www.bom.gov.au/australia/heatwave/about.shtml>

⁵ BoM (2010) *About the Heatwave Service*, How do know a heatwave is coming?

<http://media.bom.gov.au/social/blog/891/how-will-i-know-if-a-heatwave-is-coming/>

⁶ Nairn and Fawcett (2015) The Excess Heat Factor: A Metric for Heatwave Intensity and Its Use in Classifying Heatwave Severity, *Int. J. Environ. Res. Public Health* 2015, 12, 227-253

https://www.researchgate.net/figure/Excess-Heat-Factor-EHF-intensity-and-severity-calculated-for-the-observation-period_tbl1_328830435

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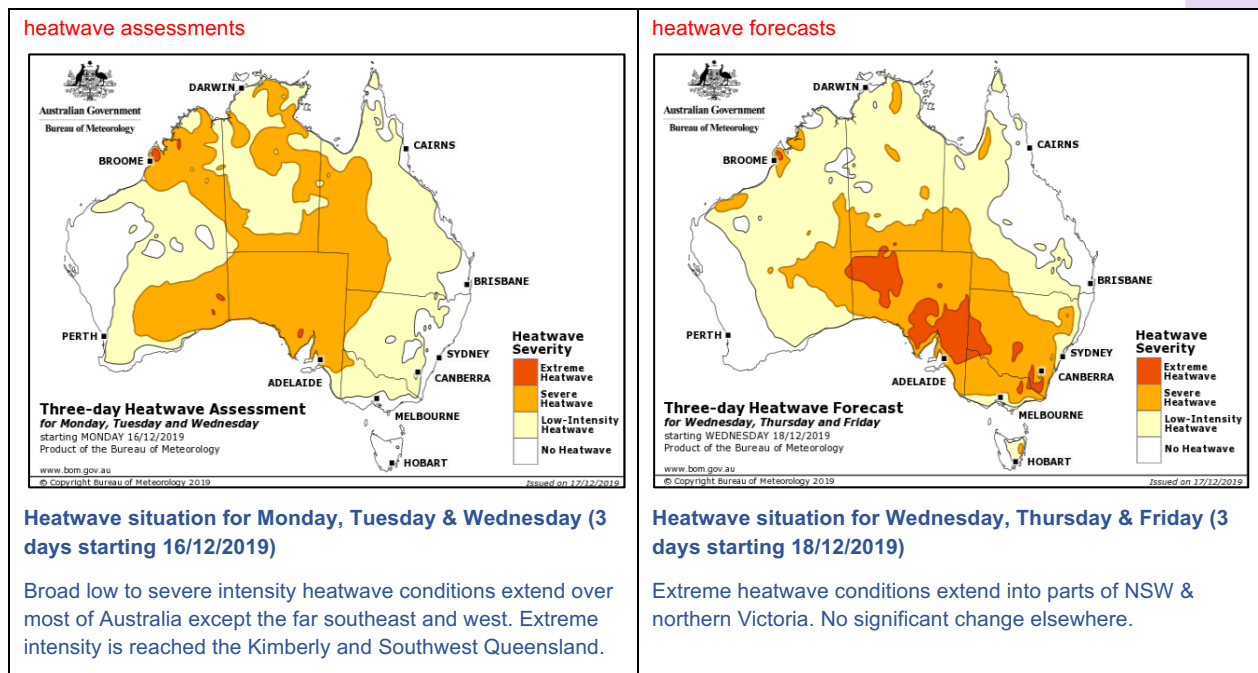
Table 1 Heatwave classification

Heatwave type	Heat impression	Frequency	Impact
Low intensity heatwave	Accumulated heat associated with a normal hot summer.	Most heatwaves	Most people can cope well but health effects may be experienced by the very young, elderly or those with medical conditions.
Severe heatwave	Unusual build up in heat. Authorities are issuing public warnings.	Less frequent	Increased health risks for vulnerable groups, especially the elderly, pregnant women, babies and young children, and those with chronic illness (e.g. Renal disease, ischaemic heart disease).
Extreme heatwave	Exceptional heat. Night and day temperatures records are falling.	Rare	Dangerous for anyone who does not take precautions to keep cool, even those who are healthy. People who work or exercise outdoors are particularly at risk. The reliability of infrastructure, such as power and transport can also be affected.

The national heatwave service is a BoM product which operates from the start of November to the end of March. Heatwaves forecasts are routinely issued at approximately 4pm (16:00) each day during summer.

Heatwave assessment maps show the conditions for the previous two three-day periods. Heatwave forecast maps show the projected conditions for the next five three-day periods.

The following figures show an example of one heatwave assessment map and two heatwave forecast maps issued by the BoM on 18 December 2019.



For more information

more information about heatwaves and their classification can be found on the BoM website <http://www.bom.gov.au/australia/heatwave/about.shtml>

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4 Heatwave warnings

Heatwave warnings are issued by the South Australia State Emergency Service (SES) as the hazard leader and control agency for extreme weather.

A new system of heatwave warnings has been developed by the SES based on the improved heatwave forecasting system developed by the BoM and follows national warning protocols.

Table 2 describes heatwave types, associated warnings and potential community impacts

Table 2 heatwave classification, impacts and warnings

Heatwave type	Warning	Purpose of warning message
Low intensity heatwave	Advice	Inform the public about a heatwave that may pose a threat to public safety, property or events.
Severe heatwave	Watch and act	Incidents that pose a localised threat to public safety. Support people to be aware of their situation, and circumstances around them and to take action to prepare and protect themselves, their family and neighbours.
Extreme heatwave	Emergency warning	The highest level of warning. Issued when there is risk of loss of life or threat to properties is almost certain or has occurred.

warnings are provided for each of the 15 weather districts defined by the BoM following the release of the BoM heatwave forecasts. District advice is published on the SES website


<https://www.ses.sa.gov.au/site/heat.jsp> and shared on social media

Note – these warnings are issued as public safety and are not designed as workplace safety advice (refer section 0)

The local government functional service group (LGFSG) will amplify heatwave warnings issued by the SES and BoM, however it is important for councils to ensure they remain situationally aware during heatwaves including receiving the heatwave warnings direct from the SES and BoM.

The LGFSG will issue notices based on the warnings to amplify the messaging and also to ensure councils are aware of the reporting requirements of the LGFSG. LGFSG notices are specifically designed to inform councils and are not designed as public warnings.

Heatwave warning shared by SES on Facebook – December 2019


SA State Emergency Service
5 mins · 🌐

SES State Heatwave Summary

Extreme heatwave conditions have been forecast by the Bureau of Meteorology for the Adelaide Metropolitan, Mount Lofty Ranges, Riverland, Murraylands, Mid North, Flinders, West Coast, Eastern Eyre Peninsula, Lower Eyre Peninsula and North West Pastoral districts for Thursday, 19 December 2019. Extreme heatwaves are dangerous for anyone who doesn't take precautions to keep cool, even those who are fit and healthy. People who work or exercise outdoors are particularly at risk.

Severe heatwave conditions have been forecast for the Yorke Peninsula, Kangaroo Island, Upper South East, Lower South East and North East Pastoral districts as well. Severe heatwaves are especially challenging for babies and young children, the elderly, pregnant women and those who are already unwell, but even healthy people should take care.

For more info, visit our website.
<https://ses.sa.gov.au/site/heat.jsp>

Forecast District	Heatwave Forecast
Adelaide Metropolitan	Extreme
Mount Lofty Ranges	Extreme
Yorke Peninsula	Severe
Kangaroo Island	Severe
Upper South East	Severe
Lower South East	Severe
Riverland	Extreme
Murraylands	Extreme
Mid North	Extreme
Flinders	Extreme
West Coast	Extreme
Eastern Eyre Peninsula	Extreme
Lower Eyre Peninsula	Extreme
North West Pastoral	Extreme
North East Pastoral	Severe

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5 Climate change and heatwaves

Across all of South Australia the frequency of very hot days will continue to increase, and heatwaves are projected to get longer, hotter and more frequent.

The Climate Change in Australia (CSIRO and Bureau of Meteorology) 2015 projections for South Australia include a substantial increase in the maximum temperatures on very hot days, the frequency of hot days and the duration of warm spells (unseasonal warm conditions)⁷. In other words, heatwaves are projected to be hotter, longer and more frequent.

These changes are already being felt. Analysis undertaken in 2014 found that:⁸

- The number of heatwaves days is increasing
- Heatwaves are occurring more frequently
- The duration of the longest yearly heatwave is increasing
- The first heatwave of the season is occurring earlier
- The hottest day of a heatwave is becoming hotter – the peak day in Adelaide was on average 4.3°C higher in 1981–2011 than it was in 1950–1980.

Since 2014 numerous heat records have been broken and broken again. January 2019 and December 2019 were the hottest January and December on record. South Australia as a whole had its hottest day on record on 19 December 2019 when it reached 47.1°C, exceeding the previous record of 45.7 °C on 24 January 2019.

In 2019 Adelaide experienced 17 days over 40°C.

Climate change in Australia projects that by 2050 (under a high emissions scenario), the frequency of days over 40°C will nearly double for most of South Australia compared to the baseline period (1981–2010). In Port Augusta this means that there will be 23 days per year over 40°C compared to 13 days for the baseline period. For Adelaide, it is projected there will be 6 compared to nearly 3 for the baseline⁹.

