Extreme Heat Operational Plan

SA Health

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Government of South Australia

SA Health

CONTENTS

INTRODUCTION

The purpose of the SA Health Extreme Heat Plan is to reduce the risk of harmful effects of extreme heat on the health of the community by:

- ensuring a planned, managed, and effective response to an extreme heat event;
- providing a coordinated SA Health communication plan; and
- promoting community resilience and adaptation to extreme heat conditions.

This Plan is a 'living document' and will be refined and revised as necessary to capture lessons learnt from extreme heat events, and to ensure alignment to the South Australian State Emergency Service (SASES) *Extreme Heat Arrangements 'Annex A'* to the *Extreme Weather Hazard Plan.*

The SASES Extreme Heat Arrangements clarifies extreme heat events within South Australia, defining triggers for actions by government agencies, and outlines the associated communication and management strategies.

GOVERNANCE

Emergency Management Arrangements

The *Emergency Management Act 2004* (SA) ("the Act") governs the emergency management arrangements for South Australia. The purpose of the Act is to establish strategies and systems for the management of emergencies in the State.

The Act provides for the establishment of the State Emergency Management Committee (SEMC) which has responsibility to:

- provide leadership and maintain oversight of emergency management planning in the State;
- prepare and keep under review the State Emergency Management Plan (SEMP); and
- coordinate the development and implementation of strategies and policies relating to emergency management (including strategies and policies developed at a national level and agreed to by the State).[1]

Health & Medical Functional Service Plan

The SA Health Extreme Heat Plan is prepared as a sub-plan to the Health & Medical Functional Service (H&MFS) Plan.

The H&MFS Plan is directed at managing SA Health resources during a disaster, major emergency or an identified major incident.

The H&MFS Plan encapsulates the description of roles and the commitment that the Department of Health will undertake in the event of an incident. This is in line with the expectations of the Health & Medical Functional Service as included in the State Emergency Management Plan.

[1] *Emergency Management Act 2004* (SA).

ROLES AND RESPONSIBILITIES

South Australian State Emergency Service (SASES)

The SEMP designates the South Australian State Emergency Service (SASES) as the Hazard Leader and Control Agency for extreme weather. As such, the responsibility of the SASES is to provide leadership and oversight to planning by organisations relative to an extreme weather hazard. This includes coordinating and leading a multi-agency approach to *prevention, preparedness, response* and *recovery* (PPRR) for extreme weather.

The SASES is responsible for developing and managing the *Extreme Weather Hazard Plan*, of which *Extreme Heat Arrangements* is Annex A.

SA Health

Health Emergency Management Business Continuity Executive Committee (HEMBCEC)

Responsibility for the SA Health Extreme Heat Plan sits with the HEMBCEC in accordance with its terms of reference.

The HEMBCEC provides strategic direction for SA Health's involvement and priorities for emergency and disaster *prevention*, *preparedness*, *response* and *recovery* (PPRR) activities and planning.

The HEMBCEC will be responsible for the oversight of the H&MFS Plan, health specific hazard plans and other individual sub-plans within the scope of the State's health emergency management arrangements.

Department of Health Emergency Management Unit

The Emergency Management Unit (EMU) focuses on both strategic planning and building capacity to respond to any critical events which may occur, including extreme heat events.

The EMU provides strategic direction, coordination and advice on issues associated with the management of critical events which may potentially impact on health service provision and on the community.

The EMU participates in the SA Health emergency management response to any incidents which may arise. It promotes best practice principles for PPRR within SA Health and will lead the management and administration of initiatives that promote systemic improvement in the health emergency management arrangements throughout the State.

State Control Centre – Health (SCC-H)

The State Control Centre – Health (SCC-H) is the coordination centre for the Health and Medical Functional Service. The SCC-H may be activated in the event of an incident that impacts on SA Health resources at a regional, state or national level.

The operational function of the SCC-H is coordinated by an Operations Manager assigned by the Director, Emergency Management Unit and/or State Controller – Health & Medical.

The SCC-H is utilised to administer correct and timely responses to emergency incidents. It provides a centralised coordination facility from which the SA Health Operational Response Team can manage the health response to a critical incident or event, including extreme heat.

SA Health Critical Incident Team (CIT)

The Critical Incident Team is responsible for the coordination of the overall SA Health response to an extreme heat event. This team will convene when an extreme heat event occurs and may meet several times a day according to need.

The trigger for when the team convenes is when the SASES Extreme Heat Warning is given 0-48 hours prior to an extreme heat event that is expected to last 3 days or more.

The CIT consists of the following personnel:

- Chief Medical Officer
- Chief Public Health Officer
- Executive Director, Communications Division
- Director, Health Systems Performance Division
- Director, Emergency Management Unit
- Representative from each SA Local Health network
- Representative from SA Ambulance Service (SAAS)
- Any other personnel deemed necessary due to their expertise may be seconded to the Team for the duration of the incident.

SA Health Local Health Networks (LHN's)

Effective September 2011, SA Health LHN's services consist of the following:

- Central Adelaide Local Health Network;
- Women's and Children's Local Health Network
- Country Health SA Local Health Network.
- Northern Adelaide Local Health Network
- Southern Adelaide Local Health Network

The SA Health Directive: Hospital Escalation[2] details the principles for implementing hospital emergency demand management strategies when hospitals are experiencing periods of peak demand or high workload which may be as a result of a mass casualty incident, or long-term event such as extreme heat.

The Directive should be implemented in an extreme heat event in conjunction with the Health Service's Business Continuity Plan. Should any of the LHN services develop specific extreme heat arrangements the responsibility for those arrangements will sit with that health service's Emergency Management Committee.

Country Health SA LHN has developed extreme heat protocols which are unique to the complexities faced by country health services and vulnerable clients in rural and remote communities. For further detail, refer to REPONSE, page 23.

Division of Mental Health and Substance Abuse

The SA Health Division of Mental Health and Substance Abuse is responsible for policy development, facilities planning and advancing Mental Health Reform throughout the state and the community.

[2] Effective 21 January 2010

The Division of Mental Health and Substance Abuse has responsibility for Adelaide Metro Mental Health Directorate through Mental Health Operations; and the Office of the Chief Psychiatrist.

The Office of the Chief Psychiatrist, the Executive Director Division of Mental Health and Substance Abuse, and regional Mental Health Directorates, all work closely to implement and evaluate the continuous improvement of mental health services. The Chief Psychiatrist has a broad mandate to safeguard the rights of individuals, improve service delivery, guide the administration of the Mental Health Act 2009, and monitor standards and services.

During an extreme heat event, the Division of Mental Health and Substance Abuse Directive, High & Extreme Heat – Vulnerable Mental Health Clients[3] will be implemented.

For Mental Health Services response activities refer to "RESPONSE" page 24.

SA Ambulance Service (SAAS)

The role of SA Ambulance Service during an extreme heat event is *"[t]o ensure an effective and sustained emergency response to predicted increased operational demands for SA Ambulance Service during a defined heatwave or period of prolonged elevated temperatures. Furthermore to address the health and welfare risks to SAAS staff during such extreme heat events."*[4]

SAAS have prepared a SAAS Heatwave Plan which details the response SAAS will provide to an extreme heat event. The principles of the SAAS Heatwave Plan are:

- prepared and planned community messages and strategies;
- maximise the use and effectiveness of personnel;
- maximise effectiveness of vehicles and equipment;
- provide enhanced crew welfare and support;
- reduce non-essential patient transport.[5]

Migrant Health Service

The Migrant Health Service (MHS) is a SA Government specialist primary health care service, funded by SA Health, providing free, confidential and culturally sensitive medical and health care for newly arrived humanitarian entrants and asylum seekers. It is not a mainstream health service.

A range of clinical practitioners, including community health nurses, social workers, doctors, massage therapists, multilingual/bicultural community health workers, an optometrist, a psychiatrist and a clinical psychologist, are available by appointment. MHS also runs a daily nursing clinic where drop in clients are triaged and assessed. Any presenting clients requiring immediate care, including those with a heat related condition, are appropriately managed and if necessary, referred to a hospital emergency department for further treatment.

Information on specific health related topics and copies of the booklet, *Extreme Heat: Guide to coping and staying health in the heat*, are readily accessible for clients..

Other Service Providers

There are a number of organisations that provide services and advice to the community (particularly vulnerable persons) during periods of extreme heat. Some of these organisations are listed in this section.

[3] Effective February 2010
[4] *SAAS Heatwave Plan*. v 5. 11 March 2008
[5] Ibid.

