REPORT BY TERENCE SHANE KIRKPATRICK

FOR CORONERS COURT OF NSW

Inquests and inquiries into the 2019/2020 Bushfires Season in NSW

Contents

1. INTRODUCTION

1.1. This report addresses Stage 2 Hearings Issues List, Backburning – Grose Valley, Mt Wilson; point 18) Responding to recommendations from the NSW Bushfire Inquiry. That is:

1.2. *Recommendation 47: That in order to enhance firefighting strategies in severe conditions, the NSW RFS implement the following in respect to backburning:*

1.3. *d) Where there is significant concern within a community regarding a backburn, the NSW RFS should undertake a community engagement session with affected residents to discuss the backburn, including any investigation and relevant findings.*

1.4. Declaration

I, Terence Shane Kirkpatrick acknowledge for the purpose of Rule 31.23 of the Uniform Civil Procedure Rules 2005 that I have read the Expert Witness Code of Conduct in Schedule 7 to the said rules and agree to be bound by it.

1.5. I rely on my psychology academic qualifications, professional training and clinical experience as well as my operational experience for over 20 years with Fire and Rescue NSW in making this report. My relevant psychological academic qualifications include undergraduate and post-graduate degrees and diplomas. As a psychologist I have developed competencies in mental health, community psychology and trauma and have experience working in the public sector, non-government organizations and in private practice. I have also worked as a Station Commander with Fire and Rescue NSW and I was operationally responded to the 1993/94 Summer Eastern Seaboard Fires and the 2001 Black Christmas Fires. I was a Partner Researcher for Fire and Rescue NSW in the Bushfire Cooperative Research Centre (CRC) from 2003-2008. I provided information and advice to support the residents of Mt Tomah Berambing communities after the Black Summer bushfire season in the documentary video Out of the Ashes that explored the experiences of those communities during and after the bushfire

1.6. My resume is attached to this report (Annexure 1).

2. BACKGROUND INFORMATION

2.1. Impact of disaster

Like all natural and man-made disasters, a major bushfire can have devastating and long-lasting impacts on individuals, families, and communities.

2.2.	Communities are often overwhelmed by a major bushfire. The size and speed of the fire front, the noise, the heat and difficulty breathing, the thick smoke and lack of visibility, the confusion, chaos and poor communication during the fire are beyond what individuals and communities anticipate adding to the fear, distress and helplessness experienced by those impacted by the fire.

2.3.	Annexure 2 provides some evidenced based information on the physiological and neurobiological impact of disaster events on individuals.

The Gospers Mountain fire and the Grose Valley Mt Wilson backburn fire impacted the effected communities in several ways. Some of the main impacts include:

2.3.1.	**Property damage and loss**: Homes, businesses, and other infrastructure and equipment were destroyed resulting in the loss of personal possessions, assets and livelihoods. This results in significant financial loss and hardship to individuals, families and communities.

2.3.2.	**Displacement and relocation**: Some individuals and families were forced to relocate or seek temporary accommodation due to the destruction of their homes or unsafe living conditions. The rebuilding process is taking several years, adding to the sense of displacement.

2.3.3.	**Disruption to daily life**: In the aftermath of the bushfire, individuals, families, businesses and the community in general find it difficult to resume their normal daily activities and routines adding to the significant psychological distress experienced.

2.3.4.	**Environmental impacts**: The fire has had long-lasting impacts on the environment including the loss of habitat and biodiversity, soil erosion and changes to water quality and availability. This has further psychological and emotional impacts on the community as many have chosen to live here because of the natural environment.

2.3.5.	**Economic impacts**: The loss of homes, businesses and infrastructure creates significant financial hardship that some will never recover from.

2.3.6.	**Psychological and emotional impacts**: The trauma from the experience of these fires has been distressing for individuals, families, and the community in general. Common reactions in the aftermath of the fires include feelings of shock, anxiety, depression grief and loss. Many people will struggle to come to terms with what has happened, and some will develop mental health issues including PTSD and clinical levels of anxiety and depression.

