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AdaptNSW

Minimising the impacts of extreme heat: A guide for local government



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Introduction

Extreme heat kills more Australians than any other natural disaster, and also impacts health and wellbeing. It can cause havoc to transport, utilities and other services, and causes significant losses in labour productivity, and costs to the Australian economy.

(Coates et al 2014)

This guide is designed to describe ways NSW local governments can manage and minimise the impacts of extreme heat on the community, assets and services. The objective of this guidance is to help ensure that communities are safe from, prepared for and resilient to current and projected impacts of extreme heat.

Local governments are well placed to address the impacts of extreme heat, given their responsibilities under the Local Government Act 1993 to provide community health, recreation, education and information services, environmental protection and a range of functions relating to urban planning, land use and the provision and maintenance of public spaces and assets. In addition, local governments have specific responsibilities under the NSW Heatwave Sub Plan, which provides the coordination of public information aimed at the preservation of human health.

Extreme heat conditions can often occur in the context of other challenging events, such as bushfires or drought. Urban councils may have impacts on transport, infrastructure and services. Minimising risks of extreme heat will ensure business and service continuity, and support better resource planning across local government operations.

This guide seeks to clarify roles and responsibilities in relation to extreme heat events and will examine ways in which local government can minimise the impacts of such events by adapting existing systems, procedures and activities. Local governments have a significant role to play in building the capacity and resilience of NSW communities in the face of this threat to human health and wellbeing.

1.1 What is extreme heat?

For the purposes of this report, extreme heat is defined as significantly hotter and/or more humid than average summertime temperature for a location, whereby human and animal health, and the performance of infrastructure and the delivery of services may be adversely affected. This includes but is not confined to heatwave conditions.

In the NSW Heatwave Sub Plan, a heatwave is considered to be the set of meteorological conditions described by the Bureau of Meteorology as a heatwave which may affect a part or the whole of the state, as thresholds of heatwave will vary depending on the area of impact. In the NSW Local Emergency Management Planning Template (2015) a heatwave is described as a sequence of abnormally hot conditions having the potential to affect a community adversely.

The Bureau of Meteorology has developed a nationally consistent approach to measuring and predicting heat events, which forecasts the location of heatwaves, for the past two days and the next seven days.

Change in number of days a year with a maximum temperature greater than 35°C 2060–2079

Annual	+26.4
Summer	+15.2
Autumn	+3.7
Winter	+0.0
Spring	+7.4

Source: AdaptNSW – www.climatechange.environment.nsw.gov.au



1.2 Increasing risk from climate change

Climate change is expected to increase the frequency and intensity of periods of extreme heat across Australia in the future. The NSW and ACT Climate Model (NARCLiM) shows, with high confidence, that NSW will experience more extreme heat in the future as a result of climate change. Hot days are expected to increase across the state by an average of 26 days per year by 2070; however there is a significant difference in regions across the state. The greatest increases are seen in the north-west of the state during summer and spring.

An overall increase in temperature means that current extreme heat events will become hotter, more frequent, with increased duration and therefore more severe. Based on projections of increasing temperatures, it has been estimated that annual net temperature-related deaths (taking into account fewer deaths in warmer winters and more deaths in hotter summers) will increase by 1250 deaths in 2070, and 8628 deaths in 2100, nationally (Bi et al. 2011).

The community needs to be aware of this increasing frequency of heat events and associated risks, and prepare to experience these on a more regular basis.

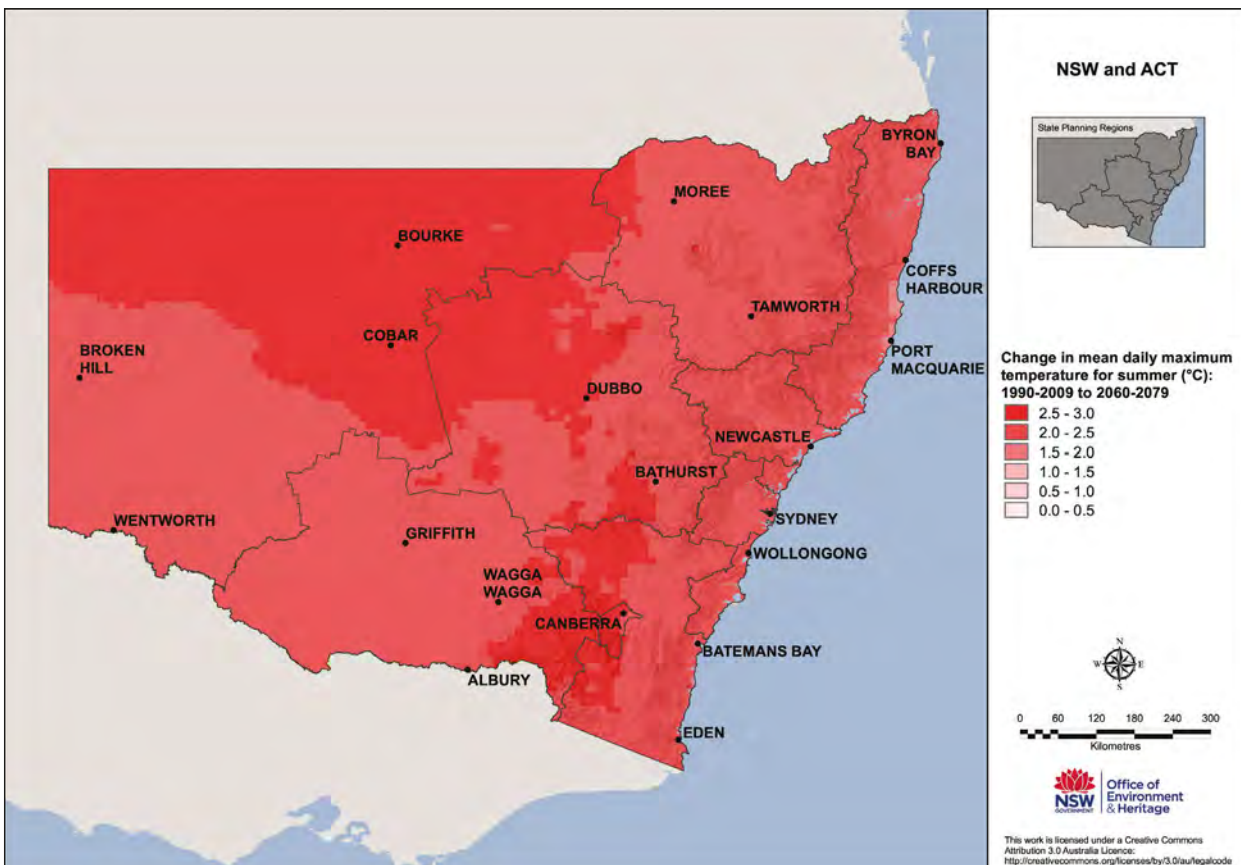


Figure 1: NSW is projected to see an increase of between 1.5-3°C on daily maximum temperatures for summer months in the far future (2060-2079). Source: AdaptNSW



1.3 Local government responsibilities in relation to extreme heat

State and local governments work together, providing different services and infrastructure, to ensure that community needs are met. In this context, local governments oversee matters directly related to a specific local area. Therefore coordinating actions to minimise the impacts of natural hazards on local communities requires a coordinated and collaborative approach.