In the last decade (2010 – 2019) there have been an average of more than 7 days a year over 40°C in Adelaide, indicating the rate of increase of very hot days is greater than projected. Further modelling and analysis is required to determine if this higher rate of change will continue. However, it is possible that the frequency of very hot days will continue to change at a faster rate than indicated by the projections.

Heatwaves interact with other climate variables, including drought and bushfires. Drought can exacerbate hot conditions, while hot conditions can exacerbate drought and heatwaves are likely to contribute to greater bushfire activity¹⁰. South Australia is projected to experience more time in drought and more days of dangerous fire weather. Cumulative and subsequent extreme weather events are likely to increase.

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⁷ Hope, P. et al. 2015, *Southern and South-Western Flatlands Cluster Report*, Climate Change in Australia Projections for Australia's Natural Resource Management Regions: Cluster Reports, eds. Ekstrom, M. et al., CSIRO and Bureau of Meteorology, Australia.

⁸ Climate Council (2014) *Heatwaves: Hotter, Longer, More Often*.
<https://www.climatecouncil.org.au/resources/heatwaves-report/>

⁹ Hope P, et al 2015.

¹⁰ Climate Council (2014)

6 Heatwave impacts

Heatwaves have significant direct impacts on health and wellbeing, infrastructure, primary production and the natural environment. Every heatwave will be different, have local differences and have different impacts on people and the environment.

The effect of heat on the community, infrastructure and services is cumulative¹¹. A single day of extreme heat can have an impact and this impact escalates with successive days of high temperatures.

Heatwaves also cause numerous flow-on or indirect impacts on communities and the economy illustrated in the figure below. Interactions with other extreme weather events such as drought, storms and bushfire can exacerbate impacts

DIRECT IMPACTS

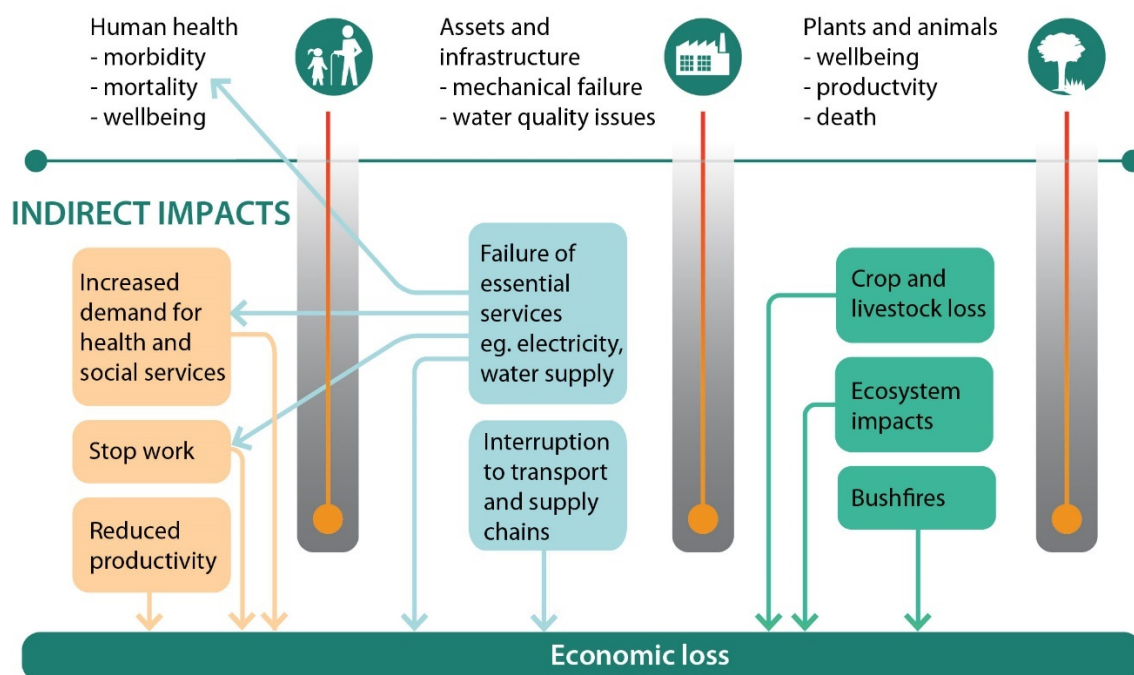


Figure 1 Direct and indirect heatwave impacts (adapted from NCCARF, 2016¹²)

¹¹ South Australia State Emergency Service (2015) *Extreme Heat Hazard Plan*, October 2015.

¹² NCCARF (2016) *Synthesis Summary 1: Heat and heatwaves*

https://www.nccarf.edu.au/sites/default/files/attached_files/Synthesis%20Summary_Heatwaves_web.pdf

6.1 Health and wellbeing impacts

Extreme heat events have caused more deaths in Australia than any other climate hazard¹³.

Extreme heat can lead to dehydration, heat exhaustion and heat stroke. Heatstroke can cause severe and permanent damage to vital organs, can result in permanent disability and even death.

Extreme heat can affect everyone, but some people are more at risk due to their health, age, socio-economic status or employment. Individuals in the following groups are most at risk:

- Older adults, pregnant women, infants and young children
- People who are obese or overweight
- People with chronic illnesses (in particular heart, respiratory, renal and mental health conditions)
- People with limited physical mobility
- People who take certain medications that may affect how the body reacts to heat
- People from culturally and linguistically diverse communities

- Homeless people and low-income earners
- People who work outdoors or in the heat
- People without air conditioning or who decide not to use it
- People living on the top floor of multi-storey buildings
- People who are socially isolated

In addition to the direct impacts on human health, increasing emergency hospital admissions place the health system under increase pressure. Higher air temperatures can increase the risk of salmonella and other bacteria-related food poisoning, with food safety risks increasing if power outages interrupt refrigeration. Extreme heat events may also exacerbate air quality issues, such as pollution from bushfires, car exhausts and industrial fumes. The risk of drowning can also increase as more people engage in water-based recreational activities.

More information on heatwave health impacts can be found on the SA Health website [healthy in the heat](#).

6.2 Infrastructure impacts

Electricity, transport and water infrastructure are particularly affected by extreme heat.

Heatwaves can cause damage or failure of electricity transmission and distribution infrastructure, causing loss of power. This can reduce people's ability to keep cool due to lack of air conditioning and can be a major cause of business shut-down during heatwaves.

Damage to road and rail infrastructure including buckling of rail lines and bitumen melt can lead to disruptions to transport systems.

Air transport can also be affected as extreme temperatures may require reduced take-off weight, higher take-off speed or longer runway length.

Longer periods of hot weather can increase the risk of algal growth in water bodies, posing risks to human health.

These impacts will have flow-on effects on community health and wellbeing, business productivity and continuity and the provision of local government services.

During heatwaves, routine council asset and infrastructure maintenance works may be cancelled or postponed as temperatures restrict safe work hours or councils attend to emerging problems and customer requests. This can create a backlog for service delivery, impacting councils' ability to maintain service levels.

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¹³ PricewaterhouseCoopers Australia (PwC), 2011. *Protecting human health and safety during severe and extreme heat events - A national framework*, prepared by PwC in collaboration with the Australian Government (through the Department of Climate Change and Energy and Efficiency), <http://www.pwc.com.au/industry/government/assets/extreme-heat-events-nov11.pdf>.

6.3 Plant and animal impacts

Heatwaves can have significant impacts on plants and animals including native species, pets, agriculture and fisheries. Heatwaves can reduce agricultural crop yields and affect livestock health and productivity. Fruit exposed to high heat can be physically damaged and have a shorter shelf life. Grapes can shrivel or be sunburnt and sugar content can rise rapidly, impacting wine quality.

Animals are particularly vulnerable to the effects of heatwaves. Many animals cannot shed their coats when they become hot and their various cooling mechanisms are

somewhat limited, compared with those of people. Heat-related mass mortality can occur in some animal species. In the January 2019 heatwave, at least 1500 flying foxes died in the City of Adelaide and a chicken farm in the Adelaide hills saw more than half of its flock of 2,000 birds die¹⁴.

Increasing marine heatwaves can reduce kelp and seagrass health and cover and fisheries health and productivity. Freshwater fish can be impacted during heatwaves by reduced oxygen and algal blooms.

Drying conditions and extreme heat increase bushfire risk.

Flying Foxes and Extreme Heat

Grey-headed flying foxes are threatened native species that started to arrive in South Australia about 10 years ago. In the City of Adelaide, a flying fox colony near the Adelaide Zoo is home to about 20,000 bats.

Flying foxes are extremely sensitive to heat and rely on natural cooling behaviours including wing-fanning, clustering in cooler areas, panting and wrist licking. At extreme temperatures these become less effective and temperatures exceeding 42°C can kill flying foxes.



During the heatwaves in December 2019 and January 2020, around 10,000 flying foxes in the Adelaide Zoo colony died, most of these juveniles and their mothers. Bats can carry a range of serious diseases so removing dead foxes and managing the waste is of critical importance.

Over summer, the City of Adelaide installed ground-based sprinklers to reduce heat and implemented a program to irrigate around the colony when temperatures exceed 40°C. SA Water monitored air temperature on an extreme heat day in November 2019 and reported a heat reduction of between two and seven degrees where the sprinklers were being used. The sprinklers can't be left on all day and so the City of Adelaide is planning to install a misting system before next summer. As this system will use less water, it will be able to be operational all day on very hot days and hopefully better cool the colony.