2.3.7.	**Impact on families**: There are unique psychological stresses when people are suddenly in a life-threatening situation separated from family members, neighbours and friends who they may have been looking to for help. Similarly, it is extremely stressful for individuals and family members who are unable to access their homes to engage in property protection when a major bushfire strikes. This has lasting impact on individual, family,

and community dynamics.

2.3.8. **Impact on volunteer RFS members**: Volunteer firefighters from the effected communities are particularly at risk. These volunteers share several responsibilities such as looking after their loved ones and properties, protecting the wider community as well as their commitment to the RFS. There were examples during this fire when volunteer firefighters were receiving directions from the Fire Control centre to remain on duty, despite the changing local conditions, and they had to stand by as their homes and properties and those of their neighbours were destroyed.

2.3.9. **Impact on fire fighters**: Firefighting is inherently physically dangerous and arduous as fires can take many hours to if not days to extinguish and often firefighting teams are responded to other communities and geographical areas. In rural communities, necessity often requires everyone to be available at their home and properties when a fire strikes. It is very stressful for volunteer fire fighters when they are not able to respond to a fire encroaching on their community and homes or properties.

2.3.10. **Impact of the Grose Valley Mt Wilson backburn**: Individuals and communities were angered when information about backburns became known. This has created a loss of trust and confidence in the RFS management. The community have a sense that the RFS and other decision makers during the response to the fires created the situation where the extent of the fires and damage was greater than otherwise would have been the case. The community hold the RFS administration responsible for what happened and seek some accountability from the RFS as an organisation and an undertaking to consult, collaborate and communicate with the community in future fire planning and preparation.

2.4. Overcoming the psychological and emotional impacts of the bushfire experience

2.4.1. An understanding of the physiology and neurobiology responses to traumatic events (see Annexure 1 – The Physiology and Neurobiology of Trauma – attached to this report) provides an appreciation of the range of ways individuals deal with and overcome the trauma associated with major bushfires.

2.4.2. While the evidence indicates that most people will not develop severe mental health issues following the experience of a major bushfire it is important to recognise that the recovery for most people will be long and difficult. The trauma associated with bushfire produces a radical shift in the way individuals think about themselves and how they see and respond to the world. Their sense of confidence, trust and predictability is shattered and, they will often over respond with high levels of emotion to unexpected and often unconscious triggers associated with their experience of trauma.

2.4.3. There is no one-size-fits all approach to supporting the mental health and recovery journey of those experiencing trauma. However, a trauma informed, recovery oriented, strength-based approach that fosters connection, collaboration and engagement will help individuals and communities recover a sense of safety, stabilisation, control and empowerment and will

help rebuild trust. For those who continue to struggle with their mental health there are a range of evidence-based therapies that can support recovery.

Some approaches to encouraging psychological and emotional healing in the following major bushfires set out below.

2.4.4. Social support and connection- The support from continuing connection with friends, family and community members is one of the most powerful ways of managing and overcoming the impacts of trauma. Support groups and community organisations and networks bringing people together providing a sense of belonging. Social connections build trust and the sharing of information. This is important because support and information delivered through strong relationships and effective networking builds social capital, trust and a renewed sense of identity at both an individual and community level. However, weak social ties can lead to a cycle where poor communication can create an environment of mistrust and blame, further damaging social connections. There are many ways for communities to come together in positive ways to foster recovery and healing including formal and informal. Here is an example of the Bilpin community coming together to share their stories of the long-lasting drought and the subsequent bushfires:

https://www.youtube.com/channel/UCo4VHa2vJS_AfxxhavtCMhQ

2.4.5. Mindfulness Based Interventions- such as meditation and yoga, can help individuals manage stress and anxiety related to trauma. These interventions can be particularly effective in group settings bringing people sharing similar experiences together in as safe and calming environment that is both supportive and restorative.