Department for Communities and Social Inclusion (previously Department for Families and Communities (DFC)

The Department for Communities and Social Inclusion (DCSI)) has a broad mandate to work with those who, through circumstance, may be poor, isolated, vulnerable, or at risk of harm and to connect them to choices and opportunities. DCSI has an Extreme Heat Plan, the purpose of which is to "*reduce the risk of harmful effects of extreme heat on vulnerable DCSI clients.*"[6]

DCSI provides its vulnerable clients with SA Health information on managing health in extreme heat. Clients are assisted to register with Telecross REDi and, where appropriate, provided with modified services during an extreme heat event.

DCSI is made up of three main service areas: disability, domiciliary care and social housing. These areas provide an important community service in response to extreme heat events and for this reason have been identified below.

Disability

Disability provides a wide range of specialist services across South Australia for people with disabilities and their families including intake and assessment, community support, community access and supported accommodation services.

Key focus areas include:

- provision of South Australia's government disability services;
- planning, development and evaluation of both government and non-government disability services;
- funding of non-government disability services;
- policy advice to government;
- action on South Australia's *Promoting Independence* policy.

Domiciliary Care

Domiciliary Care provides services to people with reduced ability to care for themselves, assisting them to continue living in their own homes. Domiciliary Care primarily assists those over 65 years to deal with reduced ability related to ageing; although younger people with a disability may in some instances qualify for support.

Services provided by Domiciliary Care in the Adelaide area include physical assistance, rehabilitation and personal care, as well as providing respite and support for carers.

By promoting independence and improving quality of life for clients, Domiciliary Care helps prevent unnecessary admission into hospital or residential care facilities.

Housing SA

Housing SA works with South Australians to make a range of housing and accommodation available to suit different people and circumstances.

Housing SA is also the lead agency for the Emergency Relief Functional Service under the state emergency management arrangements. During a disaster and under the State Emergency Management Plan the Emergency Relief Functional Service is responsible for:

- establishing and operating Emergency Relief Centres

[6] Department for Communities and Social Inclusion, *Extreme HeatPlan*, version 12.

- activation of the National Registration and Inquiry System if required
- ensuring information on practical advice and social/psycho recovery services, through home-visiting or a one-stop-location of government services
- payment of financial assistance to affected people
- temporary accommodation.

Australian Red Cross

The Australian Red Cross is part of the world's largest humanitarian organisation with more than 100 million volunteers in 186 countries. It is independent of government and has no political, religious or cultural affiliation.

The Australian Red Cross (SA Division) administers the Telecross REDi service during times of extreme heat. This service is discussed in greater detail under "RESPONSE" on page 25.

Royal District Nursing Service of SA (RDNS)

The Royal District Nursing Service of SA (RDNS) provides tailored, comprehensive, professional nursing and health care to people in their homes and community, meeting their individual needs and contributing to their quality of life and independence. General and specialised nursing and health care is provided with the dual objective of improving a person's health status whilst enabling them to enjoy the benefits of remaining at home.

RDNS services are provided 24 hours a day, 7 days a week, throughout the year to all people according to their assessed needs, irrespective of age, race, religion, presenting illness, or social and economic status. The only criterion for referral is that a person has a genuine need for care, and that their needs are able to be met by the services RDNS has to offer.

The RDNS provides a range of nursing and health care services in a clients' home including:

- community based support for health and community care;
- flexible health care services;
- accommodating client and carer lifestyle choices promoting independence.

In the event of extreme heat, RDNS nurses make a significant number of visits per day across Adelaide's suburbs, providing them an opportunity to monitor how vulnerable people (particularly the elderly) are coping with extreme heat.

Local Government

It is the responsibility of local councils to prepare their own extreme heat policy documents relevant to their specific circumstances.

The Local Government Association of South Australia issued a draft *Extreme Heat Guide for Local Government* for comment in January 2010. This Guide states that the primary role of local government should be to '*promote community awareness and education about the effects of heat and any measures that can be taken to mitigate these effects*.'

The establishment of specific cooling centres by local councils is not recommended by the SASES as Hazard Leader and Control Agency for extreme weather. However, as reflected in the LGA Extreme Heat Guide, and the SASES Extreme Heat Arrangements, local councils are encouraged to extend their opening hours of existing facilities and services if they choose to do so.

Aged Care Association of Australia South Australia (ACAA SA)

The Aged Care Association of Australia - South Australia (ACAA SA) is an independent non-profit association and peak body for aged care in South Australia. During previous extreme heat events, such as those experienced in South Australia in 2008 and 2009, ACAA SA used SASES and CFS heat safety messages to provide awareness to its members.

Aged & Community Services SA & NT Inc (ACS SA & NT)

ACS SA&NT strives to provide all members with practical information and support in operating aged care facilities and community care services, in what is a dynamic, challenging and rapidly growing service sector. ACS SA&NT assists its members by promoting their work to the community and to governments, and by keeping them informed of matters that affect their operations.

Information concerning extreme heat is published on the ACS SA&NT website at: http://www.agedcommunity.asn.au/publications/pandemic-influenza.php

PREVENTION

Activities that eliminate or reduce the probability of occurrence of a specific hazard, and/or reduce the degree of damage likely to be incurred.

Extreme Heat Definition

At this time, there is no single agreed national definition for extreme heat as a number of factors need to be considered particularly in relation to the geography and ordinary climate specific to any region. Similarly there is no consensus regarding a definition for heatwave.

Extreme heat is defined in the SASES Extreme Weather Hazard Plan as:

- *An extended period of very high temperatures which is related but not confined to heatwave conditions.*

A heatwave for Adelaide is currently defined by the Bureau of Meteorology (SA Regional Office) as:

- *5 consecutive days where dry bulb temperature[7] is 35℃ or greater, or*
- *3 consecutive days where dry bulb temperature is 40℃ or greater.*

It should be noted that this heatwave definition refers specifically to ***Adelaide*** and that the criteria for heatwave could vary considerably, depending upon the impacted group and their locality within the State.

For the purposes of this Plan, SA Health will follow the extreme heat definition as outlined in the Extreme Weather Hazard Plan and the SES Extreme Heat Arrangements to ensure a consistent approach throughout the State to emergency management arrangements for extreme heat.

Temperature Triggers for Alert Levels Watch and Warning

An **extreme heat event** for the Greater Adelaide area is three or more consecutive days with an Average Daily Temperature (ADT) of ≥32°C. The ADT is an average of the minimum overnight and maximum daily temperature occurring that day.

Extreme heat *alert levels* have been developed by the SA State Emergency Service (SASES) in conjunction with the Adelaide Bureau of Metrology. The alerts are issued by the SASES in advance of an extreme heat event. They are based on the forecast ADTs for Adelaide as provided by the Bureau of Metrology.

There are two alert levels for the Greater Adelaide area:

- **Extreme Heat Watch** (High)
  Issued when the weather forecast for the next five days includes ADTs ≥29°C for three or more consecutive days (for example, a maximum ≥36°C for three or more consecutive days, and a minimum ≥22°C for three or more consecutive nights).
  Public Alerts WILL NOT be issued by the SASES at this alert level.
- **Extreme Heat Warning** (Extreme)
  when the weather forecast for the next five days includes ADTs ≥32°C for three or more consecutive days (for example, a maximum ≥40°C for three or more consecutive days, and a minimum ≥24°C for three or more consecutive nights).
  Public Alerts WILL be issued by the SASES at this alert level.

[7] The dry-bulb temperature is the temperature of air measured by a thermometer freely exposed to the air but shielded from radiation and moisture. Dry bulb temperature is the temperature that is commonly thought of as 'air temperature'

Impact of Extreme Heat

Extreme weather events are the most frequent of the major disaster types in Australia.[8] Since the early 1800's heatwaves have been the worst natural disaster in terms of risk to human life.[9] In Australia, during the 20th Century, heatwaves caused more deaths than any other natural hazard (except disease).

There is growing recognition that extreme weather events are increasing as a result of climate change, and that this poses a serious threat to our health.[10] In South Australia, increases in temperature, evaporation, extreme maximum temperatures and extreme rainfall are expected.[11] Changes in projected wind speeds can also be expected. Evidence suggests that severe thunderstorms and heatwaves will become more frequent and will have greater impact.

People gradually adapt to changing weather patterns over a period of time and thresholds vary for each region. Excess deaths occur in part due to our inability to adapt and heat or cool ourselves sufficiently, and therefore it is likely that serious health related illness and deaths will occur in the early days of an extreme heat event while the body is in the process of adjusting. Additionally, many homes in South Australia are not adequately prepared for either extreme heat or extreme cold due to a lack of sufficient insulation.