At the state level, utilities are required to factor extreme heat into planning, design, operation and maintenance of their respective networks, to safeguard services during extreme heat events. Local water utilities are required to assess water supply and security, taking into account climate variability and change, under the NSW Guidelines on assuring future urban water security: Assessment and adaptation guidelines for NSW local water utilities (NSW Office of Water 2013). NSW Health provides information on staying healthy in the heat, and how to care for people who are at risk of heat-related illness, through the Beat the Heat website, and the Department of Education and Communities provides related guidance to schools on supporting students during hot weather.

The NSW State Emergency Management Plan (EMPLAN) provides a strategic overview to emergency management. It is supported by a series of Sub Plans, which detail the coordinated responses to specific hazards required to reduce the impacts of emergencies on communities in NSW, as no one individual or agency is responsible for emergency management across the state. It requires a coordinated effort to enhance the resilience of our communities and to reduce vulnerability to disaster.

Along with general responsibilities under the *Local Government Act 1993* and the *Work Health and Safety Act 2011*, local governments administer other service areas which could be affected by extreme heat, including food safety, water supply provision, public health and environmental risk, road maintenance, bushfire risk and emergency/disaster management (see *Public Health Act 2010* and the *Protection of the Environment Operations Act 1997*, *Roads Act 1993* and the *Food Act 2003*, the *Rural Fires Act 1997* and the *State Emergency and Rescue Management Act 1989* (amended)).

The inevitability of emergencies and their potentially significant social, economic and environmental consequences are acknowledged in the *State Emergency Rescue and Management Act*, which provides the legislative basis for the preparation of a the state EMPLAN and associated Sub Plans. These plans outline the agreed management arrangements for cross scale coordination of prevention, preparedness, response and recovery operations in the event of emergencies. In the NSW Local Emergency Management Planning Template (2015) a heatwave is described as a sequence of abnormally hot conditions having the potential to affect a community adversely, and should be considered in the Local Emergency Risk Management Study (Annex B) for each local government's Local Emergency Management Plan (LEMP).

NSW Heatwave Sub Plan

Although not classified as a natural disaster, heatwave is a natural hazard event that will generally require a multi-agency coordinated response utilising specialised resources from agencies, including emergency services and functional areas. The state's coordinated response is outlined in the *NSW State Heatwave Sub Plan (2011)*.

An important principle of emergency planning in NSW is that local communities have a greater insight into the needs and resources required to support of their community. Accordingly, EMPLAN devolves control and coordination of emergency operations and the responsibility for preparedness, response and recovery to the lowest possible level (e.g. local), but lays out a structure by which these resources may be augmented by regional and state resources, if the local level resources cannot cope.



Local heatwave plans are not required under the Sub Plan, however NSW local governments have specific roles and responsibilities in the event of heatwaves under Section 5.15 of the NSW State Heatwave Sub Plan, namely to:

- distribute warnings and other relevant advice to local stakeholders
- develop and implement strategies to minimise heat stress and the effects of heatwaves on vulnerable populations
- assist as requested by the State Emergency Operations Controller (SEOCN) or Regional Emergency Operations Controller (REOCN)
- provide regular information/situation reports to REOCN.

The NSW Heatwave Sub Plan also acknowledges that procedures to address the consequences of elevated or extreme temperature days may be implemented both before and during heatwaves.

This guide provides advice on ways NSW local governments can meet their responsibilities and minimise the impacts of extreme heat events in their local areas. It is structured to align with the comprehensive approach to emergency management, a continuum of:

- Prevention – measures to eliminate or reduce the level or severity of the risk
- Preparation – measures to enhance the capacity of communities to cope with the risk
- Response – measures to ensure the immediate consequences are minimised
- Recovery – measures to support affected individuals and communities, restore physical infrastructure and physical, emotional and economic wellbeing, and review effectiveness.

However, it is acknowledged that the development and implementation of measures to minimise the impacts of extreme heat can occur at different stages of the continuum, depending on the circumstances. There is no ‘standard’ local government approach, and as with many climate-related risks, individual councils will need to determine their approach to extreme heat based on the level of risk and their capacity to respond through the development of appropriate strategies and arrangements.

The following online resources may be of interest when considering the development of strategies and arrangements for dealing with extreme heat:

- [Heatwave Planning Guide: Development of heatwave plans in local councils in Victoria](#)
- [Hunter Councils’ Heatwave Planning template for Lake Macquarie and the Central Coast.](#)



Risks from extreme heat

2.1 Health risks

Extreme heat events have killed more Australians in the past 200 years than any other climate (i.e. natural) hazard (Coates 1996). With an increase in population, urbanisation, ageing and climate change, the health impacts of extreme heat are likely to increase, with those most affected likely to come from vulnerable groups in our communities.

During extremely hot weather, people can become dehydrated (loss of too much water from the body) or overheat, which can result in heat cramps, heat exhaustion or heatstroke. People who suffer from chronic health conditions may find their condition worsens during a period of hot weather. Also, some medications can become less effective (e.g. some mental health medications) or occasionally more toxic when stored in the heat, and some medications can make a person more susceptible to the effects of heat. Most medications need to be stored below 25°C. For further information on health risks associated with extreme heat – visit the NSW Health Beat the Heat webpages.

Extreme heat can affect everyone, but some people are at higher risk of heat illness, especially if they live alone or are socially isolated. Individuals in the following groups are most at risk:

- over the age of 75 (possibly younger in Indigenous populations)
- infants and young children
- overweight or obese
- pregnant or breastfeeding
- not very mobile
- not drinking enough water
- living by themselves or homeless
- socially isolated
- working in a hot environment (e.g. labourers, gardeners, fire fighters)
- exercising vigorously in the heat.
- people who have a chronic illness, for example:
 - heart disease
 - high blood pressure
 - diabetes
 - cancer or kidney disease
 - mental illness
 - dementia
 - alcohol and other drug use
- people who have an acute illness, such as:
 - an infection with a fever
 - gastroenteritis (diarrhoea and/or vomiting).