2.4.6. Psychological First Aid (PFA)- PFA is an evidence-based approach to providing immediate support to individuals affected by bushfires and other disasters. It involves providing emotional support, helping individuals meet their basic needs and connecting them with appropriate resources. In Australia, PFA is usually coordinated by the Red Cross and involves groups such as the Disaster Response Network of the Australian Psychological Society and a range of other appropriate volunteers.

2.4.7. Cognitive Behavioural Therapy (CBT)- CBT is an evidence-based type of talk therapy that is effective in helping individuals manage continuing distress effecting their functioning sometime after their experience of the bushfire. CBT focuses on developing effective coping strategies and overcoming negative thoughts, emotions and behaviours. It can be delivered in individual or group sessions.

2.4.8. Eye Movement Desensitization and Reprocessing (EMDR)- is a therapy that uses rapid eye movements to help individuals process traumatic events. It can be particularly effective for individuals who have experienced a single traumatic event.

2.4.9. Medication- In some cases, medication may be necessary to manage symptoms of trauma, such as clinical level anxiety and depression. Medications for mental health issues are prescribed by a GP and medication may be used in conjunction with other psychological therapies.

2.4.10 At best, a combination of all these approaches may be appropriate to assist with the recovery of communities. It is empowering for individuals and communities to determine what is best for them their recovery journey. This is highlighting in the video Out of the Ashes made by the Mt Tomah, Berambing, East Bilpin and Kurrajong Heights communities on their recovery process. The video explains how residents coming together to improve community safety are empowered and that engagement and mutual support can lead to post-traumatic growth experiences.

3. BACKBURNING- GROSE VALLEY MT WILSON FIRE CASE STUDY & CURROWAN CLUSTER & RFS COMMUNITY ENGAGEMENT SESSIONS

3.1. The coroner identified these two backburns as having significant community concern worthy of case study investigation. This makes NSW Bushfire Inquiry 2020 recommendation 47 d) applicable to these communities. This requires the RFS to participate in "community engagement sessions" to discuss the back burn in order "to enhance firefighting strategies in severe conditions" and learn lessons.

3.2. **Recommendation 47 (d) Grose Valley Mt Wilson fire**

Below is a chronology of events leading to the holding of two community engagement sessions with affected residents impacted by the Grose Valley Mt Wilson fire. The sessions were held at Berambing on 15 September 2022 and Kurrajong Heights 24 October 2022.

3.2.1. On 31 July 2020 the NSW Bushfire Inquiry released its report and the NSW Government committed to implementing all its recommendations.

3.2.2. On 10 November 2020 the Rural Fires Act 1997 No 65 (s 138) NSW Bushfire Inquiry- Ministerial progress reports came into effect requiring "*The Minister must cause to be laid before each House of Parliament a report on the Government's progress in implementing all 76 recommendations of the Final Report of the NSW Bushfire Inquiry, dated 31 July 2020, every 3 months.*"

3.2.3. In the 2021 April – June Quarterly Progress Report showed Recommendation 47 was complete. (General Brief of Evidence p.580)

3.2.4. On 20 December 2021 community members from Berambing and Kurrajong Heights who had houses, property and businesses damaged and or destroyed by the escaped Mt Wilson backburn fire; had a virtual meeting with NSW Resilience Commissioner Shane Fitzsimmons. At this meeting the RFS failure to complete Recommendation 47 (d) was discussed and the Commissioner gave an undertaking to speak to the RFS Commissioner Rob Rogers about this matter.