[8] "*Economic Costs of Natural Disasters in Australia*" – Bureau of Transport Economics Report 103 at 36
[9] Ibid at 51
[10] McInnes K.L., Suppiah R., Whetton P.H., Hennessy K.J. & Jones R.N. (2003) *Climate change in South Australia*. CSIRO Atmospheric Research, Melbourne.
[11] Above n 6

Climate Change and Weather Extremes

Climate change has been identified as the biggest global health threat of the 21st century[12] and is contributing to mortality, especially for people living in poverty and lacking access to essential health care.[13] The effects of climate change on health will affect most populations in the next decades and put the lives and well-being of billions of people at increased risk, especially global temperature rise.

The Climate Institute *Climate Change Dictionary* defines climate change as: *"[t]he radical and sustained change of global weather patterns directly resulting from the release of greenhouse gasses into the atmosphere."*[14]

In 2009 the Australian Government adopted the *Australian Climate Change Science Framework* and committed to establishing a mechanism to liaise with States, Territories and other stakeholders on climatic science, with a particular emphasis on ensuring the national program delivers useful information about likely future climate change. Research on climate change is currently being undertaken throughout Australia, by the Bureau of Meteorology, the CSIRO, at universities and other research agencies.

The Commonwealth Department of Climate Change Report, *Australian Climate Change and Weather Extreme: Past, Present and Future,* January 2008 states that *"extremes are the infrequent events at the high and low end of the other range of values of a particular climate of weather variable. A small change in the average of a climate variable, such as temperature, can cause a large change in the frequency of extreme temperatures."*

Weather extremes and climate events can cause severe impacts on society, the economy and the environment, as well as often causing loss of life, considerable disruption and expense. Climate change is likely to alter the frequency and intensity of extreme events and natural disasters, including heatwaves, tropical cyclones, storms, drought, bushfire and floods and may increase their impact.

In recent years there have been several examples of climate and weather extremes in Australia that have had a severe impact on the affected communities:

20 March 2006	*Tropical Cyclone Larry* on the North Queensland coast
8 June 2007	Storm in New South Wales causing the *Pasha Bulker* to run aground at Newcastle
3 – 17 March 2008	15 day heatwave in Adelaide
26 Jan – 7 Feb 2009	12 day south-eastern Australian heatwave
7 February 2009	Black Saturday bushfires in Victoria
8 – 15 November 2009	8 day heatwave in Adelaide
February – March 2010	Queensland floods
6 – 7 March 2010	Victorian storms

It is possible to have a wide range of extreme weather events even with an unchanging climate, so it is difficult to attribute an individual event to a changed climate. Until recently the quality and quantity of data to study changes in weather extremes have been insufficient to allow credible examination of whether these extremes are changing.[15] Changes in Australia's weather extremes are generally similar to the changes that have been observed globally, and

[12] *Managing the health effects of climate change*, The Lancet, Vol 373, Issue 9676, p 1693-1733, 16 May 2009
[13] Ibid
[14] www.climateinstitute.org.au/climate-change-dictionary
[15] *Australian Climate and Weather Extremes: Past, Present and Future,* January 2008, p 1

some of theses changes (in the case of extreme temperatures) now appear to be at least partly attributable to human influences on the climate.

Increases in temperature are the predicted changes to Australia's weather that are likely to accompany anticipated future increases in atmospheric concentration of greenhouse gasses. For example, it is predicted for Australia that there will be:

- an increase in frequency of days over 35°C by 2020; and
- a decrease in frequency of days below 0°C by 2020.[16]

Urban population in developing countries is projected to increase from the 2-3 billion in 2005 to 4 billion by 2030, and this will be compounded by expanding urban sprawl. An increase of this magnitude will inevitably increase the risk of heatwaves and heatstroke in cities in developing countries as a result of the so-called heat-island effect.[17]

The influence of changes in average climate, seasonal patterns and an increase in the number and intensity of extreme events on human health[18] are of significant relevance to the health care provided. An increase in the frequency and intensity of extremes of temperature, precipitation (rain) and wind speed have clear implications for morbidity and mortality, especially in populations who are not adapted to extremely hot weather.[19]

In 2003 it was estimated that about 1100 heat-related deaths occur each year in Australian temperate[20] cities.[21] The projected rise in temperature over the next 50 years, along with anticipated demographic change is predicted to result in 3200-5200 more heat-related deaths in all Australian cities, with decreases in deaths related to cold temperatures (as the climate warms) being *"greatly outnumbered by additional heat-related deaths"*.[22] The more vulnerable members of a community will be most affected by climate related illnesses (refer to page 18 herein, *Factors Increasing Risk*).

It is important to be aware of how Australia's changing climate will affect the health of the community, with health professionals playing an important role in raising awareness of this. Health care will need to be:

- responsive to a broad range of emerging threats to health;
- collaborative with other sectors of the community; and
- informed by the strategic imperative of reducing greenhouse gas emissions and limiting the impacts of climate change.[23]

Planning for the increased risks from climate change is still in its early stages within Australia's emergency management sectors. Research is needed to inform the way in which the various agencies respond to climate change whilst considering all hazards and key vulnerable groups.

The *National Climate Change Adaptation Research Plan: Emergency Management*[24], identifies research priorities that might help Australian Governments and communities respond to extreme events for which disaster planning, preparedness and response may be

[16] *Australian Climate and Weather Extremes: Past, Present and Future,* January 2008, p 1
[17] *Managing the health effects of climate change*, The Lancet, Volume 373, Issue 9676, Pages 1693-1733, 16 May 2009
[18] *Climate Change and Health*, Commission on Climate Change and Development, Sweden, April 2009
[19] Ibid
[20] A 'temperate climate' is one where the changes between summer and winter are generally relatively moderate, rather than being extremely hot or cold, and without extremes in precipitation (rain and snow). The southern and south-eastern coastal zones of Australia are classed as having a temperate climate.
[21] *Australian Climate and Weather Extremes: Past, Present and Future,* January 2008, p 3
[22] *Australian Climate and Weather Extremes: Past, Present and Future,* January 2008, p 4, reference to McMichael et al*, Human health and climate change in Oceania: A Risk Assessment*, Commonwealth of Australia, *2003*
[23] *Climate Change Health Check 2020*. April 2008. p 13
[24] *National Climate Change Adaptation Research Plan: Emergency Management*. The National Climate Change Adaptation Research Facility (Griffith University) 01/10. p 21

required. The Plan identifies three main strands to the research agenda for emergency management:

1. understanding the nature and location of the risks posed by climate change;
2. enhancing community and organisational resilience; to climate change risks; and
3. developing and implementing adaptive strategies.

Resilience

Communities and individuals differ in their capacity to prevent, prepare for, respond to and recover from natural disasters. It is important to understand the factors that contribute to these variations and use these insights to build the resilience of communities.

The term 'resilience' is generally used to describe:

- the capacity of a community or individual to resist the impacts of a disruption or adversity;
- the capacity to bounce back from the negative impacts of a disruption; or
- the capacity to adapt to those impacts."[25]

"To build collective resilience, communities must reduce risk and resource inequities, engage local people in mitigation, create organisational linkages, and boost and protect social supports. Resilience also requires an understanding of the psycho-social influences on human behavioural change."[26]

Reducing vulnerabilities and increasing resilience in general will help populations cope with the health effects of climate change. The challenge of understanding and building community resilience varies according to the size and nature of the community. All levels of government have a critical role to play in this.[27]

The COAG Communiqué Extract, *National Disaster Resilience Statement*, released after the 7 December 2009 meeting in Brisbane, discusses the role of government in strengthening resilience to disasters. In particular, it emphasises that:

> *"A disaster resilient community is one that works together to understand and manage the risks that it confronts. Disaster resilience is the collective responsibility of all sectors of society, including all levels of government, business, the non-government sector and individuals. If all these sectors work together with a united focus and a shared sense of responsibility to improve disaster resilience, they will be far more effective that the individual efforts of any one sector."*[28]

The National Disaster Resilience Statement further states a number of ways in which governments can strengthen resilience. Those that are particularly applicable in terms of extreme heat are:

- having effective arrangements in place to inform people about how to assess risks and reduce their exposure and vulnerabilities to hazards;
- supporting individuals and communities to prepare for extreme events; and

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[25] Ibid

[26] Norris FH, et al (2008) *Community resilience as a metaphor, theory, set of capacities, and strategy for disaster readiness*. Am J Comm Psychol 41, 127-150.

[27] *National Climate Change Adaptation Research Plan: Emergency Management*. The National Climate Change Adaptation Research Facility (Griffith University) 01/10. p 21

[28] COAG Communiqué Extract, *Natural Disaster Resilience Statement*, 7 December 2009

- ensuring the most effective, well-coordinated response from emergency services and volunteers.[29]

In 2011 The National Disaster Resilience Strategy released. The document provides a blueprint for how Australia as a nation will work together to build disaster resilience in our communities

In effecting a well-coordinated response during the 2008 and 2009 extreme heat events in South Australia, volunteers played a key role in the Red Cross Telecross REDi program by calling vulnerable clients several times daily to check on their health.