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¹⁴ Evans, B, 2019, Adelaide's extreme heat kills thousands of chickens and bats, *ABC News*, 29 January 2019, [https://www.abc.net.au/news/2019-01-](https://www.abc.net.au/news/2019-01-27/adelaide-heatwave-kills-thousands-of-bats-and-chickens/10753248)

[27/adelaide-heatwave-kills-thousands-of-bats-and-chickens/10753248](https://www.abc.net.au/news/2019-01-27/adelaide-heatwave-kills-thousands-of-bats-and-chickens/10753248)

7 Local government roles and responsibilities

Emergency management is a shared responsibility.

Playing our part means that local government is proactively contributing to emergency management and doing so in a coordinated way that is well integrated with local, regional and state

arrangements. It also requires councils to work closely with individuals, households, communities, service organisations and businesses.

7.1 Legislative responsibilities

As a service provider, landowner, employer and asset manager, councils

have responsibilities to consider risks and take appropriate risk mitigation actions. Key legislative drivers are summarised in matters related to health care and emergency management, the table includes only South Australia legislation.

Table 3. As Australian states and territories have primary responsibility for

Table 3 Summary of legislative responsibilities

Legislation	Relevance to local government
Emergency Management Act 2004	Provides the legislative framework for managing emergencies in South Australia. Articulates key elements of the state emergency management arrangements and prescribes the development of the state emergency management plan (see below).
Local Government Act 1999	<p>Outlines responsibilities for councils to consider risks including emergency risks, including to:</p> <ul style="list-style-type: none"> • Make informed decisions (section 6) - this means taking account of readily available information (such as climate risk data and climate projections) when making decisions. • Take measures to protect their area from hazards (section 7) – this means recognising climate and heatwave risks to councils, communities and businesses and providing support to prepare, respond and recover.
South Australia Public Health Act 2011	Requires councils to prepare public health plans consistent with the State Public Health Plan.
Planning, Development and Infrastructure Act 2016	Establishes land use planning and development control systems, and the role of local government in these systems. State planning policy 15: natural hazards refers to minimising risks and mitigating impacts from extreme heat events (heatwaves). The draft planning and design code include a number of policies intended to mitigate heat impacts relating to building performance (orientation, shading and landscaping).
Landscape South Australia Act 2019	Establishes the framework for the use and management of natural resources that recognise the need for climate change adaptation, including a principle to take into account the best available science

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	to inform decision making. Council operations will need to have regard to regional landscape plans.
Work Health and Safety Act 2012	Establishes systems to secure the health and safety of workers and workplaces.

7.2 State emergency management plans and documents

The **State Emergency Management Plan (SEMP)** sets out the state's arrangements for effective prevention, preparedness, response and recovery in accordance with the Emergency Management Act 2004. All levels of government, households, community, business and volunteer agencies have a part to play.

The SEMP identifies the South Australia State Emergency Service (SES) as the hazard leader and control agency for extreme weather (including extreme heat). As hazard leader, the SES has overall control and responsibility to lead a robust planning and preparedness approach and prepare a state-wide hazard plan. As control agency, the SES has responsibilities including to take control of the response to emergency incidents and ensure effective communication and information sharing with government agencies and the public.

The SEMP can be found on the DPC website

<https://www.dpc.sa.gov.au/responsibilities/security-and-emergency-management/state-emergency-management-plan>.

The extreme weather hazard plan can be found on the LG Emergency Management Knowledge Hub. (note – the hazard plan is not a public document).

Zone emergency management plans (ZEMPS) outline the high priority risks, responsibilities, authorities and mechanisms to prevent, manage and recover from incidents and disasters within the zone.

Extreme heat is identified as a **major hazard** in every one of the 11 emergency management zones across South Australia.

A summary of key hazards and risks for each zone can be found on the SES website
https://www.SES.sa.gov.au/site/about_us/publications_and_reports/key_hazards_risks_summary_for_zones.jsp.

7.3 Local government's role in emergency management

Councils, in partnership with state government, are responsible for contributing to the safety and wellbeing of their communities by participating in local emergency management. The SEMP describes councils' principal roles and responsibilities (refer part 2, p7-8).

During significant incidents (when a severe or extreme heatwave warning is issued), local government plays a support role to the control agency (SES), functional support groups and support

agencies who have prescribed roles in the state emergency management plan.

For incidents involving more than one council, the Local Government Functional Support Group (LGFSG) coordinates the response from local government. This includes:

- Ensuring effective coordination and communication between impacted councils

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- Ensuring effective coordination and communication between emergency services and impacted councils
- Facilitating resource sharing across the local government sector
- Representing the local government sector at the state emergency centre, agency state control centres, zone emergency support teams and any relevant agency incident management teams.

The LGFSG is led by the LGA to coordinate local government resources as required (see figure 2).

Since its creation in 2016, the LGFSG has provided strategic and operational leadership to the local government sector before during and after emergencies.

All South Australia councils are participating agencies of the LGFSG, with the LGA having the 'lead' role. The LGFSG's primary responsibility is to coordinate the response from local government during emergencies. This includes operating Emergency Operations Centres (EOCS) and a State Coordination Centre (SCC) for local government, incident support teams and maintaining incident management resources.

To support councils in their provision of services during emergencies, the LGA developed the i-Responda operational platform as a standard when providing support to the control agencies during emergencies. The operational platform is facilitated through use of the i-Responda app for council staff to use during emergencies, allowing for timely access to reminders, checklists, action plans, joint operating guidelines and plans. The i-Responda app allows councils to report back to the LGA on council response to the emergency, allowing the LGA to collate state-wide local government response and report to the SES.

More information on local government roles in emergency management can be found in the following LGA documents available from the LG EM Knowledge Hub:

- Local Government Emergency Management Framework (LGA, July 2019)
- Emergency Management Planning Guide for SA councils (LGA, June 2019)
- Elected Members' Guide to Emergency Management (LGA, July 2019)

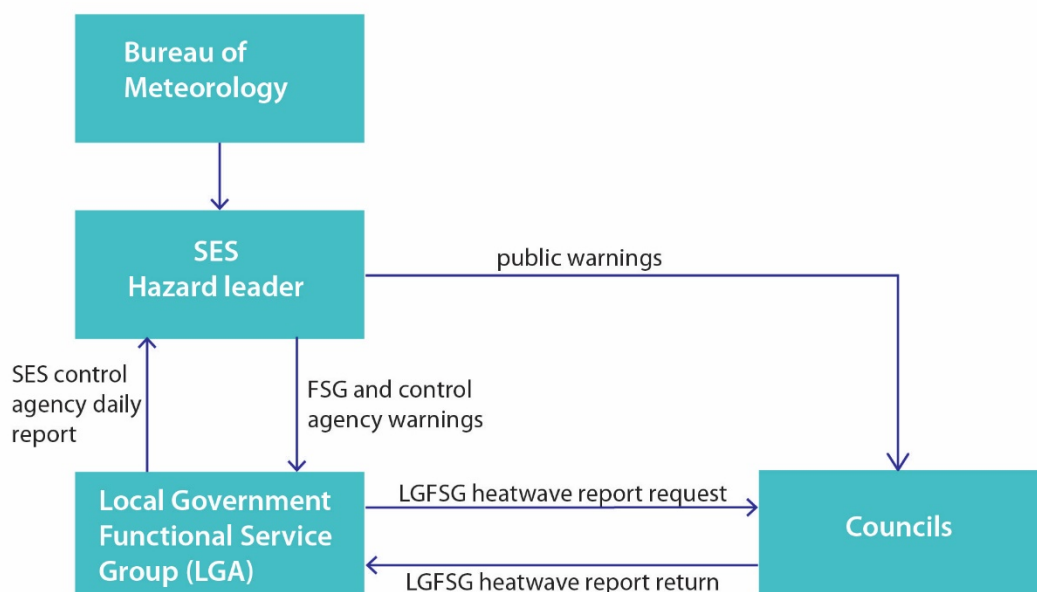


Figure 2 Relationship between SES, LGFSG and councils during an emergency

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7.4 Local government's responsibilities as an employer

As an employer, councils have a duty of care to ensure they are not putting their workers' health and safety at risk.

SafeWork SA describes the responsibilities of employers to manage heat risks:

Unless it is specified in workplace employment agreements, the work health and safety legislation does not set temperatures at which a worker may be sent home. Each workplace environment is different, and the onus is on the employer to manage any risks, in consultation with their workers. If it is not possible to eliminate exposure to increased temperature, the risk of heat-related illness must be minimised so far as is reasonably practicable¹⁵.

Advice from the bureau of meteorology is not to set a trigger to stop work.

Heatwaves are defined by the maximum and minimum temperature which is generally not reflected in a trigger. Temperatures may only reach a trigger level for a short period and cool soon after. Advice from the bureau is to manage outdoor work considering the nature of work being undertaken, local conditions and available mitigation options.

Heat related risks should be managed through an adaptive approach where managers and their teams work together to ensure a safe working environment.

Councils are responsible for preparing policies and procedures to ensure the safety of the employees. Heat risks and mitigation approaches must be addressed in these.