3.2.5. On 5 September 2022 community members attended NSW Parliament Budget Estimates Hearing where the RFS Commissioner was asked why a report had been made that Recommendation 47 d) had been completed when it had not. At these hearing the RFS

Commissioner gave an undertaking to implement Recommendation 47 d) (Video footage)

3.3. Mt Wilson Backburn (Gospers Mountain Fire and Grose Valley Fire, Mt Wilson)

3.3.1. On 15 September 2022 residents of Bilpin District organized a community engagement session at Berambing attended by RFS Assistant Commissioner Jayson McKellar. (Video footage)

3.3.2. On 24 October 2022 residents of Bilpin District organized a community engagement session at Kurrajong Heights attended by RFS Assistant Commissioner Jayson McKellar. (Video footage)

3.3.3. These two community engagement sessions were video recorded and a document titled Lessons Learnt was produced by community members. These video records and documents are attached, and I have reviewed them. I also appeared in the video Out of the Ashes made by this community and have seen the video footage of NSW Parliament Budget Estimate Committee meeting where Commissioner Rogers responds to questions about the implementation of Recommendation 47 d) https://www.mtwilsonbackburn.com/film I have also viewed video footage of this same Budget Estimates Committee meeting where the Commissioner apologies to impacted communities.. Hyperlinks to the all the video footage I have viewed are in the reference list attached to my report

3.4. Currowan Cluster (Lake Conjola)

3.4.1. The NSW RFS conducted only one community engagement session with residents of Lake Conjola community on 7 May 2020 which was recorded in a story on ABC News on 8 May 2020. I have read this article https://www.abc.net.au/news/2020-05-08/lake-conjola-rfs-report-on-back-burn/12226956

4. OBSERVATIONS OF IMPLEMENTATION OF RECOMMENDATION 47D. VIDEOS AND DOCUMENTATION.

4.1. I made the following observations from my review of the material on the conducting of the 3 community engagement sessions.

4.2. The range of psychological and emotional responses common to the trauma experienced as a result of bushfires were evident across each of the videos including those who were distressed but coping and seeking validation of their experiences through to those needing medication and more professional clinical support.

4.3. The introduction by the Minister of Religion at the Berambing meeting was crucial to creating a safe environment for all stakeholders and an acceptance of the emotions that may emerge during the meeting and encouraging mutual respect and support.

4.4. The two community sessions held at Berambing and Kurrajong Heights were planned and run by community organizers and the RFS and other representatives of the emergency services came as invited guests rather than collaborators and partners in the engagement.

4.5. Despite the underlying emotion and anxiety, the community participants were able to calmly describe their experiences. There was a sense of community integrity in the way they participated in the meetings. Most participants were not attributing blame but were seeking some accountability from the RFS and an apology for the impacts of the fire on individuals and the community.

4.6. The strong sense of community identity and cohesion was evident in all the meetings. The participants were clearly providing emotional support to each other.

4.7. In general, the community members acknowledged the difficulty of those firefighters responding to RFS directions and the complex decisions that had to be made by those in control. However, there was a sense that the RFS were not taking responsibility and being accountable for what happened as a result of the backburn.

4.8. For some in the community there was an expressed distrust of those in authority at the RFS and this appeared to be a common view of most participants.

4.9. There was an expressed concern that the RFS has lost its community focus and has become a large emergency service bureaucracy that is out of touch with local communities. The RFS now directs how communities are to respond in major bushfires without consideration of the local history of fires and local changes in conditions. The size and approach of the RFS bureaucracy makes it difficult for the RFS to learn from mistakes impacting different communities across the State.

4.10.   There was a sense of outrage and disbelief that the advice of locals with the experience of major fires in the past was ignored. Many local residents indicated that it was dangerous to backburn and described the potential outcome of backburning based on historical knowledge but this was ignored.

4.11.   There was concern among the Berambing participants that the public approach of RFS Senior Officers is to expect the community to understand that they are doing their best under difficult circumstances and they deflect any criticism of them as employed professionals for decisions made at senior levels as a criticism of RFS volunteers.