Although governments and other emergency services play a critical part in responding to an emergency situation or disaster, resilience to the event is dependant on individuals taking their share of responsibility for preventing, preparing for, responding to and recovering from the impact of the event.

Additional to the ways in which governments can strengthen resilience as stated above, the SA Health Extreme Heat Plan describes how SA organisations and agencies will work together before and during an extreme heat event to ensure that the health and well-being of individuals and communities, especially those most vulnerable, is maintained.

Adaptive Strategies

Proactive health adaptation strategies are needed to protect the most vulnerable from the effects of climate change on human health and well-being. Public health planning and decision making needs to shift from only focussing on relatively short term risks to the projected long term impacts of climate change.[30] Addressing the links between climate and health at different times will become increasingly important.

Adaptive strategies to prepare for and respond to the impacts of extreme events resulting from climate change will need to be implemented at an individual, household, community, agency, business and state level. However, adaptive strategies alone cannot be expected to cope with all the projected effects of climate change.

In the report *Climate Change Health Check 2020* April 2008, adaptive strategies are identified which can lessen health risks associated with climate change. The following activities are those which the health sector should lead or participate:

- public education, including in health care settings (doctor's waiting rooms and hospital clinics;
- preventative programs;
- provision of health care (especially mental health promotion and primary care) for communities affected by environmental adversity (e.g. drying conditions in rural communities);
- surveillance of disease;
- forecasting future health risks from projected climate change;
- health sector workforce training to attune to climate-related health risks.

In addition to adaptive strategies for the health sector, the *Climate Change Health Check 2020* report also identifies capacity building measures that extend beyond the formal health sector for other agencies and individuals to pursue. These are:

[29] Ibid.
[30] *Climate Change and Health*, Commission on Climate Change and Development, Sweden, April 2009

- community education and mass media campaigns to reduce and prevent weather-related health risks;
- disaster preparedness across sectors (and including the 'surge capacity' of the health system);[31]
- early-warning systems for impending weather extremes (e.g. heatwaves, storms);
- neighbourhood support watch schemes to protect those who are most vulnerable;
- enhanced urban planning – green spaces, shade and reduction of the 'heat island' effect;
- climate-proofed housing design (shade, insulation, ventilation); and
- improved water catchments in water-deprived regions.

Local Research

In July 2009 a research paper titled '*The unfolding story of heat waves in metropolitan Adelaide*' was completed and published in late 2010. This paper, authored by SA Health's Dr Monika Nitschke (Principle Scientific Officer, Public Health) and Mr Graeme Tucker (Head, Health Statistics Unit), concerned findings from two extreme heat events which occurred in March 2008 and late January to early February 2009 affecting Adelaide, South Australia.

The main objective of the study was to assess the potential health effects that occurred during the 2008 and 2009 extreme heat events in the Adelaide area. The report explored both events by comparing average daily morbidity and mortality rates during these two extreme heat events to daily rates during non-extreme heat periods within the respective years, stratifying by season.[32] This was done by analysing data on the following:

- ambulance call-outs
- hospital admissions
- emergency department presentations
- mortality.

Summary of Results

The following data and results summaries are taken from '*The unfolding story of heat waves in metropolitan Adelaide'.* The information provided herein is used with the permission of the authors.[33]

Ambulance call-outs

During both extreme heat events ambulance call-outs increased:

- 10% during the 2008 extreme heat event of 15 days;
- 16% during the 2009 extreme heat event of 13 days (estimated extra 519 call-outs);
- 9.8% in 2008 and 12.7% in 2009 respectively for cardiac-related call-outs;

[31] *Climate Change Health Check 2020*, April 2008, p 15

[32] Nitschke, M. and Tucker, G. (2009) "*The unfolding story of heat waves in metropolitan Adelaide*". Department of Heatlh, South Australia.

[33] The study related to "heatwave", using the BoM definition of heatwave. While this Plan references "extreme heat", the use of the term heatwave has not been altered for reporting the findings of this research.

- 39.3%in 2008 and 35.3% in 2009 for neurological-related call-outs in the 65-74yrs age group;
- for respiratory-related call-outs in the 15-64yrs age group only in 2008;
- ambulance call-outs for sport-related injuries were reduced.

Hospital admissions

In 2008 and 2009, the increase in direct heat-related hospital admissions was pronounced.

- in 2008, total admissions were 2.6-fold higher during heat wave days compared to non-heat wave days in the relevant summer season;
- direct heat-related admissions increased almost 3-fold in 2008 and 14-fold in 2009.
- total renal admissions increased during both extreme heat events, but the increase is not considered statistically significant. The most significant increase was 47.5% in the 75+ age group.

Small increases in total admissions occurred during both extreme heat events:

- 5.9% in 2008; and 8.2% in 2009 (both these increases are considered not statistically significant).

During the 2009 extreme heat event:

- ischaemic heart disease hospital admissions increased by 33% in the 15-64yrs age group; and
- it was estimated that that there were an extra 213.6 heat-related hospital admissions with the majority of cases (136.5) affecting the 75+yrs age group.

Emergency Department presentations

There were increases in direct heat-related hospital and emergency cases during 2008 and more significantly in 2009.

Total emergency presentations increased by:

- 5.5% during the 2008 extreme heat event;
- 2.4% during the 2009 extreme heat event (considered not statistically significant);
- in both 2008 and 2009 the impact was mainly seen in the 15-64yrs and 75+yrs age group;
- younger age groups (younger than 15 years) were not affected and their emergency presentations were in fact reduced.

Renal disease related emergency presentations increased by:

- 10.5% in 2008 (statistically not significant); and
- 39.3% in 2009.

It was estimated that an extra 304 heat-related presentations occurred during the 2009 heat wave. Extra cases were evident throughout the age groups but the majority of cases were seen in the 15-64yrs age group (123) and the 75+yrs age group (140).

A sharp rise in direct heat-related cases in 2009 was particularly pronounced on 29 January and 30 January (with maximum hospital admissions totalling 39 and maximum emergency presentations totalling 63).

Mortality

During the 2008 heatwave increases in mortality were observed in the 0-4yrs age group.

In 2009, the major impact was seen in the 15-64yrs age group with a statistically significant increase in mortality of 36.7% (23 extra deaths). Daily deaths in 2009 peaked on the 30 January (44 deaths), 31 January (38 deaths), and 1 February (44 deaths).

Total mortality increased by:

- 4.8% in 2008 (not considered statistically significant)
- 9.5% in 2009 (marginally statistically significant);
- estimated excess in 2009 of 32 extra cases.

The 2009 heat wave occurred simultaneously in South Australia and Victoria with the observed mortality rate in Victoria increasing by 62% above the expected rate.[34]

The Victorian study used a different statistical approach compared to the South Australian study, but the obvious difference in mortality risk cannot be attributed solely to the different approach in calculating expected number of deaths. The reasons for the marked differences are more likely to be location specific, such as differences in population and weather-related parameters.[35]

Summary

The findings contained within the research paper indicate an increased severity in health risks during the 2008 and 2009 heatwaves in Adelaide compared to previous heatwaves. In comparison to other national and international heatwave events, Adelaide's health outcomes were relatively well-contained; in particular, the relatively moderate increase in excess mortality. This may reflect the positive impact of prevention measures directed to the vulnerable population during the 2009 heatwave.

The report recommends that further studies be undertaken to assess in detail the progression of disease processes and risk factors during heat waves in South Australia. The scope of the suggested studies includes:

- case-control studies to examine individual risk factors (reported in either case-notes or gathered by asking next-of-kin) that are evident in cases (deaths) compared to controls;
- survey of the elderly and their perceptions of risk during heatwaves;
- time-series studies to examine the modifying effect of air quality during heatwaves on health outcomes;
- geo-spatial studies of health outcomes during heatwaves.

[34] http://www.health.vic.gov.au/chiefhealthofficer/downloads/heat_impact_rpt.pdf
[35] Nitschke, M. and Tucker, G. (2009) "*The unfolding story of heat waves in metropolitan Adelaide*". Department of Health, South Australia.

Who is at risk during an Extreme Heat Event?

Everyone is at risk during extremely hot weather but some groups of people have a higher risk of becoming ill than others, especially during a period of continuous extreme heat. It is very important that people in these risk groups take extra care of themselves during these times, and adequately prepare for future extreme heat events.