Other groups are also at higher risk, in the following circumstances:

- people without air-conditioning or who decide not to use it
- low income earners
- those with limited access to transport
- people who are outdoors for any reason, especially doing strenuous activity like working, farming or playing sports
- some people from culturally and linguistically diverse backgrounds
- people living remotely.

In addition, high temperatures have been linked to an increase in aggressive crimes in hot weather, such as civil unrest (Rotton & Cohn 2000a, 2000b), higher levels of street violence, attacks and homicide (BOM n.d.), road rage (Kenrick & MacFarlane 1986), and domestic violence (Auliciems & Bartolo 1995). People may also drink more alcohol, which can lead to social disruptions. Providing guidance for community contact staff on dealing with heat-related aggression may protect services and staff from associated risks. Drownings are also likely to increase around times of extreme heat.



2.2 Environmental health risks

There are environmental health risks caused by extreme heat events that may require specific actions from local government to manage. The following list outlines some risks, however there are tools available to help local government assess their environmental health risk for a range of impacts (enHealth 2012).

Water quality: Surface water (including domestic use reserves) can be impacted by extreme heat events through outbreaks of algal blooms as well as being contaminated from runoff from bushfires. Monitoring and potentially cordoning off impacted waterways may be required.

Recreational water quality: Increased use of recreational water for bathing may result in the need for increased disinfection for swimming pools, which can be compromised by heat-related power cuts. Algal blooms may contaminate natural water bodies.

Air quality: Extreme heat events may exacerbate air quality issues, such as pollution from bushfires, car exhausts and industrial fumes as well as an increased level of ozone. The lack of a breeze or wind can allow pollution to stagnate, causing air quality health impacts, and prolonged dry conditions can increase rates of dust and pollen, and also result in bushfires. Extreme heat events also increase the use of air-conditioning and private transport which results in greater air pollution. Inform stakeholders about how to assess and address air quality health risks, for example through the Air Quality Index and how to reduce risk of exposure.

Food safety: Higher air temperatures can increase cases of salmonella and other bacteria-related food poisoning because bacteria grow more rapidly in warm environments. These diseases can cause gastrointestinal distress and, in severe cases, death. Food safety can also become an issue if blackouts cause refrigeration to be interrupted. Food spoilage can occur both in public eating places as well as within the home. While it is unlikely that council will be able to increase food inspections during heat events, promoting summer food safety messages may assist the community to minimise risks.

Power outages may also create risks with wastewater management systems, or contamination of cooling towers (e.g. with legionella).

The monitoring of environmental health indicators may also provide metrics that can be used to measure the effectiveness of strategies or actions to minimise heat and/or health impacts.

2.3 Service impacts

Extreme heat can disrupt electricity supply networks, causing economic impacts, while also impeding the ability of individuals to manage their exposure to high temperatures. During periods of forecast extreme heat, the operator of the national electricity grid manages the amount of reserve generator capacity across the participating states and the ACT. The transmission lines which connect these states can be subject to thermal constraint, although interconnectors between Queensland, NSW and Victoria are more robust. The distribution networks, including 'poles and wires' and substations, can also be subject to thermal stress, which may lead to an unexpected outage. Recent network upgrades have sought to manage the peak hot weather electricity load.

NSW Health-owned hospitals have standby power units and electricity network operators have established relationships with NSW Health in the event that a power failure requires priority for restoration or for temporary electricity supply. Similar priority is given to water supply systems. However, facilities for vulnerable people such as retirement villages or preschools may not have backup power, potentially leaving these communities exposed.

In addition, state and local gas, petroleum and water providers are required to factor heatwave conditions into planning, design, operation and maintenance of their respective networks. Procedures are developed for system operation in extreme conditions, including heatwave.

There may also be increased demand for some community services, potentially resulting in extended response times, or emergency infrastructure works (i.e. cooling asphalt roads) during periods of extreme heat. Staff providing these services may also face adverse health effects caused by exposure to high temperatures. Ensuring there are sufficient work health and safety procedures in place to protect the health and wellbeing of the workforce, while continuing to provide an appropriate level of necessary services is important. Ensuring that councils have in place an up to date Business Continuity Plan, and that staff have been trained to carry it out, can minimise service impacts.

3

Minimising the effects of extreme heat

3.1 Urban design and land-use planning

Seeking to pro-actively minimise heat in a local government area can take the pressure off services, minimise expense and most importantly, reduce heat stress and health risks that result from extreme heat events.

For urban dwellers, a compounding factor in urban and suburban areas is that the effects of extreme heat are exacerbated by the urban heat island effect (UHI) (Figure 2). UHI is where hard surfaces absorb and retain the sun's heat, and this heat is not adequately reduced at night. However, building orientation, design and materials can all heavily influence the impact of heat on the built environment.

There are a range of urban design and land-use planning strategies that can be employed to minimise heat in local government areas.

3.1.1 Urban green cover

Integrating vegetated, reflective and permeable surfaces into the built environment can adapt our cities and towns to climate change. They reflect sunlight and reduce air temperatures through evapotranspiration, thereby providing shade and passive cooling, which can reduce energy demand during extreme heat events.

- Cool roofs and walls: Impervious hard roof surfaces are a major contributor to the UHI effect. Roofs that are partially or full vegetated (green roofs) or roofs that use reflective materials to reflect and emit solar energy (cool roofs), can decrease heat absorption, thereby reducing ambient air temperature and minimising heat impact. Green walls are vegetated systems on a vertical façade, and have been shown to reduce adjacent pavement temperatures by 5°C.
- Cool pavements, streets and carparks: Using reflective (light coloured) and/or permeable (porous) materials for roads, carparks and footpaths can reduce the amount of hard, paved and dark coloured surfaces that cause UHI.
- Green open spaces: Increasing the number of canopy trees, to provide shade to grass areas, cycleways, parklands and amenities can reduce the amount of heat absorbed and radiated by open spaces.

For more information on the application of these strategies, see the Technical Guidelines for Urban Green Cover in NSW which were released in 2015 by the NSW Government, available on the Green Cover webpage.