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¹⁵ <https://www.safework.sa.gov.au/health-safety/hazards-risks/cold-heat-uv-exposure/heat-uv#>



Part 2 – Heatwave guidance

8 Seasonal and long-term heatwave preparation

Heatwaves cannot be prevented however the impacts of heatwaves can be mitigated through action to reduce exposure to heat. This action needs to occur both in the short term (ie leading up to and during the heatwave season) and the long term.

By preparing for heatwaves councils can reduce risks and respond more effectively.

Heatwaves in South Australia generally occur in summer between November and

March but as discussed in section 0 heatwaves are occurring earlier as the climate is changing. Preparing for heatwaves can occur throughout the year but actions such as community awareness raising and workforce planning should be increased as the heatwave season approaches.

Some of the ways to prepare for heatwaves require longer term planning, for example constructing wetlands to store water for irrigation of green areas, tree planting and asset management planning.

The table below identifies ways councils can prepare for heatwaves. Opportunities and considerations have been grouped by functional service area, and are classified as either:






Seasonal preparation



Longer term preparation

This table describes actions that could be taken to prepare up until a heatwave warning is issued by the SES.

Table 4 Preparing for heatwaves

Functional service areas	Opportunities and considerations to prepare for heatwaves
Community information and engagement	<p>Community information</p> <p> undertake community awareness campaigns leading into summer that help people understand the danger of heatwaves and what they can do to help themselves through preparing, irrigating their gardens and using air conditioning. Utilise SES, SA Water and SA Health materials and share information through council websites, social media and community networks.</p> <p> provide information to support people changing their air conditioners from heating to cooling at the beginning of summer and remind them to have them serviced before summer demand increases. People often confuse the sun (heating mode) and snowflake (cooling mode).</p> <p> prepare a communication plan that describes how the council will share SES heatwave warnings and provide local information on available facilities and services. Include</p>

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Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p>communication approaches that will target different sectors of the community, for example social media, phone calls to vulnerable residents, signs or hard copy information in council facilities (libraries, offices, swimming pools), communication from service staff in particular health and community service areas.</p> <p> newcomers (residents, migrants or businesses from overseas or interstate) often do not understand risks and don't know where to get information. Councils should include information and reference to zone emergency management plan public versions for new residents. Opportunities could be investigated to provide information to renters through engagement with community housing or rental agencies.</p> <p>Community events</p> <p> provide water bottle filling stations and shade facilities for events held in summer.</p> <p> engage with event planners and manager to discuss how they can prepare their venues and support attendees during hot weather. Key issues may include requirements for cooling equipment such as fans or misters, operation of electrical equipment in heat and need for extra shade.</p> <p> schedule summer events and activities in the cooler morning or evening periods rather than during the day (noting that during heatwaves it can still be very hot in the evening, particularly in built-up areas) and consider the micro-climate of the event site and access to shade and drinking water.</p> <p> during event risk assessments, assess risks to public health and safety and identify triggers for relocation, postponement or cancellation and associated communication requirements.</p> <p>Business support</p> <p> support business which have high patronage or regular visitors to provide heatwave information and hand out water during summer months.</p> <p> support businesses to undertake business continuity planning that considers the impacts of heatwaves and power outages and the potential cumulative impact of these events.</p>

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Preparing a heatwave communications plan

Councils may consider preparing a heatwave communications plan that identifies target groups for information, approaches to share hazard messages from the SES and SA Health, provide local information on available facilities and services and identify roles and responsibilities.

The following information has been adapted from the heatwave planning guide - development of heatwave plans in local councils in Victoria¹⁶.

Planning theme	Key content
Internal communications	<ul style="list-style-type: none"> Alert all council staff of warnings and alerts and instruct to commence planned response actions Inform council staff about potential impacts on operations and service delivery Commence planning for any changes to workload including need to provide increased or reduced services Inform council staff when warnings are reduced or no longer current, and recovery action may be required.
Community communication	<ul style="list-style-type: none"> Identify how council will share hazard messages with the community and what local information will be included (eg identifying local changes to operations or services) Identify council staff responsible for engagement
Stakeholder communication	<ul style="list-style-type: none"> Map stakeholders and information needs, for example external service providers, contractors, health and medical facility providers and local businesses Identify council staff responsible for engagement
Communication messages	<ul style="list-style-type: none"> All communications should be consistent with SES, SA Water and SA Health materials. Messages from council should include SES warnings with additional messaging reminding the community to stay cool, stay hydrated, look after most vulnerable (aged, young, existing health conditions), look after neighbours, look after pets. Changes in provision of services or operations should be clearly communicated and identify when a return to usual services might occur.
Communication methods	<ul style="list-style-type: none"> Identify opportunities to share heatwave messages, for example <ul style="list-style-type: none"> Social media, council website Leaflets, brochures, factsheets and posters to be shared at council offices, libraries, community centres, health facilities or local businesses Articles in council newsletter/paper Radio interviews Share information through community networks, eg community service providers, community groups, health professionals Visits to vulnerable communities and discussions about heat impacts

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¹⁶ Department of Human Services (2009) *Heatwave Planning Guide - Development of heatwave plans in local councils in Victoria*, <https://www2.health.vic.gov.au/about/publications/policiesandguidelines/heat-health-plan-for-victoria>

Stay healthy in the heat - City of West Torrens

the City of West Torrens was looking for a new way to help their community look after themselves during heat waves. The strategic resilience team came up with the idea of giving out gift bags designed to encourage conversations about staying healthy in the heat and provide practical assistance.

The first lot of 100 goody bags containing a water bottle, mist fan, cooling towel, magnet and information from the SES, SA Health and the red cross were given out to community members at the library during a heatwave in November. During the December heat waves, the home library team also distributed goody bags with their book deliveries to vulnerable local residents unable to attend the library due to illness, disability or frailty.

The community response was overwhelming and the success led council to order more bags. During community events in January bags were distributed from staffed information stalls where resilience officers talked to people about what they can do to stay healthy and how to use the bags' contents.

More than 500 bags have been given out in less than 2 months and council teams are investigating opportunities to share more goody bags and information with their community.



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Functional service areas

Opportunities and considerations to prepare for heatwaves

Community development and support services

Community services and facilities

 identify public places where drinking water distribution could occur in a heatwave, including shopping centres, health precincts, hospitals or transport stops (eg train stations or bus stops). Where these places are not council operated, confirm with site managers about proposed plans.

 review community services to assess how demand might change during heatwaves, associated management implications and implications for other council functions. For example:

- ☐ Swimming pools – how might demand change as temperatures increase and more frequent extreme heat events occur? Will opening hours change? How will this impact staffing, cleaning and treatment Processes?
- ☐ Libraries – are libraries adequately resourced to provide respite from extreme weather? How can opportunities for community connection and engagement at libraries be maximised?
- ☐ Aged care facilities – do facility management plans identify and address opportunities to mitigate risks of increased extreme heat

Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p>events and power outages through design or operation? Plan for nursing home staffing increases during extreme heat-events</p> <ul style="list-style-type: none"> <input type="checkbox"/> Community transport – how do climate risks impact community transport services? How can communities continue to be services as extreme weather events become more frequent? <input type="checkbox"/> Events and activities – do planning for events and activities consider the public health related climate risks? How can events that support community connectedness be continued during summer as temperatures and bushfire risk increase?

Provision of council facilities during heatwaves

The SES does not recommend the establishment of temporary cooling centres during a heatwave.

Instead they suggest promoting the availability of normal facilities and councils may wish to extend their opening hours.

If councils are promoting facilities to be accessed during a heatwave, they should consider the following:

- ☐ Does the facility have effective and reliable air conditioning?
- ☐ Is there access to back-up power in the event of an outage?
- ☐ Is the capacity of the facility sufficient to safely welcome additional visitors?
- ☐ Is the facility physically accessible for people with mobility issues?
- ☐ Are there first-aid facilities on site? Do staff have adequate first aid training?
- ☐ Are there adequate toilet facilities, including accessible toilets?
- ☐ Are there accessible adult change facilities for adults needing assistance (eg at swimming pools)?
- ☐ Are staff available to operate and supervise the facility, including additional staff if ordinary opening hours or rosters are extended?
- ☐ Are there kitchen or refrigeration facilities available?
- ☐ Where is the nearest health or medical facility?
- ☐ Are the opening hours clearly communicated?

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Functional service areas	Opportunities and considerations to prepare for heatwaves
Community development and support services	Education and awareness raising <ul style="list-style-type: none">  share seasonal weather outlooks as they are released by the bureau of meteorology and refresh council staff on heatwave warnings and impacts.  share SA Health and SES information with council staff that work with communities so they can promote heat safety messages.  provide heatwave risk education for community and health service workers, for example health effects of extreme heat including heat stress and mental health effects.
	Engagement with other community service providers <ul style="list-style-type: none">  engage with local community service providers including health, social services and NGOs to discuss seasonal outlooks, new or planned response actions and planned communications.  work with agencies and providers to plan how to support the community in heatwaves.
	Volunteer support and management <ul style="list-style-type: none">  provide heatwave risk education and awareness raising for volunteers that work with vulnerable members of the community.  identify and plan for how volunteer services or activities will be managed or modified during heatwaves, considering the relevant volunteer demographic and triggers for response.
Vulnerable and aged residents	Understand local heatwave risks <ul style="list-style-type: none">  review local community characteristics and understand how they might be key risk factors in hospital admissions, mortality and morbidity in heatwaves (refer to section 6.1 – heatwave impacts on health and wellbeing).  engage with local GPS who understand local health issues and can talk to local residents with existing health issues about heatwave risk reduction.
	Plan and prepare to support vulnerable and aged residents <ul style="list-style-type: none">  plan for nursing home staffing increases during extreme heat-events.  support heatwave warning systems (eg red cross Telecross REDI), and the use of pre-recorded health messages.