4.12.   There was an interesting juxtaposition in the approach of the Police representative and the RFS senior officers at the Kurrajong Heights meeting. The Police representative thanked the community members for their criticisms and accepted that going forward the

Police had a lot to do to improve their response and communication in major bushfires and gave a commitment to engage and work with the community to improve their emergency management. This prompted a positive response from the community participants. The RFS Assistant Commissioner seemed more defensive and while apologizing for the fire and justifying their actions did not acknowledge any accountability or acknowledge any systemic failures.

5. DISCUSSION & CONCLUSIONS

5.1. The intent of recommendation 47d is that emergency services and response agencies engage in positive and constructive ways with communities affected by poor decisions made during a bushfire event causing losses of life and property. In practice the degree of influence and effectiveness of community engagement can vary from token, tick-the-box efforts to genuine collaboration and shared decision making. Effective community engagement under recommendation 47d is important for several reasons:

5.1.1. **Accountability**: It is important for emergency services to take responsibility for decisions and actions during a major bushfire and to acknowledge any mistakes that were made. Engaging with affected communities is a crucial and necessary step in this process as it allows the emergency services to hear directly from those who were impacted and to take responsibility for their decisions and actions.

5.1.2. **Rebuilding trust**: When the affected community believe that emergency services made poor decisions resulting in losses to life and property it erodes the trust that communities have in these services. Engaging in ways that are respectful, collaborative, transparent and cooperative with affected communities is necessary to rebuild trust as it shows that emergency services are willing to listen and accept the experiences and concerns of those impacted and are committed to working with the community towards better outcomes for the inevitable future bushfires. This is particularly important if the emergency services want the community to trust their advice and expertise in the future.

5.1.3. **Lessons learned**: All emergency services conduct internal reviews following major incidents to determine what went well and things that did not go well to improve performance in future events. However, engaging with affected communities provides valuable insights into what went wrong during the bushfire and how the future response of emergency services can be improved. Through listening to the feedback and stories of those impacted by the fire and taking onboard the history of those in the community who have experienced bushfires in the past all emergency services can learn and benefit from local knowledge and experience ensuring better outcomes in the future.

5.1.4. **Support recovery and healing**: Individuals and communities often experience a sense of powerlessness and helplessness during and after a major bushfire. Positive community engagement with the emergency services taking responsibility and being accountable

for poor decisions is important for the healing process helping individuals and communities restore a sense of being back in control. This engagement can also bring a sense of healing and closure to the emergency service and its personnel involved in the event.

5.1.5. **Sharing knowledge, experience, and skills**: Together, the community and emergency services can collaborate to share their knowledge, experience, and skills. This partnership will make for a more resourceful and resilient community and emergency services that are better prepared to respond to the unique features, geography and fire history of the community.

5.1.6. The strength of community identity combined with the increasing use of social media and communication technology is a double-edged sword. It can provide a powerful engine driving recovery and collaboration with emergency services in preparedness and response strategies for future bushfires. However, when the community is unhappy with the response from the emergency services then int can drive a greater sense of mistrust, growing dissatisfaction with the organisations performance in ways that make the community less likely to accept

5.1.7. Further, the phases of a natural disaster such as a major bushfire require a nuanced approach from both the community and emergency services. Prevention, preparedness, response and recovery are interdependent and overlapping rather than discrete and linear. For example, preparedness activities influence emergency service response and community recovery while recovery processes can affect preparedness and response for future bushfires. During long fire seasons the lines between these phases are blurred even further with prevention, preparedness, response and recovery activities occurring simultaneously.

6. RECOMMENDATIONS

6.1. The RFS, to fulfil the spirit of 47d, need to collaborate and consult the effected communities to organize community engagement session/s at a time/s and place/s that best suits the community and to provide an opportunity for all interested members of the community to participate.

To achieve this:

6.1.1. RFS at senior levels to respond to the request of any community for a 47d engagement session/s when the community has concerns about the impact of an RFS backburn.

6.1.2. 47d engagement session/s to be organized by community leaders, interested community groups and individuals in the impacted location with positive and supportive

collaboration and consultation by the RFS, including senior officers.