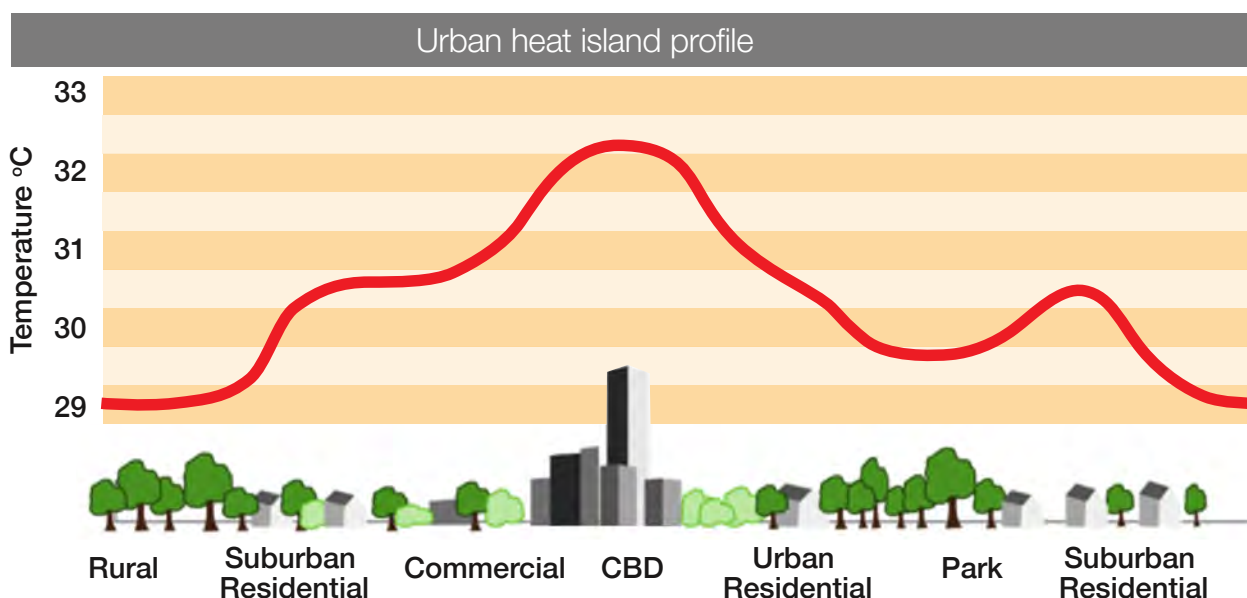


Figure 2: Temperature variations over land use (adapted from USGCRP 2009)



Planting urban forests is another strategy found to be very effective for minimising heat in communities. Integrating urban vegetation with other design elements will increase opportunities for cooling; however, the use of trees and vegetation may not be practicable in all locations. As with all investments, maintenance costs, and community acceptance are important elements to factor into design and implementation choices.

Urban designs that redirect wind, control humidity and water, and consider thermal qualities of materials can also minimise temperatures. Public spaces with a combination of shading, reflective or permeable materials, and humidity and wind management, can influence temperature and management of

heat islands. Even if not applied on a broad scale, small scale heat refuges at street level can improve community amenity and functionality. Geothermal cooling (where wind is tunnelled underground and cooled by the earth) and misting are two tools that can actively reinforce cool space within cities.

3.1.2 Planning and development

The NSW Building Sustainability Index (BASIX) has requirements for creating homes that are more 'climate friendly' and consume less energy and water. For example, specific design strategies for lighting, heating, cooling, ventilation, orientation and material selection may also have incidental benefits in mitigating extreme heat.

Parramatta City Council maps its 'hotspots'

As you head west across the Sydney metropolitan area it gets hotter, as the cooling effects of the ocean become less and less. Parramatta currently experiences close to 25 days over 35°C per year, and under a changing climate the number of days is projected to increase.

Parramatta City Council decided that it first wanted to better understand where heat was an issue within the city. Aerial thermal imaging was done across the local government area during a three day heat event, which provided visual maps of heat during both the day and the night (Figure 3). These heat maps were then used in public presentations to highlight the different factors that affect temperatures, for example, vegetation, roof colour and roof type.

Council then adopted an Urban Heat Action Plan, which outlines focus areas including community resilience, high priority locations and better infrastructure. This summer, the council will run a Cool Parramatta campaign to encourage people to be aware of the issue of heatwaves.

Council is also proceeding with its Parramatta Ways project, which is a series of green and cool corridors that link the major centres in

the LGA, in support of the state government's Green Grid project.

Paul Hackney from the City Strategy Unit in Parramatta City Council notes "in regards to the aerial thermal imagery the phrase "a picture tells a thousand words" comes to mind. If you can show people that a park area is 30°C, whilst the nearby city centre is 40°C, or alternatively how hot roads are during the night, it's a very powerful tool".

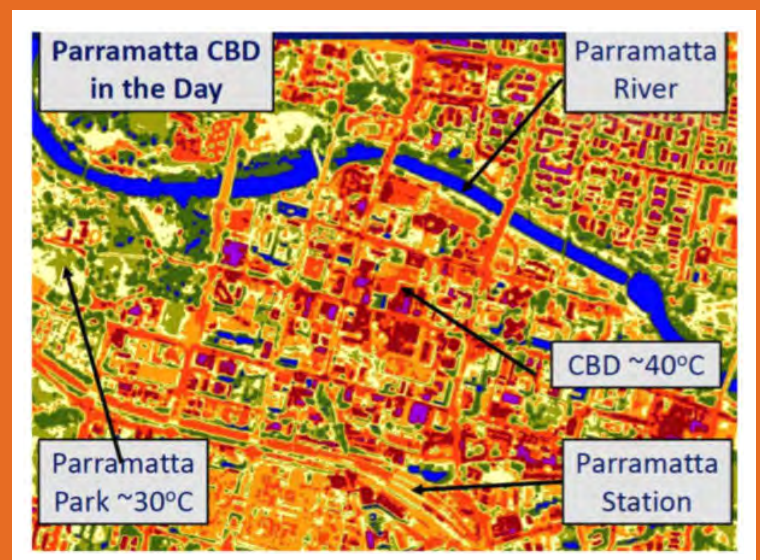


Figure 3: Thermal heat imaging of Parramatta CBD during the day; blue and green temperatures range from 10–34°C, while orange, red and purple range from 36–53°C



At the regional scale, A Plan for Growing Sydney Action 4.3.1 (page 105) requires the application of the Technical Guidelines for Urban Green Cover in NSW in priority precincts. While seeking to address thermal loading in the built environment, the guidelines also provide co-benefits such as reduced energy costs for cooling, improved stormwater management and water quality outcomes, cleaner air and improved biodiversity. These guidelines can also be applied via regional or subregional strategic planning, environmental planning instruments, public domain guidelines or through local government policies. The application of the strategies in these guidelines will encourage the better integration of green space, vegetation and permeable surfaces into our cities, towns and communities.