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Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p> visit vulnerable individuals or groups to raise awareness about heatwave risks. Send hard copy information to people who may not have regular access to social media.</p> <p> identify people at risk and develop register of vulnerable individuals/groups.</p> <p> promote vulnerable and isolated people to register with the telecross redi so they receive a phone call during extreme weather events to ask people how they are coping and remind clients of important measures to assist them through the extreme weather.</p> <p> enhance early warning and care systems to ensure that vulnerable members of the community are effectively warned, and cared for, during heatwaves.</p> <p> community homeless outreach services should plan for likely increases in demand for services and associated heat-related increases in domestic violence and alcoholism incidents. Work with external service providers where possible to share experiences and plan together.</p> <p> engage with service providers to understand which may provide additional services if a code red is issued.</p> <p>See box – code red activation</p> <p>Support community connectivity</p> <p> support community events and activities that contribute to building social connections. Communities that are well connected and look out for each other, neighbours and older people are less likely to be adversely impacted by heatwaves.</p> <div data-bbox="470 1456 821 1836">  <p>SA Health December 16 at 8:21 AM · 🌐</p> <p>Do you, or anyone you know, struggle during a heatwave? The Australian Red Cross offers a free daily phone call to check on your safety and wellbeing during heatwaves. Register by calling 1800 188 071 or emailing telecrossredi@redcross.org.au</p> <p>More info here: http://bit.ly/2ojXGKD</p> <p>#HealthyInTheHeat</p>  </div>

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Code red activation



Code red activated
Extra support for people sleeping rough

SA Homelessness Gateway
1800 003 308

Human Services SA 1 hr - 10

A statewide Code Red heatwave response is in place across South Australia.

In the Adelaide metropolitan area the following services are available for people sleeping rough:

- Westcare (Baptist Care SA) 11/19 Millers Ct Adelaide, will be open overnight, (including Friday night) until Friday 20 December. Closed 7am-9am.
 - Street to Home will be providing additional outreach services to people rough sleeping
 - Trace-A-Place (SYC) 135 Currie Street Adelaide, will extend their hours from 5pm to 7pm on Tuesday 17 until Friday 20 December. Opening at 9am.
 - Hutt Street Centre 257 Hutt St, will extend their hours from 7am to 5pm on Tuesday 17 until Friday 20 December.
 - The Homelessness Gateway Service will continue to operate 24 hours a day 7 days a week. Anyone who is rough sleeping is encouraged to contact the Homelessness Gateway on 1800 003 308
- If you are in regional South Australia, are rough sleeping and need assistance in the heat call the Gateway

Code red is an extreme heat response aimed to reduce the harmful effects on people sleeping rough by connecting them with support services and providing additional services including extended operating hours for services, increased shelter options, additional food services and sunscreen.

A code red is activated by Housing SA following advice and warnings from the SES.

The program is funded through the SA housing authority and provided to uniting communities to administer through the homelessness gateway service.

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Opportunities and considerations to prepare for heatwaves

Public and environmental health

Public health plans



review climate projections to support understanding of future climate risks to public health and priorities for regional public health planning.



identify strategies to build resilience of vulnerable groups to heatwaves and the functions of council that need to work together to mitigate the public health impacts of heatwaves.



determine how council can work with external partners (industry groups, education providers, care providers) to build community resilience.











Environmental health



review environmental health monitoring and food inspections programs and determine if seasonal conditions are likely to require an increase in event monitoring or management response.



consider how water quality along the coast and in rivers, lakes and wetlands could be affected by increased temperatures and extreme heat.

Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p> ensure water quality monitoring and management programs address climate risks including changes in the frequency of toxic algal blooms and triggers for event-based monitoring (eg extended heatwaves).</p> <p> consider how longer, hotter and more frequent heatwaves and disruptions to energy supplies could increase the risk of food-borne disease and review associated inspection programs.</p>
Natural environments and open space	<p>Planning</p> <p> ensure the impacts of heat on condition, function and use is considered in all natural environment and open space plans.</p> <p>Parks and reserves</p> <p> inspect tree health and undertake maintenance to minimise risks of limb drop during hot weather.</p> <p> review the location of parks and reserves to determine if closures during extreme heatwaves are required to manage risks to visitors. Install shade structures and drinking fountains for people and dogs and seats in shady spots</p> <p> during review of community land management plans, consider strategic management actions that can contribute to greening, cooling and provision of shade.</p> <p>Biodiversity management</p> <p> protect and restore biodiversity to enhance resilience to heatwaves. For example, provide buffers to protect areas of native vegetation, undertake pest plant and animal control, manage bushfire risk and undertake targeted revegetation. Consider providing additional drinking water for native animals during heatwaves.</p> <p>Design and landscaping</p> <p> design landscaping to contribute to greening, shading and cooling of urban areas. For example, select landscape species for warmer and drier climates, protect and provide large (shade) trees, provide shade for playgrounds, seats and picnic areas. Provide shade shelters and drinking fountains and consider the design of community event spaces</p> <p>Water management and irrigation</p> <p> increase irrigation before a heat wave, not during heatwave. Let nearby rough sleepers or homeless people know about changes to irrigation schedules.</p> <p> review irrigation requirements to ensure all irrigation is designed to achieve the best possible water use efficiency. Irrigation management software is available which can set total water or total</p>

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Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p>cost budget for year and plan and limit irrigation to the set limit, reducing financial risks to councils. Soil moisture sensors and local weather stations can provide inputs to irrigation management.</p> <p> identify opportunities for water sensitive urban design (wsud) and green infrastructure including rain gardens, permeable pavements, green roofs and green walls.</p> <p> identify opportunities to irrigate using non-potable water, rainwater or harvested stormwater.</p>
Land use planning and development	<p>Planning and design</p> <p> promote development that is resilient to heatwaves and increasing temperatures. For example, through material choices to withstand heat and minimise maintenance; minimising heat retention of materials; landscaping with irrigation or low water demand plants; stormwater management; mix of natural and constructed shade; suitable trees that consider growth and safety (limb drop) maintenance; contribution to urban biodiversity, ventilation and natural cooling.</p> <p> enforce climate-related conditions of development approvals, for example through compliance audits of approved plans to ensure that landscaping/vegetation is delivered and maintained to achieve desired climate resilience outcomes.</p> <p>Increase urban green cover</p> <p> require vegetated and green spaces to be integrated into all development types to provide shade and passive cooling, which can also reduce energy demand during heatwaves. This is supported by the draft planning and design code, which includes requirements for landscaping within the design in urban areas general development policy.</p> <p> design and construct landscaping that considers the future climate relating to species selection, water availability and irrigation demand.</p>

Which plant where?

SA Water and the Nursery Association are currently undertaking a project looking at what trees cool best. A national project called Which Plant Where? is testing landscape plants around Australia to ensure the right plants are selected for urban environments now and in the future. An Interactive Plant Features Tool and technical design guide is being developed with recommendations for urban plantings and is expected to be released in 2021.

See www.whichplantwhere.com.au for more information.

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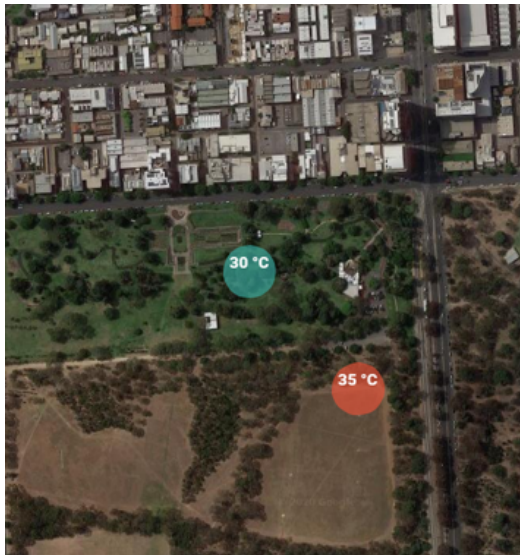
Irrigate and stay cool

SA Water has been undertaking investigations across Adelaide and regional centres to examine the impact of outdoor water use on the air temperatures of adjacent areas.

More than 200 temperature sensors have been installed at sites scattered across sa. Sensors have been placed in irrigated and unirrigated parks near each other, in car parks and along roads. Temperatures are recorded every 5 minutes and data can be viewed in real time from the project website.

The data is showing that irrigated green cover can cool outdoor temperatures by more than 7°C on a 35°C day, when compared to the bureau of meteorology observation at the same time. The data is also showing how temperatures are higher in unirrigated or hard surface areas.