Any individual, regardless of age, sex, or health status, can develop heat stress if engaged in intense physical activity and/or exposed to environmental heat. The level of heat discomfort is determined by a combination of factors:

- Meteorological – air temperature, humidity, wind and direct sunshine;
- Cultural – clothing, occupation and accommodation; and
- Physiological – health and fitness, age, physical exertion, and level of acclimatisation.

Humans maintain a core body temperature near 37°C, with a surface skin temperature of up to 35°C.[36] If heat exposure exceeds the physiological capacity to cool, and core body temperature rises, then a range of heat-related symptoms and conditions can develop – from relatively minor heat cramps to severe life-threatening heat stroke, which is always an extreme medical emergency.

Even when acclimatised, adequate hydration is always critical to avoid the development of health related illnesses, however drinks containing caffeine or alcohol should be avoided as they can aggravate dehydration.

Factors Increasing Risk

Certain factors can increase the risk of extreme heat to a person's health. When preparing for an extreme heat event, knowing these risk factors can assist in coping with and reducing the health risk of the population.

The risk factors identified below can increase a person's vulnerability or place them at greater risk in an extreme heat event. Vulnerable populations may not be able to easily, comfortably or safely access and utilise resources to reduce the effects of heat on their health.

Older age (over 65 years) and frailty

An older person has increased vulnerability during an extreme heat event due to their physical responses to heat. They have reduced thirst response and diminished ability to sweat, as well as possibly having contributory chronic disease. This is especially so for:

- women over 75 years;
- those living on their own;
- those socially isolated.

Acute, chronic and severe illness

Increased vulnerability resulting from acute, chronic and severe illness may affect:

- a person with a high temperature from an existing infection;
- people with heart or breathing problems, diabetes, respiratory or renal insufficiency, serious mental illness, or who are very overweight (obese);

[36] "*Humans Fail in Rising Heat*". University of New South Wales. Published 5 May 2010 http://www.sciencealert.com.au/news/. Accessed 11 June 2010.

- people taking certain types of medications that can make them more vulnerable to the heat;
- persons who use medical equipment (e.g. ventilators, oxygen, gastric-tubes).

Inability to keep cool

The body's ability to thermo-regulate is critical during periods of extreme heat. The following are examples of persons who are at increased risk due to their body's inability to keep cool:

- babies and children under five years;
- anyone confined to bed;
- persons with Dementia or Alzheimer's.

Disability

Persons living with a disability are at an increased risk during extreme heat events, such as those:

- who are non-ambulatory;
- with physical disabilities that impair their capacity to self-manage;
- with sensory impairments (blind/visually impaired or deaf/hard of hearing);
- with cognitive disorders;
- who use mobility devices (e.g. wheelchairs, walkers, canes).

Environmental factors

- wearing inappropriate clothing;
- being outdoors during the hottest part of the day (usually in mid or late afternoon);
- engaging in activities in places with no cooling, or outdoors, and which includes high levels of physical exertion (gardeners or labourers);
- living in a confined space with no ventilation;
- those who live on their own or who do not live close to other people;
- crowded living conditions;
- living on the top floor of a house or apartment building.

Social factors

- women who are pregnant;
- individuals with drug or alcohol related problems;
- persons who are poor and/or socially disadvantaged;
- homeless people;
- persons who are socially isolated;
- people from culturally and linguistically diverse backgrounds with minimal access to information and health services.

PREPAREDNESS

Activities that focus on essential emergency response capabilities through the development of plans, procedures, organisation and management of resources, training and public education.

SA Government Extreme Heat Communications Plan

A SA Government Extreme Heat Communications Plan has been developed by the SASES as the Hazard Leader and Control Agency for extreme weather in South Australia. The Plan has been developed to ensure the SA Government is able to effectively respond to future extreme heat events. Particular emphasis has been placed on developing strong and consistent key messages across all Functional Services.

It is expected that each of the Functional Services identified in the SEMP develop a communications plan specific to their Functional Service. The efficacy of these plans depends on a consistent and coordinated approach across government; thus the SA Health Communications Plan must reflect the substance of the SA Government Extreme Heat Communications Plan.

SA Health Extreme Heat Communication Plan

The SA Health Extreme Heat Communication Plan has been developed by the SA Health Communications Division in conjunction with the Emergency Management Unit. The Plan supports SA Health's responsibilities under the SASES Extreme Weather Hazard Plan to support the Health & Medical Functional Service by providing heat health advice to the community on mitigating actions to reduce the impact of potential heat risks.

Evidence shows that a contributing factor to adverse health effects during extreme heat events is social disadvantage. Those with little or no disposable income need to be provided with heat health information on actions/strategies that they are able to implement. A variety of methods for distribution of information will ensure that extreme heat messages reach vulnerable persons in the community.

SA Health extreme heat messages will be practical, written in plain English to ensure they are easy to read, and focused on the actions people can take to avoid the effects of extreme heat. All materials produced will have a consistent look and style so they are easily identifiable.

The SA Health Communications Division will ensure the widest circulation possible for heat health information, with information available to download from the SA Health website. A link from the homepage will be created for the summer months to maximise awareness and make information easy for people to find quickly. A link to the heat health information page will also be posted on the websites of other relevant organisations such as the SASES and Department for Families and Communities.

As well as being provided as a download from the SA Health website, information will also be printed where possible. This will ensure that people who do not regularly use the internet, or those with limited or no access, will still have access to information on extreme heat.

SA Health Extreme Heat Guide

A comprehensive printed guide *Extreme Heat: Guide to coping and staying healthy in the Heat* was produced in late 2009 by the Department of Health as a SA Health publication for the general public.

The Extreme Heat Guide provides information on:

- heat related conditions and what to do if a person has symptoms;
- practical tips on preparing for and coping during extreme heat;
- emergency treatment for people affected by the heat;

- helpful tips for recovering from the heat.

IIt is available as a booklet or can be downloaded from the SA Health website at www.health.sa.gov.au

The Extreme Heat Guide was distributed widely in South Australia, in late 2009 and early 2010, with the assistance of government and non-government agencies and organisations. During extreme heat, the Emergency Departments (EDs) in hospitals in the metropolitan area will provide copies of the Extreme Heat Guide at the entrance to the ED for patients to take.

The Department for Communities and Social Inclusion distributes copies to clients of disability, domiciliary care and social housing services through its offices and home visits. South Australia's Fire and Emergency Services Commission (SAFECOM) holds a supply at each of its offices for distribution as needed.

Local Government Councils have the Guide for distribution through council libraries and at public venues. Organisations which support vulnerable groups such as the Red Cross, RDNS and Meals on Wheels, are able to give the Guide to clients utilising their services, or during the course of visiting them in their homes. Other customer service organisations including Tourism SA and Adelaide Metro offices, Medicare locations, Service SA and Centrelink have copies available for the public.

At large outdoor events such as the Clipsal 500 Adelaide and Tour Down Under, the Guide will be available in health booths.

SA Health Fact Sheets

Additional information has been developed in the form of fact sheets focusing on specific topics, or for specific audiences. The following fact sheets are available for download from the SA Health website.

- Advice for older people
- Being active in the heat
- Caring for babies and young children in extreme heat
- Caring for older people
- Caring for pets
- Preventing Heat Related Illness – keeping healthy in the heat
- Safe food handling in extreme heat
- Clothing for the heat
- Older children and teenagers
- Physical activity during the heat
- Pregnancy advice during the heat
- Sleeping when it's hot

RESPONSE

Actions taken in anticipation of, during and immediately after an emergency to ensure that its effects are minimised, and that people affected are given immediate relief and support.

SA Health Extreme Heat Action Plan

The SA Health Extreme Heat Action Plan reflects the level of response relative to the alert phases issued by SASES. These actions are dependent on advice received from the SASES and Bureau of Meteorology in relation to extreme heat alert triggers and are thus subject to change.

Refer to '*Attachment 1*' for SA Health actions which will be implemented at each stage of extreme heat alerts issued by SASES.

This **Action Plan is available as a stand alone document** on the Department of Health website www.health.sa.gov.au

Department of Health Emergency Management Unit

During an extreme heat event, the Emergency Management Unit is responsible for:

- management of the SCC-H;
- attendance at the State Emergency Centre (SEC) as required;
- ongoing liaison with other emergency services (i.e. SAAS, SAPOL, MFS, CFS, SES etc.);
- the formation and coordination of meetings for the Critical Incident Team;
- production and distribution of situational reports (SitReps) to relevant stakeholders for the duration of the extreme heat event;
- coordination of a SA Health debrief of the incident including all relevant stakeholders once the extreme heat event has concluded.

SA Ambulance Service (SAAS)

The level of response from SA Ambulance Service (SAAS) to an extreme heat event will largely be determined by advice it receives from the Bureau of Meteorology (BoM) and by service delivery demand at the time.