There are a number of mechanisms by which local government can minimise the effects of extreme heat through planning functions, and these can be provided for across various scales. Ensuring development is appropriate for regional climate is important, and conditions of development consent also provide an additional mechanism to influence the way development can cope with specific climatic effects, such as extreme heat. Councils shape new development through use of design codes and development control plans outside the scope of BASIX, for example, providing design principles for maximising solar access and cross-breezes, or landscaping opportunities. Developers seeking to go beyond mandated minimum thermal performance standards would provide the market with additional choice.

While councils are unable to exceed BASIX requirements for residential developments, there is scope to demonstrate leading approaches for heat minimisation on non-residential buildings, to adapt them to changing climate conditions.

3.2 Council operations and processes

3.2.1 Work health and safety

Extreme heat is both a health and a safety hazard. Working in hot conditions can result in a number of adverse health effects, ranging from discomfort to serious illness and even death. Councils should also be aware that extreme heat events may increase staff absenteeism due to carer responsibilities or inability to travel to work, particularly in peri-urban areas

where bushfire management responsibilities may take precedence. Councils may also consider training staff and volunteers on how to identify or address risks associated with extreme heat, such as dealing with heat affected clients or anti-social behaviours.

Under section 19 of the Work Health and Safety Act 2011, an employer has a legal duty to ensure the health, safety and welfare at work of all employees. Strategies local governments may consider to ensure the safety and protection of their outdoor staff in extreme heat (and sun) include providing:

- protective clothing and sunscreen
- shaded areas where work is being carried out, to shield workers from heat and ultraviolet rays
- 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
- air-conditioned spaces and cold drinks for rest breaks
- flexible work arrangements on days of extreme heat (early starts or late finishes).

WorkCover NSW provides useful resources on its website for protecting against heat stress.

This duty of care extends to people using council facilities. Whether planned or not, it is potentially likely that some facilities will be used as a means of 'cooling down' in an extreme heat event. Therefore, looking out for the needs of customers and volunteers, and having a contingency plan should power or air-conditioning be affected, should also be considered.

3.2.2 Event and recreation policies

Many councils have policies in place to manage events such as sports games, festivals or public gatherings in order to minimise the impacts of heat on participants, including not only council-run events, but events that require development consent. Strategies such as scheduling summer events and activities in the cooler afternoon or evening periods rather than during the day, or the provision of shade or water bottle filling stations in high traffic areas, can help to minimise extreme heat impacts on the public. Statewide Mutual has prepared a toolkit for Adapting Recreational Facilities to Climate Change which outlines some responses that councils might like to consider. This is available to member councils upon request.



Heatwave Planning template for Lake Macquarie and the Central Coast

Hunter and Central Coast Regional Environmental Strategy



It is projected that Australians will face extreme hot weather far more often in the future, and that heatwaves will be hotter and longer lasting. In the absence of more active planning (short and long-term) it is expected that the number of heat-related deaths in Australia will continue to rise, particularly within more vulnerable sections of the community.

The Hunter and Central Coast Regional Environmental Strategy (HCCREMS) partnered with a number of local councils, the Australian Red Cross, the NSW Ministry of Police and Emergency Services and the NSW Office of Environment and Heritage to develop a heatwave planning template.

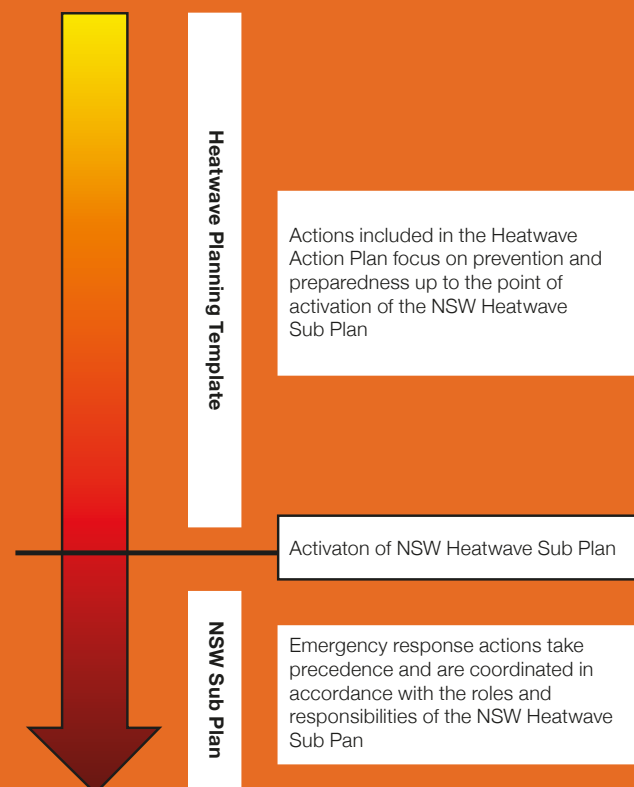
The template seeks to provide support and guidance to facilitate more active and collaborative planning at a local level to reduce the health impacts of heatwaves. In particular, it addresses not only short-term preparation and response to individual heatwave events, but provides recommended approaches for building the long-term resilience of communities to this natural hazard that is increasing in both frequency and intensity.

Key elements provided within the planning template include:

1. an agreed definition of a heatwave for the project area
2. agreed heatwave planning objectives for the project area
3. the legislative and planning context supporting local heatwave planning
4. an overview of heatwave trends and their impacts on the community

5. an action framework that identifies:
 - potential management strategies for addressing heatwave impacts
 - responsibilities for implementation
 - implementation priority
6. a model framework to support consistent and coordinated communication strategies by all partner organisations prior to, during and immediately after a heatwave event.

While the template was developed as a pilot project for Lake Macquarie, Wyong and Gosford councils, it has relevance and broad application to any council in Australia.





Heatwave planning stage	Activation trigger
Heatwave alert	Heatwave conditions likely to eventuate based on 7 day Bureau of Meterology forecast for the projected area
Heatwave response	0-4 day heatwave forecast issued by the Bureau of Meterology that encompasses the project area
Recovery and review	Bureau of Meterology forecast identifies cessation of current or further heatwave conditions

Figure 4: The three heatwave planning stages covered in the template, and the activation triggers for each

Sport Medicine Australia (SMA) has released Hot Weather Guidelines for sporting clubs and associations and the physically active, which explore when is it safe to play sport or be physically active in the heat. It canvases issues such as altering playing periods, training times or venues and scheduling events outside the hottest part of the day, usually 11 am–5 pm.