<https://www.sawater.com.au/community-and-environment/community/cooling-the-community>



BoM observation – 32°C
Irrigated area – 30°C
Unirrigated area – 35°C



BoM observation – 31°C
Industrial area – 40°C



BoM observation – 26°C
Irrigated area – 24°C
Unirrigated area – 31°C

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Land use planning and development	<p>Urban heat mapping</p> <ul style="list-style-type: none">  undertake heat mapping to understand where current development is contributing to urban heat islands.  use urban heat mapping to prioritise areas for greening.
Strategic planning	<ul style="list-style-type: none">  take advantage of strategic planning process to engage with elected members, the community and business to understand how recent heatwaves have affected them and how longer, hotter and more frequent heatwaves might impact what is valued in the area.  investigate how recent heatwaves have influenced council operations and service provision and if changes are required to the management or funding of council assets, infrastructure or programs.  consider how community expectations regarding council service levels or program delivery may be affected by longer, hotter or more frequent heatwaves. Communities have expectations regarding continuity of services, regular waste management, and the amenity of public places that may be impacted by heatwaves.  consider if specific strategies, targets or actions might be required to address future heatwave impacts.
Animal management	<ul style="list-style-type: none">  remind the community about the need to look after all pets during heatwaves. Dogs should not be walked as footpaths and roads can injure their feet and animals should not be left in cars.  engage with local communities about the need to manage livestock health and wellbeing during heatwaves. Dairy Australia's Cool Cows contains practical information on how to reduce the impact of high temperatures on cow productivity with practical advice on providing cooler conditions that could also be adapted to other livestock (http://coolcows.dairyaustralia.com.au/).  review operation of animal management facilities and services considering responses during heatwaves, including power outages at pounds, or stray animal collection.  review potential requirements for animal waste (carcass) following heatwaves or extreme heat events. Following mass flying fox mortality events, the City of Adelaide has made arrangement with the Adelaide Zoo to remove carcasses for composting off-site. Many peri-urban and regional councils assist with on-site burial of carcasses through trench digging.
Waste management	<ul style="list-style-type: none">  consider the impact on the community if municipal waste collections or waste transfer stations are more frequently disrupted by concurrent extreme weather events such as a heatwave and bushfire.

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	<p>Include heatwaves in waste management plans and identify any changes to collection schedules that may be required.</p>  <p> prepare a disaster waste management strategy that identifies potential waste sources following a heatwave (including animal carcass) and waste management responses. Green industries SA's disaster waste management guidelines should be referred to (see https://www.greenindustries.sa.gov.au/disaster-waste-management).</p>
Community wastewater management systems	<p> establish and undertake monitoring to evaluate how extreme heat affects the effectiveness of cwms operations, materials and assets.</p> <p> review the potential for extreme heat, to impact the effective operations of each cwms, including the potential for treatment networks be affected by disruptions to energy supply. Consider anecdotal evidence as to how hotter and drier conditions impact operations.</p> <p> ensure facility management plans consider emergency management requirements, particularly relating to recovery.</p>
Stormwater management	<p> establish and undertake monitoring to understand how heatwaves affect water levels, plant health, materials and operation of assets.</p> <p> maximise water sensitive urban design opportunities to keep water in the landscape and achieve greening, amenity and cooling benefits.</p> <p> ensure landscaping and species selections are climate-ready, including a diversity of species and diversity of stock within species to be more resilient.</p>

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Functional service areas	Opportunities and considerations to prepare for heatwaves
	 ensure the impacts of heat on asset condition, function and maintenance is considered in all stormwater design processes and management plans.
Buildings, assets and infrastructure	<p>Infrastructure risk assessment</p>  review all infrastructure to identify potential impacts of heatwaves on effective function and maintenance, including roads and bridge surfaces, it transmission stations, sewerage and water pumping stations, buildings that rely on passive cooling.

IPWEA Practice Note 12.1: Climate change impacts on the useful life of infrastructure

The institute of public works engineering Australasia (IPWEA) produce a range of guidance and technical publications for engineers working with public sector infrastructure. Practice note 12 provides guidance on determining the useful life of infrastructure which requires consideration of expected physical wear and tear. Climate changes such as increasing temperature and extreme heat days is likely to impact the physical wear and tear. Practice note 12.1 describes the likely impacts of climate change on building materials and components and identifies opportunities for adaptation. Although the note does not provide

For more information see www.ipwea.org

Functional service areas	Opportunities and considerations to prepare for heatwaves
Buildings, assets and infrastructure	<p>Infrastructure and asset management plans</p>  when reviewing service levels for infrastructure and asset management plans, consider the impact of longer, hotter and more frequent heatwaves, for example could increasing damage from heatwaves lead to increased customer service requests or complaints?
	 consider how life cycle costs might be affected, for example changing frequency of programmed inspections, triggers for reactive inspections, routine maintenance or renewal programs.
	<p>Roads and footpaths</p>  when designing new roads and footpaths research materials and methods to provide confidence that materials are suitable for projected conditions. In particular, the softening point of the various binder types available should be considered. Look to other councils in warmer areas to find out what they have experienced with different materials.
	 reflective road surfaces that have less potential to store heat are being trialled across Adelaide. Refer to the case study below.

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Cool roads - City of Charles Sturt

Asphalt roads can significantly contribute to urban heat, particularly along roads which are very wide or where trees cannot be planted due to space restrictions. Reducing heat on roads is commonly identified as a strategy to reduce heat loads on cars and adjoining properties, and contribute to cooler neighbourhoods.

The City of Charles Sturt undertook a trial application of *CoolSeal*® - asphalt treatment to a number of roads in the suburbs of Albert Park and Hendon. CoolSeal is a light-coloured reflective asphalt coating that is designed to reduce surface temperature. Temperature measurements taken showed that CoolSeal treated roads were in average 6°C cooler than untreated roads at the road surface. Measurements of thermal comfort yielded inconclusive results.

Measurements of roads with good tree canopy cover showed that trees were better at reducing surface temperature than CoolSeal. Nevertheless, where trees cannot be planted or canopy will take a longer time to develop, CoolSeal provides a useful alternative.

The trial also considered associated costs and found that the higher upfront project costs of applying CoolSeal over a standard seal is likely to be offset by the benefits of a longer asset life.

Other applications of CoolSeal and similar cool road surface treatments are currently being trialled in the City of Adelaide and City of Salisbury.

For more information see <https://www.charlessturt.sa.gov.au/environment/climate-change/coolseal>.



CoolSeal being applied to the road



Road treated with CoolSeal

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Functional service areas

Opportunities and considerations to prepare for heatwaves

Buildings, assets and infrastructure











Council buildings



consider how council buildings may be used to provide 'respite' during extreme weather or as evacuation centres and what management practices are required to support this use.



identify emergency management requirements for council buildings, for example back-up generators and water storage.

Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p> design council buildings to maximise thermal comfort, minimise energy and water consumption, design services and air-conditioning considering future demand, include insulation specifications for future warmer conditions and select building materials, particularly exterior materials and finishes that consider future climate and maintenance requirements.</p> <p> maximise the application of building scale green infrastructure such as green walls and facades, green roofs, on-site rainwater harvest and use, gardens and plantings to maximise shade and greening.</p> <p> identify opportunities for building and landscape upgrades or retrofits with more energy or water efficient fittings, including window shading, energy efficient fixtures and landscaping.</p> <p> review if demand for council buildings and associated service/facility is likely to increase as climate risks increase, and consider associated resource implications.</p> <p>Cemeteries</p> <p> there may be an increase in demand for cemetery services following a heatwave. Cemetery management should consider how they can increase service provision in the event of a rapid increase in mortality as a result of a heatwave.</p>
Financial management	<p> there may be increased costs associated with incorporating climate risks into asset maintenance, repair and renewal, increasing operation of some facilities during heatwaves, reduced productivity during heatwaves and increased demand for community services. All functions of council have responsibilities to consider the financial impacts of increased heatwave frequency to inform long term financial planning.</p> <p> establish process to track costs and resources allocated to heatwave response and recovery to support assessment of financial impacts and future planning.</p>
Human resources	<p>Engagement with council staff</p> <p> share seasonal forecast and remind staff at the beginning of the heatwave season about the risks of heatwaves, how council will keep them safe and sources of information that may be useful to their role.</p> <p> provide training to all staff on heatwave risks, emergency warnings and council roles and responsibilities (suggested as part of an all-hazards approach).</p> <p> conduct a heatwave scenario exercise with all council functions represented, following the i-Responda framework.</p>

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Functional service areas	Opportunities and considerations to prepare for heatwaves
	<p>Workforce management</p> <p> review work rosters, working arrangements and availability of council staff, including ability for staff to contribute to response and recovery actions.</p> <p> plan for how to maintain continuity of service/operations given likely increases in staff absenteeism during heatwaves due to carer responsibilities or inability to travel to work, particularly in areas where concurrent bushfire response responsibilities may take precedence.</p> <p> plan for covering increase staff hours needed if facilities such as libraries or swimming pools are to be opened for longer.</p> <p>Outdoor workload management</p> <p> identify and plan for seasonal tasks that can be safely completed during hotter weather as a result of their location, duration or physical intensity.</p> <p> review working outdoor policies and procedures, considering heat risks and mitigation approaches.</p> <p> plan annual work programs considering likely increase in hot days and heatwaves. Identify training opportunities and tasks that can be picked up at short notice when heatwaves are forecast.</p> <p> provide education to all outdoor staff about heatwave risks to both human health and safety and the assets and infrastructure they are responsible for.</p>

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Working outdoors in the City of Adelaide

Many built up areas become urban heat islands during hotter conditions. Dark road and building surfaces absorb heat, and the asphalt, steel and brick materials both store and reflect this heat, making the area up to 8°C warmer than surrounding areas.