SAAS staff will follow the processes and procedures outlined in the *SAAS Heatwave Plan* when determining the appropriate level of response to extreme heat events.

The flow chart of SAAS response actions for extreme heat is included in this Plan for information purposes as '*Attachment 3'.*

State Control Centre – Health (SCC-H)

During an extreme heat event the SCC-H may be activated in order to provide a central coordination centre for the SA Health Operational Response Team.

SA Health Critical Incident Team (CIT)

During an extreme heat event the CIT may meet several times daily via face to face meetings and/or teleconference discussions. This team will link with the Commonwealth's Australian Health Protection Principle Committee (AHPPC) as necessary and State health service providers across the system.

The CIT will be responsible for the overall SA Health response to an extreme heat event. This will include undertaking the following functions:

- coordination of SA Health resources;
- liaison with the State Coordinator – in the event of a declaration;
- coordinating the preparation and dissemination of Department of Health heat health information and warnings to the public;
- coordination of information collection, analysis and dissemination of intelligence to the State Coordinator and relevant stakeholders;
- oversight of bed management status across the State's public hospitals;
- coordination of health media messages;
- contributing to the AHPC;
- any other action deemed necessary by the CIT.

SA Health Local Health Networks

The SA Health LHN's will actively participate in the response to an extreme heat event. This will be done by:

- providing a representative to the State Control Centre – Health (SCC-H) to act as a liaison between the SCC-H and the Regional Health Service executive management and disaster control centre;
- providing bed management data to the SCC-H upon request;
- participating in the CIT when required;
- provision of expert advice and clinical information as necessary.

Country Health SA LHN

Country Health SA LHN has instituted extreme heat response activities specific to rural and remote communities, and the vulnerabilities these communities may face during an extreme heat event.

Community health managers are responsible for establishing internal processes which assess and monitor vulnerable clients during extreme heat periods. When extreme heat conditions commence, Country Health SA LHN services will prepare and produce a list of vulnerable clients. This list of clients is forwarded to each Cluster Director who in turn reports on a weekly, or more regular, basis to the Chief Operating Officer, CHSA. The Chief Operating Officer will then make a determination as to the level of response from CHSA during the particular extreme heat event.

The method used for contacting vulnerable clients during an extreme heat period is at the discretion of the individual cluster director. A cluster may engage the service of Red Cross Telecross REDi, or a cluster may use its own staff and/or local volunteers to make telephone contact with vulnerable clients. A decision on which method will be used will often depend on the number of calls anticipated and the extent of any expected follow up.

In order to assist the identification of vulnerable clients during an extreme heat event, Country Health SA have adapted and modified the Red Cross Vulnerability Assessment Tool to be the '*Country Health SA Vulnerability Assessment for Extreme Heat Conditions*'.

Division of Mental Health and Substance Abuse

the Division of Mental Health and Substance Abuse will comply with standard procedures in extreme heat conditions outlined in the SA Health Directive ('High & Extreme Heat – Vulnerable Mental Health Clients') to ensure the safety of mental health clients, staff and others.

The procedures set out in the Directive are designed to ensure that clients of Mental Health Services receive a heat vulnerability assessment and a written information package on managing their health during an extreme heat event. If a client is identified as vulnerable, intensive monitoring of the client is implemented during the event of 'High' and 'Extreme' alert phases. The purpose of these procedures is to try and prevent, and ensure the early treatment of, any potentially adverse physiological effects.

To achieve this, all current mental health clients will have a heat vulnerability assessment conducted by Mental Health Services staff using the Red Cross Telecross REDi ("REDi") Vulnerability Assessment Tool. All current mental health clients will also be provided with a written information package on managing health during extreme heat events.

As part of this vulnerability assessment, all clients assessed as vulnerable will also be offered registration with REDi services. If this service is accepted, mental health staff will register the client with REDi, who will ensure that the client is contacted during an extended 'High' (Watch) alert phase and during an 'Extreme' (Warning) alert phase. If the vulnerable client declines the offer of REDI services, Mental Health Services will be responsible for contacting the client as per the 'heat related intensive contact protocol', or arranging alternative client contact, during 'High' and at 'Extreme' alert phases.

SA Health Communications Division

Advertising in the media will increase awareness of the availability of information and of the importance of looking after self and others during periods of extreme heat.

Media Unit

During an extreme heat event SA Health Media Unit staff will liaise with SASES and SAAS communications teams to ensure consistency of message and information across government agencies.

Public Awareness

Advertisements may be created for both print press and radio. The decision to advertise in the media will be made by the Operational Response Team, and will be coordinated by the SA Health Media Unit in consultation with the Department of Health Emergency Management Unit.

During the January and February 2009 heatwave, the advertisements were designed to run as soon as the weather was forecast to be at or above 40℃ for 3 or more consecutive days with night temperatures at or above 24℃ for 3 nigh ts. Advertisements can be run at any other time if it is determined that the heat is severe or unexpected enough to warrant this

SAGEMS Release

SAGEMS is the South Australian Government's across-government messaging service. It delivers email, calendar and related services to desktop environments in most agencies.

A SAGEMS release will be sent out to provide information to all SA Government employees regarding key messages throughout the hot season.

Australian Red Cross

Australian Red Cross successfully implemented a modified Telecross service to contact 'at-risk' people during the extreme heat event in early 2009, and have developed this into a model that will be utilised during future extreme weather events.

Telecross REDi

The Telecross REDi Service is a free life-saving service during extreme weather events which was activated as part of an emergency response in February 2009 to provide calls to vulnerable clients during the period of extreme heat. The program was developed as a full service and launched on 14 October 2009. The Service assists at risk, vulnerable and isolated people to prepare for and cope with extreme heat.

Registrations for Telecross REDi can be made by individuals, or by a carer, doctor, family member or friend with the individual's consent. For those people who receive services from Domiciliary Care, Disability SA, Disability Services, Housing SA, Meals on Wheels and RDNS, they can be assisted to register by the staff of those organisations.

Red Cross volunteers will call pre-registered clients up to three (3) times daily during an extreme heat event to discuss how the client is coping and to remind them of important measures to assist them through the extreme heat event. If a call goes unanswered or if a client appears unwell or confused, or requires extra support an escalation pathway is activated to ensure the safety and well-being of the client.

Organisations will be supported to appropriately assess clients using the Red Cross Telecross REDi 'Vulnerability Assessment Tool'.

Telecross REDi will be activated by the State Controller, Emergency Relief Functional Service, when SASES issues an extreme heat 'Warning' (Extreme) 0 - 48 hours in advance of an extreme heat event. In addition the Department for Communities and Social Inclusion will activate a modified Telecross REDi service (one call per day) when an extreme heat 'Watch' (High) has been in place for three consecutive days and the conditions are forecast to extend beyond five days.

Telecross Activated

Further information about the Red Cross Telecross REDi program is available at: http://www.redcross.org.au/sa/ or contact Telecross REDi on 1800 188 071 or (08) 8100 4697 (10 am – 5 pm), or via email: SAClientServices@redcross.org.au)

Royal District Nursing Service of SA (RDNS)

During the heat wave which occurred during January and February 2009, RDNS nurses had the opportunity to monitor how older people were coping with the extreme heat. Those with dementia were especially vulnerable and some needed daily reminders to protect themselves.

The RDNS 'extreme weather condition policy' was invoked during the 2009 extreme heat event which resulted in:

- many staff working additional hours and shifts across a 24 hour spectrum;
- RDNS purchasing a number of electric fans for distribution to clients most in need;
- a total of 2925 client contacts directly related to heat wave emergency response activities;
- 'Heat Wave Kits' were made up in addition to standard supply kits to be used by staff deployed from the office to conduct 'Heat Wave Assessment Visits';

- a ‘Virtual Hospital’ was established to monitor clients hourly, ensuring adequate hydration and preventing hospitalisation for 50 clients.

It is anticipated that a similar response will occur for future extreme heat events.

More information on the services provided by RDNS can be found at the following web address: http://www.rdns.org.au/

Local Government

Each council has responsibility for developing its own extreme heat arrangements, however it is anticipated by the Local Government Association of SA that councils will be most effective during an extreme heat event by:

- acting as an information or guidance source for persons needing additional assistance and/or support during an extreme heat event;
- ensuring that councils act as a participating organisation to state-wide extreme heat plans;
- understanding the formal triggers implemented by SES for an extreme heat event;
- ensuring clear communication processes are developed between state government agencies and local councils;
- considering enhancements to current services and facilities available to the local community to cope with anticipated increases in demand during an extreme heat event;
- developing Business Continuity Plans that anticipate and mitigate the business disruption to may occur during extreme heat events.