3.2.3 Asset management

Councils will in general have asset management plans to support their Delivery Program and Operations Plan, to ensure the assets and facilities are managed within economic, environmental and socially sustainable criteria. Extreme heat may not be seen as a high priority, compared to other operational priorities, however given the projected increase in temperatures across the state, consideration should be given to appropriate risk management planning and options.

Minimising the risks to assets requires a robust risk assessment to inform planning and management options, and capital and operational plans. OEH has published a Guide to Climate Change Risk Assessment for NSW Local Government, following the Australian standard. By assessing risks associated with likely local climatic changes, councils can identify adaptation measures, for consideration in the development of specific plans or strategic documents.

Some asset management considerations that may emerge due to extreme heat events include:

- the repair and maintenance of road infrastructure (which may fail depending on the thermal performance of construction materials)

- power outages that impact on workforce productivity and availability of public facilities
- infrastructure that is not designed to cope with extreme heat, including road and bridge surfaces, IT transmission stations, sewerage and water pumping stations, community buildings that rely on passive cooling that becomes inadequate during extreme heat events
- council-owned or supported food businesses, or health services (e.g. immunisation services)
- additional maintenance required of 'cool' spaces due to increased patronage such as swimming pool filtration systems, etc.
- staff absenteeism due to carer responsibilities or inability to travel to work – particularly in peri-urban areas where bushfire response responsibilities may take precedence.

3.2.4 Business continuity

Most councils have business continuity plans, covering topics such as general operations, IT impacts or asset specific plans. Reviewing business continuity plans to specifically consider heat will enhance their effectiveness. Any review will need to ensure staff have requisite training to enact contingency plans. Councils may wish to encourage heatwave protocols or contingency plans in facilities with vulnerable populations through conditions of consent.

4 Communicating with local stakeholders

Preparation

Responding effectively to extreme heat requires individuals, families and communities to understand and address the impacts of extreme heat as individuals, and also to recognise and care for those most at risk in the community. It has been shown that often vulnerable people do not identify as such, so raising awareness of factors that increase risks, such as age, is important.

In order to address the key responsibilities of local government under the NSW Heatwave Sub Plan, councils need to be in a position to communicate with local stakeholders about the risks associated with extreme heat. This requires the identification of target groups for information, the determination of key and consistent messages, the identification of communication channels and tools, and also the roles of internal and external stakeholders. Aligning these steps with neighbouring councils and collaborating with stakeholders at a state and regional level can maximise the impacts of stakeholder communications.

4.1 Identifying stakeholders

There are a range of stakeholders who should be consulted and engaged before, during and after an extreme heat event. It might help to refer to the Part 2 template (People and Population) of the LEMP when compiling this list. As the impacts of extreme heat can be wide ranging, key internal stakeholders should be drawn from across functional areas including, but not limited to:

- emergency services
- health and community services
- environmental and recreation services
- asset management
- communications and community engagement.

Some NSW local government organisations have created cross functional teams that meet regularly to oversee and coordinate integrated approaches to minimising extreme heat events.

These different departments will have external stakeholders and service providers that can be involved in minimising extreme heat impacts. Working with local organisations that are developing their own responses to extreme heat, can ensure that your strategies are supporting each other.

This could include:

- local health districts and emergency management agencies
- community services providers and volunteers (e.g. Bushcare, meals on wheels)
- aged care services
- disability services
- childcare services, family day care providers and preschools
- carers (formal and informal)
- medical providers
- counsellors, and
- schools and community facilities.

All of these identified stakeholders may have different communication needs. Enabling awareness of extreme heat management actions or protocols that affect them, and identifying effective channels to alert stakeholders of impending heat conditions or cessation of risks/actions, can enhance coordination and improve consistency in regional responses to heat events.

4.2 Key messages

There appears to be less public awareness of the impact of extreme heat on health, compared to other extreme weather events. While raising public awareness is not the responsibility of councils, it may assist in reducing the level of adverse heat effects experienced by community members, and may improve the effectiveness of advice during an extreme heat event. Local governments may wish to offer training on extreme heat and heatwaves to staff and the community.

The NSW Health Disaster Risk Management Guidelines (2009) identify the role of NSW Health as providing 'a coordinated health communications response for prevention, preparation, emergency response and subsequent recovery from the impacts'.



When informing stakeholders, including individuals or organisations that support vulnerable communities, about the risks of extreme heat, and actions to address impacts, it is important to ensure consistency with messages from other stakeholders, and the use of endorsed public health messages is recommended. Beat the Heat is an educational campaign aimed at improving individual understanding about how to avoid heat-related illness. The campaign includes an information booklet and detailed website with multilingual information on ways of preparing for, and minimising the effects of extreme heat (NSW Health 2015).

Key messages of the NSW Beat the Heat campaign

- Drink plenty of water.
- Minimise physical activity.
- Check on elderly friends, neighbours and relatives, especially if they live alone.
- If you have an air-conditioner, make sure it is working before you need it.
- If you don't have air-conditioning, spend time in a cool place like a library, shopping centre or cinema. Try to go early, so you're not outside in the middle of the day.

- Plan your day around the heat – avoid being outdoors between 11 am and 5 pm.
- Avoid alcoholic, hot or sugary drinks.
- Take cool showers or baths.
- Wear light coloured, loose fitting clothes made from natural fibres like cotton.
- Cool your house by shading windows, shutting curtains and, if it's safe to do so, opening windows at night to let in cool air.

Some councils may be in a position to promote or extend operating hours of 'cool areas' that can be accessed by the community in extreme heat – such as council-owned buildings, libraries, leisure centres and recreation venues. However, there may be risks involved with accommodating or encouraging vulnerable people to move during extreme heat.

Councils may consider auditing existing facilities that can be used for heat refuge, considering backup plans for secure water, natural ventilation and power generation. Some may need to amend local laws governing trading to allow for heat refuge; for example, in regional centres the local shopping centre, club or local hospital may be the only appropriate place for a refuge to be established.





Australian Red Cross and Clubs NSW Defeat the Heat

The Defeat the Heat project is a pilot partnership between Australian Red Cross and Clubs NSW which aims to reduce the health impact of heatwaves in the community in two ways:

- by raising awareness of the risks of heatwaves, and
- providing a safe place to shelter during heatwaves.