Several years ago, the City of Adelaide noticed that increasing temperatures in the city meant that their 38°C stop work trigger was being reached more frequently but the nature of a capital city council is that work can't just stop. The city won't function without the ongoing work of the outdoor teams like cleansing, horticulture, infrastructure, parking and information officers, environmental health officers, waste management, road works and stormwater management.

From a whs perspective it is difficult to prescribe a safe or unsafe ambient temperature. People respond differently to weather conditions for all sorts of reasons and there is a very big difference between being unsafe and being uncomfortable.

Realising that working in hot conditions is a seasonal hazard of living in South Australia the council scrapped their stop work trigger and transitioned to a leader led safety system where team leaders have responsibility for their teams' health and safety while meeting relevant service levels. In this system, leaders have the flexibility to accommodate individuals' needs and meet their duty of care requirements.

This essentially means reducing exposure to the heat by rostering more staff to allow for rest breaks and reducing the amount of any work that cannot be avoided. Some indoor workplaces like the Adelaide aquatic centre will also be uncomfortable during prolonged heat but the same basic principles apply. Those principles also apply to any emergency work.

While leaders have primary responsibility, individuals are also asked to take responsibility for their own health too and report to their leaders if they are feeling unwell. This system relies on a workplace culture of trust between leaders and their teams and has helped to maintain strong working relationships. The resulting systems are benign but still allow operational flexibility to keep the city running.

To make this system work, leaders also:

- Send out work teams for shorter periods
- Start work earlier in the day
- Undertake training to recognise signs of heat illness
- Understand how to reduce core temperatures
- Plan to undertake work in air-conditioned buildings in the worst heat of the day
- Develop a short notice training schedule to be accessed when outdoor work is not possible.

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When a heatwave warning is issued, the response action across the state may include:

- Harm reduction action including health and safety messaging,
- Health system response including increasing staffing and emergency response capability,
- Provision of support to vulnerable communities,
- Electricity demand strategies including community messaging and if necessary rotational load shedding (rolling blackouts),
- Infrastructure risk mitigation including increasing cooling where available
- Implementation of business continuity planning in particular worker management
- Preparation for potential disruption to essential services.

State government departments including the department for health, department of human services, and the department of planning, transport and infrastructure have heatwave plans that would be activated.



For councils, responding to heatwaves will require activating associated response plans that describe communication with the community and employees, ensuring a safe working environment for all staff and managing facility availability and

service provision. Councils also have responsibilities to report on local heatwave impacts and council response to the LGFSG. This reporting will be requested by the LGFSG from councils when heatwave warnings are issued by the SES and will be limited to those councils within the warning zone. The reporting tool is a web-based system that will allow councils to report on the impacts, consequences and council actions.

Table 5 describes actions that could be taken by councils once a heatwave warning is issued by the SES. Most actions are linked to an action in the preparing for heatwaves section where the planning for the response is identified. Not all functions of council may be directly involved in response action, although some councils may request staff to participate in emergency response action led by other functional areas.

An effective and efficient response requires councils to have undertaken appropriate planning and preparation so that everyone knows what they need to do. Having a response plan, providing education and training and undertaking emergency exercises or scenario will enable councils to be most effective in their response.

Table 5 responding to heatwaves

Functional service areas	Opportunities and considerations to respond to heatwaves
Community information and engagement	<p>Community information</p> <p> activate heatwave communication plan - share SES warnings and messaging with the community and staff through planned approaches. Ensure customer service staff are prepared to provide information and deal with likely complaints.</p> <p> encourage the community to contact vulnerable people in the local community and check on their neighbours.</p>

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Functional service areas	Opportunities and considerations to respond to heatwaves
	<p> promote the availability of council facilities that will be available, making sure these are prepared for additional visitation.</p> <p> inform the community of any changes to services or access to public areas.</p> <p> continue communicating with the community regularly during the heatwave and after it has finished, not just when warnings are first released.</p> <p>Community events</p> <p> implement relocation, modification or cancellation plans for outdoor events and sporting activities.</p> <p> if events are going ahead, ensure water, shade, cooling or misting facilities are available and accessible to meet the needs of all attendees.</p>


SA State Emergency Service
3 hrs · 🌞



EXTREME HEAT ALERT


Port Augusta City Council 4 hrs · 🌞


Port Augusta City Council are urging local residents to take care in the extreme heat until the end of the week.

You're invited to cool off at these Council locations if you require an escape from the severe heat:

- Port Augusta Public Library (water cooler available)
4 Mackay Street, Port Augusta
- Port Augusta Cultural Centre - Yarta Purtili Gallery
6 Beauchamp Lane, Port Augusta
- Central Oval
10 Augusta Terrace, Port Augusta
- Ryan Mitchell Swim Centre
Hannagan Street, Port Augusta
(Entry Fee required), enjoy the pool, and make sure you use sunscreen and seek shade.

We also stress to not forget about your furry or feathered friends. Make sure you are extra mindful about keeping pets cool, safe and offer them plenty of fresh drinking water.

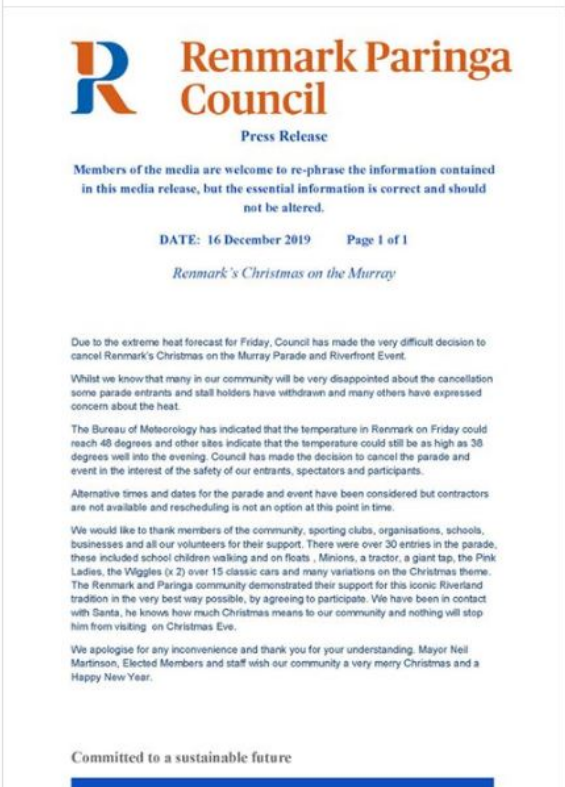
Further information and our Hot Weather information can be viewed here:
<https://www.portaugusta.sa.gov.au/page.aspx?u=1421>


Renmark Paringa Council
20 hrs · 🌞

Due to the extreme heat forecast for Friday, Council has made the very difficult decision to cancel Renmark's Christmas on the Murray Parade and Riverfront Event.

We apologise for any inconvenience and thank you for your understanding.

Mayor Neil Martinson, Elected Members and staff wish our community a very Merry Christmas and a Happy New Year.



Renmark Paringa Council
Press Release

Members of the media are welcome to re-phrase the information contained in this media release, but the essential information is correct and should not be altered.

DATE: 16 December 2019 Page 1 of 1

Renmark's Christmas on the Murray

Due to the extreme heat forecast for Friday, Council has made the very difficult decision to cancel Renmark's Christmas on the Murray Parade and Riverfront Event.

Whilst we know that many in our community will be very disappointed about the cancellation some parade entrants and stall holders have withdrawn and many others have expressed concern about the heat.

The Bureau of Meteorology has indicated that the temperature in Renmark on Friday could reach 48 degrees and other sites indicate that the temperature could still be as high as 38 degrees well into the evening. Council has made the decision to cancel the parade and event in the interest of the safety of our entrants, spectators and participants.

Alternative times and dates for the parade and event have been considered but contractors are not available and rescheduling is not an option at this point in time.

We would like to thank members of the community, sporting clubs, organisations, schools, businesses and all our volunteers for their support. There were over 30 entries in the parade, these included school children walking and on floats, Missions, a tractor, a giant tap, the Pink Ladies, the Wiggles (x 2) over 15 classic cars and many variations on the Christmas theme. The Renmark and Paringa community demonstrated their support for this iconic Riverland tradition in the very best way possible, by agreeing to participate. We have been in contact with Santa, he knows how much Christmas means to our community and nothing will stop him from visiting on Christmas Eve.

We apologise for any inconvenience and thank you for your understanding. Mayor Neil Martinson, Elected Members and staff wish our community a very merry Christmas and a Happy New Year.

Committed to a sustainable future

Heatwave social media posts during December 2019 heatwave.