Actions to Safeguard Health and Assist Readjustment after an Extreme Heat Event

Following an extreme heat event it may take time for individuals to readjust to cooler weather and to generally feel better. This is a result of the body having developed its own coping mechanism and adjusting to the extreme temperatures.

Generally, people want to return to normal[37] as quickly as possible. However it is important to reflect on the impact the extreme heat had, and assess what actions are required to lessen the effects of future extreme heat events. Such actions may have a significant impact on a person's ability to cope during future extreme heat events.

In assisting people to recover from an extreme heat event it is recommended that in order to maintain health and well-being, and prepare for any future event they are advised to take the following actions:

- continue to drink plenty of fluids to enable the body to get back into balance;
- take time to rest and recover as extremely hot weather can have significant impact both physically and mentally;
- go to a doctor if feeling unwell;
- open windows and doors to let the house cool down without compromising the security of the home;
- contact family and friends to ensure they have managed during the extreme heat;
- reflect on coping measures during an extreme heat event and what, if anything could be done differently next time;

  make any necessary changes in and around the home in preparation for any future extreme heat events. This will allow for greater comfort during the next extreme heat event

[37] 'Normal' in this context refers to the way things were relevant to that individual before the extreme heat event.

RECOVERY

The conduct of human, economic and environmental measures necessary to re-establish the normal pattern of life of individuals, families and communities affected by an emergency.

Recovery commences with planning and responding to an emergency and continues until after the affected community is able to manage on its own. Planning for recovery is integral to preparing for emergencies, and is not simply a post-emergency consideration.

National Principles for Disaster Recovery

The Community and Disability Services Ministers Advisory Council endorsed National Principles for Disaster Recovery at their March 2008 meeting.

The National Disaster Recovery Principles comprise a series of six (6) key concepts which state that successful recovery relies on the following:

- understanding the **context**;
- recognising **complexity**;
- using **community**-led approaches;
- ensuring **coordination** of all activities;
- employing effective **communication**; and
- acknowledging and building **capacity**.

The National Principles for Disaster Recovery poster is included as '*Attachment 4*'.

State Recovery Office

The State Recovery Office is a unit within the Department for Communities and Social Inclusion that works across government and non-government sectors increasing the State's disaster recovery capacity. The State Recovery Office directly supports the Chair, State Recovery Committee and the Assistant State Coordinator – Recovery (if appointed) in meeting their planning, development and operational responsibilities. The State Recovery Office also provides support to Zone Emergency Management Committees.

During an emergency event, the State Recovery Office provides management and administrative support to the Chair, State Recovery Committee and/or Assistant State Coordinator – Recovery (if appointed), the State Recovery Committee and Local Recovery Committee. This includes leadership and coordination roles in recovery operations.

FOR OFFICIAL USE ONLY

SA Health *Extreme Heat* Action Plan

Health actions to be implemented at each stage of *'Extreme Heat'* Alerts issued by the SASES

'Alert Levels' have been developed by the SA State Emergency Service (SASES) in conjunction with the Adelaide Bureau of Metrology, Kent Town (BOM) and form the Temperature Triggers for *'Action'* as in the *'Extreme Heat' Arrangements* Annexe A to the SASES *Extreme Weather Hazard Plan for SA.*

The SASES is the Hazard Leader for Extreme Weather (this includes Extreme Heat)

The **Alert levels are issued by the SASES in advance of an extreme heat event.** They are based are based on the forecast *Average Daily Temperature* (ADT) for Adelaide for 3 consecutive days' temperatures as provided by the BOM Adelaide (Kent Town). The ADT is an average of the minimum overnight and maximum daily temperature occurring that day.

Seasonal Preparation

Actions to be taken in September in preparation for the lead up to hotter months (October to March) Heat advice available on the SA Health and SASES websites

Public Alerts WILL NOT be issued by the SASES

PREPARATION

- **Department of Health (DH) Emergency Management Unit (EMU)**
  - **Prepare for and maintain** a state of increased readiness.
  - **Advise** health service providers and other agencies to be prepared for impending hot weather and ensure their heat health action plans are current and able to be implemented.
  - **Revise and update** as required:
    - the *'Extreme Heat Guide* booklet
    - topic specific fact sheets.
    - Communications Plan for Extreme Heat
  - **Arrange distribution** of the *booklet 'Extreme Heat: Guide to coping and staying healthy in the heat'* to government and non-government agencies/organisations and community groups as per requests received.
  - **Develop** other topic specific fact sheets according to need.
- **SAAS/Local Health Networks(LHNs)**
  - **Conduct any training** of staff and test/exercise activation of plans and procedures.
  - **Identify vulnerable groups** within the community and review/update notification processes for these groups.

- **Refer vulnerable clients,** with their permission, to Red Cross Telecross REDi.
- **Encourage clients to:**
  - prepare before the heat and have a plan to cope and manage
  - have contact numbers for help
  - check that air conditioners (AC) and fans are working and that the AC is on **'Cool'** setting
  - ensure water supplies (if not on mains water) will last at least a week, and make arrangements for adequate food availability (stored or delivered) to avoid the need for shopping in the heat as far as possible
  - ensure they have adequate supply of their medications (up to 2 weeks)
  - keep out of the heat as much as possible.

- **Communications Division (DH)**
  - **Review and maintain information** for the public on the Department of Health Extreme Heat web site.
  - **Write** newspaper/press release and radio advertisements for use during periods of extreme heat.

HIGH – (Watch)

Based on Adelaide forecast temperatures for next 5 days
(available on the SASES website) **Issued 2-3 days in advance of 'Watch'**

Public Alerts WILL NOT be issued by the SASES at this Alert level

PREPARATION AND RESPONSE

- **SAAS/LHNs**
  - **Monitor reports** on the number of calls and Ambulance carries to hospital Emergency Departments for provision to DH HSP Division when an increase in service demand becomes evident.
  - **Prepare to** action Heat Health plans in readiness for full activation if an ***'Extreme Heat Warning'*** Alert level is reached.
- **DH Health Systems Performance (HSP) Division**
  - Prepare to monitor hospital Emergency Department presentations, and provide information to EMU when an increase in service demand becomes evident.
- **DH Emergency Management Unit**
  - **Commence SA Health Sit Reps** when DH HSP Division and SAAS report that an increase in service demand is evident, or when an ***'Extreme Heat Warning'*** has been issued.
  - **Advise DH Mental Health Operations** and **LHN Mental Health Services** of the ***'Extreme Heat Watch'*** Alert level so that a decision can be made by the local mental health services about the most appropriate time to commence calls for mental health clients, according to the SA Health *'High and Extreme Heat Policy for Vulnerable Mental Health Consumers Directive'.*
- **Communications Division (DH)**
  - **Prepare heat health messages** for the community as appropriate:
    - media release – 'Prepare to respond'
    - consider 'Health Watch' media release and finalise adverts for newspapers and radio – (supporting the media release and focused on preparation for vulnerable groups, referring general public to SA Health website for advice).

Note: **Where an *'Extreme Heat Watch'* has been in place for 3 days, SA Health should consider whether to activate additional services.**

EXTREME – (Warning)

Based on Adelaide forecast temperatures for next 5 days
(available on the SASES website) **Issued 48 hours** in advance of 'Warning'

Public Alerts WILL BE issued by the SASES at this level

RESPONSE

- **SAAS/LHNs**
  - **Continue to monitor**, and in addition, provide daily reports to DH HSP Division on the number of calls and Ambulance carries to hospital Emergency Departments, and LHNs hospital bed state.
- **DH HSP Division and EMU**
  - **Liaise** with LHN's if required and assist hospitals to coordinate activities in conjunction with the EMU/State Control Centre Health (SCC-H).
  - **Consider** reduction of non-emergency service provision if extreme heat situation progresses.
  - **EMU to provide** daily reports on service provision to SASES as required (usually daily).
- **Mental Health Services**
  - **Activate** calls to vulnerable clients once day temperatures reach 40°C and above; and night temperature stay above 24°C.
  - **Continue calls** to vulnerable clients according to the SA Health *'High and Extreme Heat Policy for Vulnerable Mental Health Consumers Directive'*.
- **Communications Division (DH)**
  - **Activate 'heat health warnings'** - newspaper and radio adverts and supporting media releases with messages focusing on getting general public to look after themselves and look out for those around them.

IMPACTS OF DECISION MAKING

- In the event that the extreme heat situation progresses (or a day of catastrophic fire danger is also declared), to assist with the implementation and management of the SA Extreme Heat Action Plan principles, the following applies:
  - **LHN Silver Command will in the first instance** make contact via the Director of the Emergency Management Unit, or after hours, the EMU Duty Officer
  - **in relation to standardised processes for Human Resource issues** the Director of Workforce Division DH has been designated as a single authoritative point of contact. Liaison with the Director of Workforce contact should, in the first instance, be through the EMU regarding corporate decision about service continuation, suspensions or cessation.