Red Cross will work within the local community to increase awareness of the health impacts of heatwaves. This will be done through media, local publications, community events and the community service sector. This includes engaging with NSW Health, pharmacists and other medical professionals to share the message with their networks. Red Cross will host a heatwave preparedness workshop in each location for the community service sector, so that they can better prepare their

organisations and clients for heatwaves.

Clubs NSW clubs are readily accessible institutions and have comfortable and air-conditioned spaces, making them a good place to find relief from heatwaves. The program is being piloted this summer with Dubbo RSL Memorial Club, Wagga Wagga RSL and Richmond Club which have been assessed to have the capacity and facilities to provide activities, shelter and information during heatwaves.

For more information on the outcomes of this pilot, and its measures for success, please contact Melissa Morgan, Emergency Services Project Officer at Red Cross: mmorgan@redcross.org.au.

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4.3 Communication methods

There are diverse methods for disseminating information about extreme heat, but for the message to be effective it is important to consider how respective stakeholders prefer to receive information. Integrating messages with existing and trusted services can strengthen the efficacy of heat messaging. Selecting the appropriate method will be different, depending on the role and actions required by the stakeholders. For example, information should be made available in the languages most relevant to the local community.

For internal stakeholders, examples of effective methods include:

- cross functional team meetings
- staff and Executive briefings
- fact sheets, posters, leaflets, brochures and booklets
- all staff emails
- intranet, websites
- phone calls or SMS services.

For external stakeholders, examples include:

- social media (e.g. Facebook)
- local and regional newspapers, newsletters or magazines
- promotion at local events
- local radio
- email
- phone calls to landlines
- SMS services
- encouraging social connections through community events or neighbourhood network programs (e.g. neighbour day)
- existing community networks via schools, clubs or groups.

For vulnerable people in contact with local government services or programs, coordinating the delivery of information with visits by service providers, volunteers or neighbours might be considered.

5

When the NSW Heatwave Sub Plan is activated

Responding

The following section outlines the flow of information during the activation of the NSW Heatwave Sub Plan. It should be noted that NSW Health or Local Health Districts may also choose to issue a heat health alert at the local level in some circumstances, which are not contingent on the activation of the State wide response of the NSW Heatwave Sub Plan.

The State Emergency Operations Controller (SEOC) is a member of the NSW Police Force Senior Executive Service, and is responsible for establishing and controlling a State Emergency Operations Centre (SEOC) for the control and coordination of emergency response operations at the state level. Where there is no designated Combat Agency, as is the case in the NSW Heatwave Sub Plan, the SEOC is the designated Controller.

The SEOC will activate the NSW Heatwave Sub Plan for a region when advice has been received that a heatwave is imminent or predicted. This will allow for the coordination of public information at the state level, and trigger the dissemination of information to emergency services and functional areas, and health and other services will arrange for community health information to be released through the Public Information Functional Area.

The SEOC will inform the Regional Emergency Operations Controller (REOC) for those regions that will be affected by the heatwave. Depending on the direction the heatwave is travelling, the REOC will notify those Local Emergency Operations Controllers (LEOC) who will be affected, who in turn will notify affected councils in their area.

Noting that operational reporting is determined by LEOC based on local circumstances and arrangements, in general the NSW Heatwave Sub Plan notification will go from the LEOC (a regionally based Senior Police Officer) to the Local Emergency Management Committee (LEMC) for the local government area, which is chaired by the General Manager of Council and receives executive support through a Local Emergency Management Officer (LEMO) (see Figure 6).

LEMCs are responsible for the preparation and review of plans in relation to the prevention of, preparation for, response to, and recovery from emergencies in the local government area (LGA) for which they are constituted (section 29, SERM Act). The LEMO is responsible for facilitating and collating Local Emergency Management Plans (LEMPs) for endorsement, which are prepared in accordance with the LEMP template, updated and distributed to all NSW councils in January 2015.

Using the LEMP template, the LEMC and council can determine if heatwave is a hazard of high likelihood, consequence and risk. Councils may consider including other council officers on their Emergency Management Committee if they are providing a service in a functional area, such as an Environmental Health Officer.

Independently of the arrangements in the NSW Heatwave Sub Plan, councils should develop their own arrangements to implement during periods of 'extreme heat', irrespective of whether the event has been described as a 'heatwave'. Adequate training prior to an event will be required for all staff involved.

The LEMC Chairperson is mostly likely to be designated to be the primary point of communications for councils during the duration of a heatwave event; however, this may differ from council to council. Arrangements should be put in place to ensure the flow of communications if the designated representative is absent when the NSW Heatwave Sub Plan is activated.

The following pages show a flow diagram of the information flow of the NSW Heatwave Sub Plan, and a table showing some ways local government can respond.

Efforts to prepare for and alleviate the effects of extreme heat, through strategies previously mentioned, will reduce the level of responses needed when the NSW Heatwave Sub Plan is activated.