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Functional service areas	Opportunities and considerations to respond to heatwaves
Community information and engagement	<p>Business support</p> <p> communicate with local business to ensure they are aware of warnings, have undertaken their own preparation for their staff and operations and are prepared if they are planning to provide heatwave information or provide water to customers or users of their services.</p>
Community development and support services	<p>Community services and facilities</p> <p> councils that have planned and are ready and prepared to extend opening hours for libraries, pools or community centres for people to cool down should enact these plans and inform the community of what is available.</p> <div data-bbox="173 716 1136 1279"> <p>Home Council News Library hours extended during heatwave</p> <h3>Library hours extended during heatwave</h3> <p>Tuesday 17 December 2019</p> <p>Due to the extreme weather forecast this week, the City of Holdfast Bay has extended the opening hours at the Glenelg and Brighton libraries.</p> <p>The extended opening hours are:</p> <p>Tuesday 17 December: 9am - 7pm at both Glenelg & Brighton libraries</p> <p>Wednesday 18 December: 9am - 7pm at both Glenelg & Brighton libraries</p> <p>Thursday 19 December: 9am - 7pm Brighton library / 9am - 5pm Glenelg library</p> <p>For more information about the libraries, visit www.holdfast.sa.gov.au/libraries</p>  <p>SHARE THIS ARTICLE  </p> </div>
	<p> increase access to water by setting up drinking water distribution points in public places.</p> <p>Volunteer support and management</p> <p> notify volunteers of impending heat events and plans to modify any volunteer programs.</p>
Vulnerable and aged residents	<p>Support for vulnerable and aged residents</p> <p> notify service providers of impending heat events</p> <p> increase outreach to vulnerable population groups. Telecross REDI will be activated by the South Australia department of human services when an extreme weather event is declared.</p> <p> activate plans to increase nursing home staffing.</p>

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Functional service areas	Opportunities and considerations to respond to heatwaves
Public and environmental health	<p>Environmental health</p> <ul style="list-style-type: none">  commence heatwave event-based water quality monitoring of water bodies.  prepare for event-based food inspections if power outages occur.
Natural environment and open space	<p>Parks and reserves</p> <ul style="list-style-type: none">  activate planned park and reserve closures.  restrict access to public places where large trees with high limb drop risk occur (eg large eucalypts).  irrigate when warnings are first issued but limit irrigation during heatwaves. <p>Biodiversity management</p> <ul style="list-style-type: none">  where appropriate, provide drinking water for native birds and animals.
Animal management	<ul style="list-style-type: none">  monitor local animal populations including native and pest species to identify required management response or recovery actions.
Waste management	<ul style="list-style-type: none">  implement (where required) planned modifications to waste collections.
Community wastewater management systems	<ul style="list-style-type: none">  monitor water treatment Processes and undertake remedial action if treatments become sub-optimal.
Stormwater management	<ul style="list-style-type: none">  monitor aquatic and plant health at WSUD features that may trigger additional irrigation needs to mitigate significant damage that would affect water treatment or functionality.
Buildings and infrastructure	<ul style="list-style-type: none">  monitor for impacts on infrastructure including damage of roads (buckling/melting) and restrict access where further costly damage could occur.  activate back up power supplies if required.
Financial management	<ul style="list-style-type: none">  track costs and resources allocated to heatwave response

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Functional service areas	Opportunities and considerations to respond to heatwaves
Human resources	<p>Workforce management</p> <ul style="list-style-type: none">  brief staff about warnings and expected conditions and communicate council heatwave responses and responsibilities. Ensure staff and resources are ready to respond to emergency incidents, including responding to vulnerable people, power failures (noting that not all councils have generators), tree limb drop, environmental health (in particular food safety) monitoring after power failures  implement planned alternate work activities or changed hours of work (see also outdoor work)  send messages to staff to look after themselves, their families, their neighbours and their pets.  notify volunteers of heatwave warnings and planned changes or cancellation to services  initiate planned work arrangements if facilities are to be opened for longer hours.  ensure all relevant workplace policies are adhered to, in particular for people working with the community including at child care centres, aged care facilities, home support and community services.
	<p>Outdoor work</p> <ul style="list-style-type: none">  implement planned alternate work activities or changed hours of work.  provide daily updates to outdoor staff, reminding them to inform leaders if they are feeling unwell and to look out for each other.  ensure outdoor workers are protected by providing: <ul style="list-style-type: none"> <input type="checkbox"/> Protective clothing and sunscreen <input type="checkbox"/> Cool neck ties or ice vests <input type="checkbox"/> Shaded areas where work is being carried out, to shield workers from heat and ultraviolet rays <input type="checkbox"/> Regular rest breaks. A 10-minute break every hour, in a cooler area, helps the body cool off. The length of the break should be increased if the temperature is very high <input type="checkbox"/> Air-conditioned spaces, cold drinks and ice for rest breaks. <input type="checkbox"/> Guidance on maintaining food/energy intake during hot conditions.

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Once the heatwave threat has reduced, the recovery process can commence. There are four aspects of recovery that are nationally recognised and reflected in South Australia's arrangements:

1. **Infrastructure and built** – public and commercial buildings, roads, paths, essential services (power, water, communications) and other infrastructure
2. **Social** – people, families and communities
3. **Economic** – employers, industry, investment and job creation
4. **Natural** – land management, air quality, natural heritage, culture, history and ecological conservation.

Heatwaves can impact all of these aspects and each heatwave will have a different impact.



Councils' role in recovery will involve assisting individuals, communities, businesses and the local environment affected by a heatwave to return to a proper and effective level of functioning.

Recovery is shaped by the initial experiences of individuals and communities immediately after the threat has passed. This means that recovery action needs to be swift and effective, embodying recovery principles from the moment a disaster strikes.

To do this successfully, recovery action has to be considered, planned and, as much as possible, practised before a disaster occurs. Starting to think about recovery after the disaster event is too late.

Table 6 describes actions that could be taken by councils to support the community recover from a heatwave.

Table 6 recovering from heatwaves

Functional service areas	Opportunities and considerations to recover from heatwaves
Community information and engagement	<p>Community information</p> <p> continue to provide community information, share SES and SA Health messages.</p> <p> manage and respond to community concerns or complaints about damage or service decline and expectations about timing for action.</p>

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Functional service areas	Opportunities and considerations to recover from heatwaves
	<p> SA State Emergency Service 20 hrs · 🌐</p> <p>Can you feel the cool change? If it's feeling cooler outside than it is inside your home, start opening windows and doors where safe to let your home cool down.</p> <p>Don't forget to keep drinking plenty of water. Although it's cooler out there, the heat will still be affecting your body, so stay hydrated.</p> <p>Want more tips about what to do after a heatwave? Visit our website https://www.ses.sa.gov.au/site/heat/after.jsp</p> 
	<p>Community events</p> <p>☀️ when possible, reschedule cancelled events or activities and inform the community.</p> <p>☀️ undertake community events and activities which support community needs and encourage community connection.</p>
	<p>Business support</p> <p>☀️ engage with businesses to understand how they have been affected and how council can help them get back to business.</p>
Community development and support services	<p>☀️ actively encourage local service providers to engage with clients about how they are recovering from the heat and identify and respond to any new or emerging needs.</p>
Vulnerable and aged residents	<p>☀️ actively engage with vulnerable and aged people about how they are recovering from the heat and identify and respond to any new or emerging needs.</p>
Public and environmental health	<p>☀️ provide advice to the community and businesses on food safety and disposal.</p> <p>☀️ undertake environmental health officer inspections to assess impacts on food safety and suggest any preventative measures (if possible) to prevent impacts from future heatwaves</p>
Natural environment and open space	<p>☀️ assess damage to plants, turf or other landscaping. Remove any dead plant materials to minimise amenity impacts and plan for replanting and restoration.</p>

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Functional service areas	Opportunities and considerations to recover from heatwaves
	 remove or prune hazardous trees (from both public and private land where they pose a threat to public space).
Animal management	 assist with removal or burial of carcasses.
Waste management	 if waste management services have been interrupted, make arrangements for catch up services.  make arrangements for any specific waste management needs, for example animal carcasses or excess green waste.
Community wastewater management systems	 assess operation and functionality of cwms and undertake requires remedial works.
Stormwater management	 assess damage to plants at WSUD features that may impair effective function and plan and implement required remedial action. Remove any dead plant materials that may obstruct pipes or drains.
Buildings and infrastructure	 assess damage to assets, plant, equipment and facilities and triaging those to repair first, whilst also managing a backlog of works and request (across all areas of council) and considering other resourcing options (eg contractors).
Financial management	 review costs and resources allocated to heatwave response and recovery to inform future planning.
Human resources	 continue to communicate with staff, encouraging people to informally share stories or information about successes and challenges to support future response and recovery effort.  undertake a lesson's learnt exercise to document what occurred, how it was managed and options for the future.  managing payroll impacts from altered staff hours during the event.

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This guide is not intended to be prescriptive, provide all the answers or replace the need for councils to develop their own tailored heatwave plans and arrangements but the following suggested actions might assist councils to get started using this guide.

- Ensure heatwaves are included in emergency management plans, emergency response plan and business continuity plans
- Consider preparing a heatwave management plan that describes actions roles and responsibilities as well as response and recovery actions. This may be part of a council emergency management plan that follows an all hazards approach.
- Build the knowledge, awareness and capacity of council staff to understand how heatwaves are changing, their impacts and what they need to do to keep themselves and their communities' safe in the heat.
- Prepare a heatwave communications plan that describes how the council will share SES heatwave warnings and provide local information on available facilities and services.
- When undertaking strategic plan reviews, make sure climate change and heatwaves are identified as issues that can impact council operations and service provision.
- Ensure all operational and management plans consider heatwaves and their potential impacts on operations and service provision

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