Enquiries contact: emergencymanagement@health.sa.gov.au

Revised: **January 2012**

ATTACHMENT 2

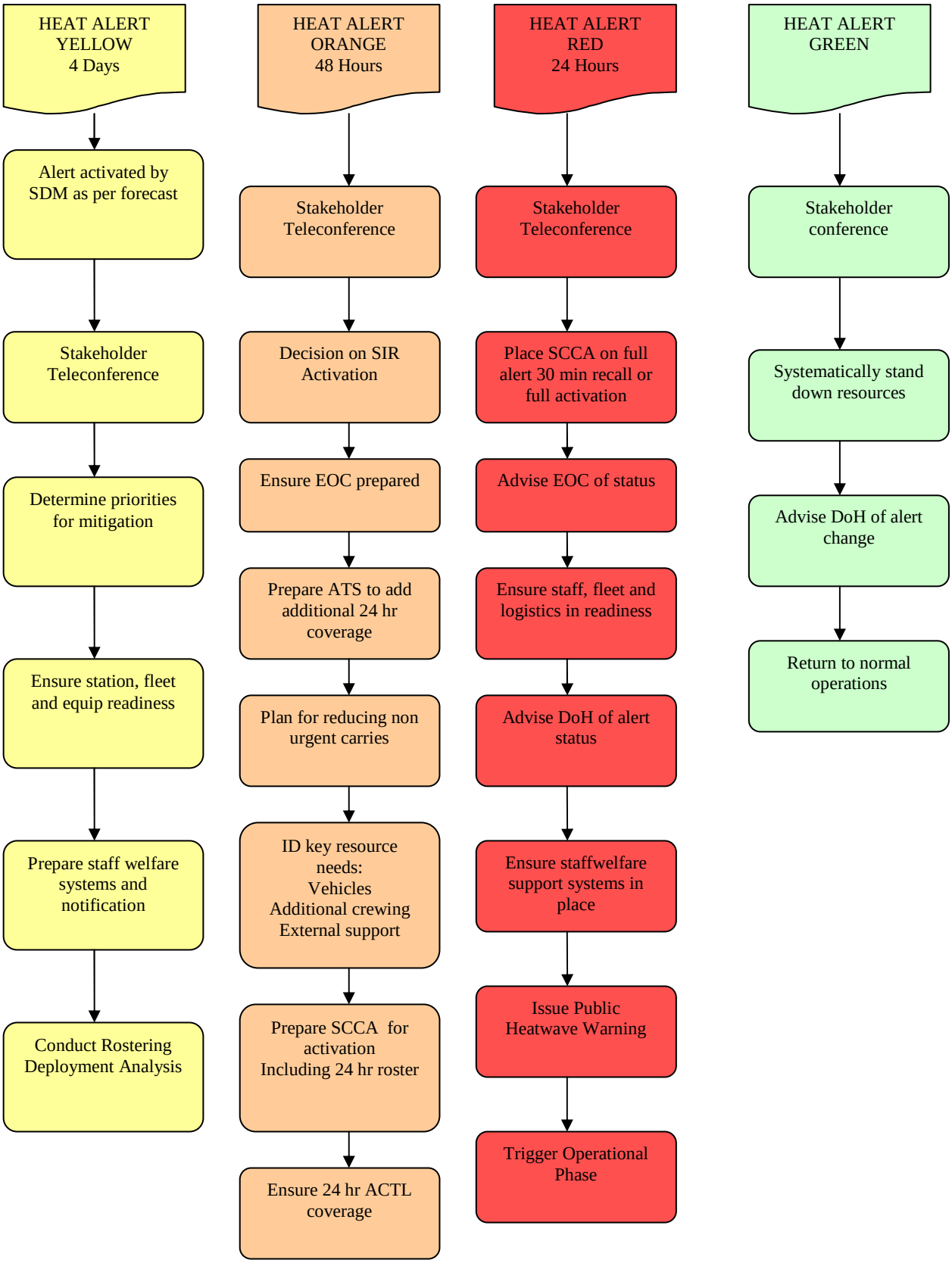
Heat related illnesses

Illness	Symptoms	Treatment
Dehydration	Profuse sweating Increase in body temperature Lethargy and tiredness Loss of appetite Being thirsty Irritability	On feeling unwell, cease activity and go to a cool shaded place Drink plenty of fluids (avoid caffeine and alcohol) Try to keep cool by: turning on a fan or air-conditioner using a spray bottle of water on the face and body If remaining unwell, seek medical advice as soon as possible
Heat Cramps	Muscle spasms Painful muscle cramps in the limbs or abdomen Twitching Moist cool skin	On feeling unwell, cease activity and go to a cool shaded place Drink plenty of fluids (avoid caffeine and alcohol) Try to keep cool by: turning on a fan or air-conditioner using a spray bottle of water on the face and body to cool down, or use a wet towel having a cool shower or bath Lie in a cool place with legs supported and slightly elevated Massage limbs gently to ease the spasms, or firmly if cramped, then apply ice packs If remaining unwell, seek medical advice as soon as possible
Heat Syncope	Dizziness and Fainting	May be aggravated by cardiovascular disease, and certain medications On feeling unwell, cease activity and go to a cool shaded place Drink plenty of fluids (avoid caffeine and alcohol) Try to keep cool by: turning on a fan or air-conditioner using a spray bottle of water on the face and body to cool down, or use a wet towel having a cool shower or bath Lie in a cool place with legs supported and slightly elevated If heat cramps present, massage limbs gently to ease the spasms, or firmly if cramped, then apply ice packs If remaining unwell, seek medical advice as soon as possible

Heat Exhaustion	Headaches High temperature Profuse sweating Cold, clammy pale skin Fatigue, weakness and restlessness Nausea and vomiting Weak but rapid pulse Poor coordination Circulatory collapse	May be aggravated by cardiovascular disease, and certain medications On feeling unwell, cease activity and go to a cool shaded place Drink plenty of fluids (avoid caffeine and alcohol). Try to keep cool by: turning on a fan or air-conditioner using a spray bottle of water on the face and body to cool down, or use a wet towel having a cool shower or bath Put cool packs under the armpits, in the groin or on the back of the neck (or all three places) to reduce body heat Lie in a cool place with legs supported and slightly elevated If heat cramps present, massage limbs gently to ease the spasms, or firmly if cramped, then apply ice packs If remaining unwell, seek medical advice as soon as possible **If vomiting continues, seek medical assistance immediately by calling 000 for an ambulance**
Heatstroke	Confusion, headaches, dizziness and nausea Skin flushed, hot and unusually dry Intense thirst Dry, swollen tongue Sudden rise in high body temperature (40^{o}C+) Disorientation, delirium Slurred speech Aggressive or bizarre behaviour Sleepiness Convulsions Unconsciousness may develop rapidly Seizures or coma	**This is an extreme medical emergency. Ring 000 immediately for an ambulance!** May be aggravated by cardiovascular disease, and certain medications On feeling unwell, cease activity and go to a cool shaded place Drink plenty of fluids (avoid caffeine and alcohol) Try to keep cool by: turning on a fan or air-conditioner using a spray bottle of water on the face and body to cool down, or use a wet towel having a cool shower or bath Put cool packs under the armpits, in the groin or on the back of the neck (or all three places) to reduce body heat Lie in a cool place with legs supported and slightly elevated If heat cramps present, massage limbs gently to ease the spasms, or firmly if cramped, then apply ice packs If conscious – try to keep the person calm and stay with them until ambulance arrives If unconscious – check airway for breathing and monitor pulse rate until ambulance arrives Do not give aspirin or paracetamol to a person affected by the heat

ATTACHMENT 3

SA Ambulance Extreme Heat Response Flow Chart



ATTACHMENT 4

The National **Principles** for Disaster Recovery

Successful recovery relies on:

- understanding the **context**:
  Successful recovery is based on an understanding of the community context.
- recognising **complexity**:
  Successful recovery acknowledges the complex and dynamic nature of emergencies and communities.
- using **community**-led approaches:
  Successful recovery is responsive and flexible, engaging communities and empowering them to move forward.
- ensuring **coordination** of all activities:
  Successful recovery requires a planned, coordinated and adaptive approach based on continuing assessment of impacts and needs.
- employing effective **communication**:
  Successful recovery is built on effective communication with affected communities and other stakeholders.
- acknowledging and building **capacity**:
  Successful recovery recognises, supports and builds on community, individual and organisational capacity.

Government of South Australia

Department for Families and Communities