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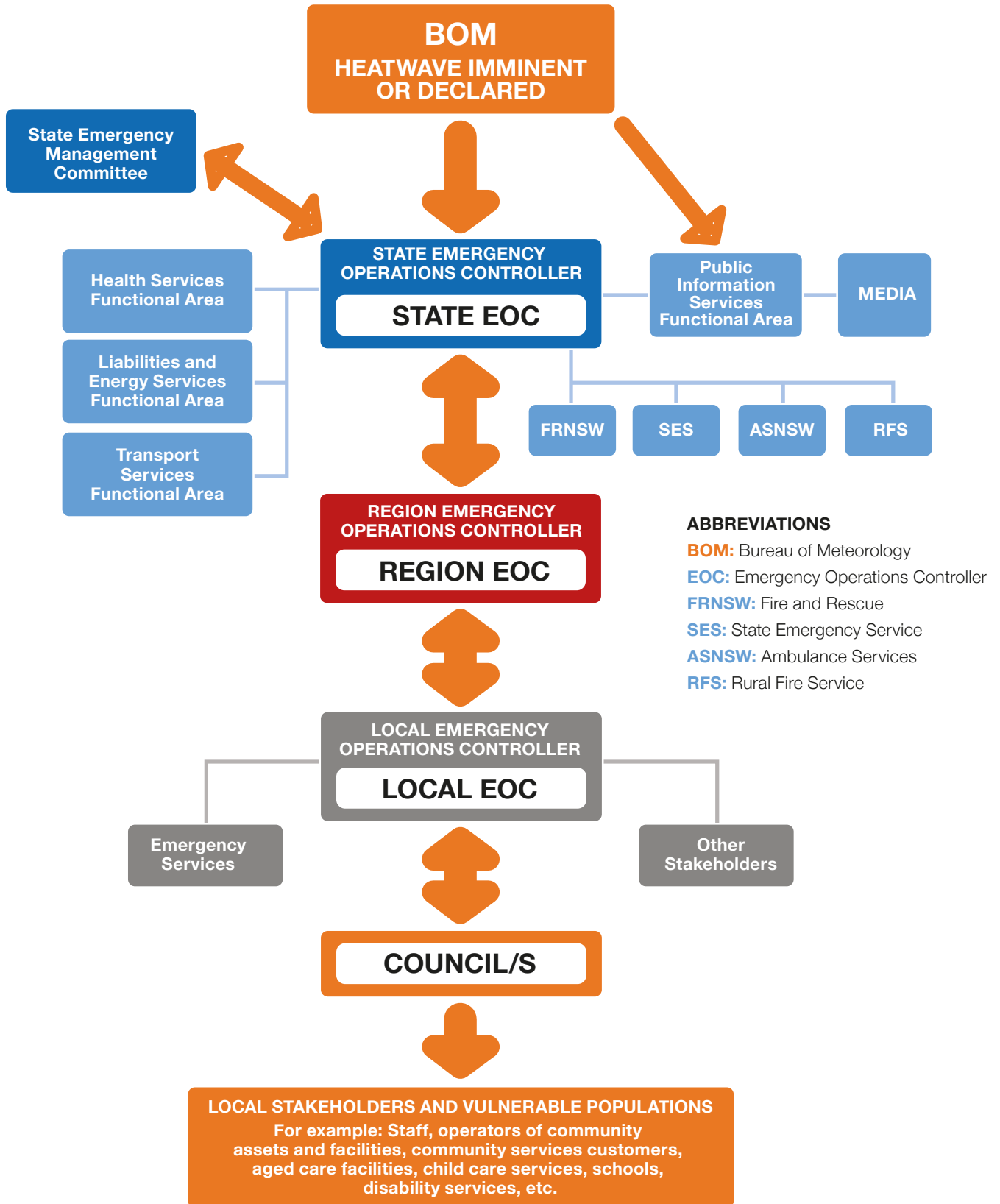


Figure 6: Information flow during a heatwave



This table outlines some ways in which councils can meet their NSW Heatwave Sub Plan responsibilities

<p>Distribute warnings and other relevant advice to local stakeholders</p>	<ul style="list-style-type: none"> ■ Promote extreme heat awareness and disseminate extreme heat materials and messages ■ Brief staff and communicate to key stakeholders about extreme heat actions and/or responsibilities
<p>Develop and implement strategies to minimise heat stress and the effects of heatwaves on vulnerable populations</p>	<ul style="list-style-type: none"> ■ Ensure exposed staff are protected during extreme heat events, while maintaining or modifying service provision ■ Notify service providers/volunteers working with vulnerable populations of impending heat events ■ Encourage family and friends to contact vulnerable people in the local community ■ Increase outreach to vulnerable population groups ■ Identify and promote safe, cool, public places ■ Extend hours of cool (e.g. air-conditioned or passively cooled) council buildings or facilities ■ Implement cancellations or modifications for outdoor events and sporting activities
<p>Assist as requested by the State Emergency Operations Controller (SEOCN) or Regional Emergency Operations Controller (REOCN)</p>	<ul style="list-style-type: none"> ■ This may be coordinated through the regional or local Emergency Management Committee representatives or may be a direct request to council
<p>Provide regular information/situation reports to REOCN</p>	<ul style="list-style-type: none"> ■ This may be coordinated through the regional or local Emergency Management Committee representatives



Willoughby City Council addresses extreme heat awareness

A climate change risk assessment undertaken by Willoughby City Council in 2009 found a high public safety risk relating to ‘hot days’. However, while specific staff roles took responsibility for other climate-related events (e.g. bushfire and flooding), no specific role had been tasked with acting on extreme heat. To fill this gap, Willoughby undertook a range of activities including:

- developing a communication plan relating to heat awareness and warnings
- printing a hand-held fan – on one side heat awareness information and the other side blank for children to personalise. They were then delivered to childcare centres, children’s activities and group gatherings of culturally and linguistically diverse communities
- a range of flyers on specific heat topics including where Willoughby’s ‘Cool Zones’ are, babies and children, sports and activities, and pet owners, made available at community events, and on a foyer display

- distributing Beat the Heat messages through media releases, e-newsletters and social media (Facebook and Twitter)
- NSW Health Beat the Heat flyers/ fridge magnets/booklets in English and translated (when available) shared with the community through Community Services clients and events, including meals on wheels, Constant Companion, libraries, spring fairs, etc.
- a range of conversations with culturally and linguistically diverse communities, meals on wheels and sustainability workshops.

Nicola Faith, Climate Change Project Officer, notes that for now, the main focus of the council is increasing awareness on health risks relating to extreme heat. Infrastructure planning will be next, following the completion of a heat mapping project later in the year. She said ‘The captive audience at the meals on wheels lunch was useful – they had to listen to the presentation before eating, so a handy space to organise information sessions – the audience is there already and we don’t have to market and hope for the best people to turn up!’



Figure 5: A snapshot of some of the extreme heat publications produced by Willoughby City Council



6

Evaluate strategies and effectiveness

Recovery

The cessation of the Sub Plan activation will occur when the SECON hands control of the situation to the State Emergency Recovery Controller (SERCON), and state and district coordination centres will be notified. Following this chain of command the LEOCON will contact the LEMO to notify the close of the Sub Plan.

After an extreme heat event there may be requirements to provide measures to support affected individuals and communities to restore physical, emotional and economic wellbeing, and also to restore physical infrastructure. This provides an opportunity to review and evaluate the strategies and/or communications that were employed. Evaluation should be planned well in advance, so that quantitative data and metrics can be collected and analysed, such as number of people affected, or incidences of food safety breaches during extreme heat.

Qualitative analysis could be undertaken through survey or interviews with key stakeholders to identify impacts on operations, approaches that worked well, and importantly, approaches that did not result in intended outcomes, and ways to rectify the flawed approach.

There is no requirement for local government to evaluate or report on findings of a post event review; however, robust evaluation will strengthen planning for extreme heat, and help build community resilience to the risks.



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