6.1.3.47d engagement session/s be facilitated by an independent and skilled moderator with an understanding of the impact of mental health issues associated with the trauma experienced in bushfires. It would be helpful if the facilitator recognized the importance of a recovery oriented and strength based approach to achieving outcomes from the session/s.

6.2. **About rebuilding trust and supporting community recovery and healing**

6.2.1. The RFS to take responsibility for the decision-making processes and firefighting tactics and strategies contributing to the losses and trauma experienced by the community. One important way of doing this is to provide a meaningful apology and recognizing the importance of this in the healing process of the community.

6.2.2. The RFS be accountable by providing the community with clear and objective information that led to the decision to implement a backburn and to listen and respond to feedback and information provided by the community. Through this process lessons can be learnt and issues identified and actioned to make sure the same mistakes are not made in the future. This can then underpin prevention, preparedness and response strategies in the future. This information be recorded and provided to the community as a record to be used to ensure accountability and continuous improvement.

6.3. **Improve accountability & community confidence in the RFS.**
Through a process of consultation and collaboration with the community engage in a process of continuous improvement. This can be facilitated by establishing a mechanism that allows easy access for the community to provide feedback to the RFS on any issues of concern following the backburn and to monitor the implementation of lessons learnt from community engagement and recommendations from other Inquiries.

ATTACHMENTS

Annexure 1: Resume of Terence Shane Kirkpatrick

Annexure 2: Physiological and neurobiological impact of disaster events on individuals.

REFERENCES

Bilpin our stories https://www.youtube.com/channel/UCo4VHa2vJS_AfxxhavtCMhQ December 2020

Footage of Berambing RFS Community Engagement Session held 15 September 2022

Footage of Kurrajong Heights RFS Community Engagement Session held 24 October 2022

Lake Conjola RFS Community engagement sessionhttps://www.abc.net.au/news/2020-05-08/lake-conjola-rfs-report-on-back-burn/12226956

Lessons Learnt at Berambing Community Meeting 12 October 2022

Mt Wilson RFS Backburn Survivors Group Submission (May 2022) to the NSW Coronial Inquiry into the fire at Grose Valley 2019

Out of the Ashes – A story about a community's battle with bureaucracy to prevent the next bushfire. https://www.youtube.com/watch?v=kM1HA4wvc_I November 2022

Resume

Terence Shane KIRKPATRICK

Home Address: 15 Burnett Avenue, Gerringong, NSW 2534
Mobile: 0402 967 026
Personal e-mail: terry.kirkpatrick@bigpond.com

Personal Details: Date of Birth: 24th August
Nationality: Australian /Dual Citizenship: Ireland

Relevant Tertiary Education -Psychology

2003   **Post Graduate Diploma in Organisational Behaviour**
Macquarie University

1997   **Graduate Diploma in Psychology**
Macquarie University

1981   **Bachelor of Arts**   Division 1 Honours (Psychology)
University of New England

1979   **Bachelor of Arts** (Double Major: Psychology & Philosophy)
Macquarie University

Other Education

Bachelor of Science Fire Engineering and Safety Technology University of Cincinatti

Certificate 1V Workplace Training and Assessment

Continuing Professional Development and Education

Since full registration as a psychologist in 2002 I have followed a structured CPD program focussing on maintaining currency of knowledge, skills and evidence-based practice and developing and exploring new skills, knowledge and competencies over a two-year cycle. The CPD program also covers the requirements of continuing registration with AHPRA.

Professional Memberships and Registrations

- Registration with Australian Health Practitioner Regulation Authority PSY0001149012
- Healthcare Provider Identifier: 8003613340396381
- Medicare Provider Number: 4400392L

- WorkCover Approval Number: 9442
- Member Australian Psychological Society, Carlton, Vic
- Member of International Association of Applied Psychology, London, UK

Relevant Employment

Jan 2013 – Present: Appointment by NSW Minister of Health under the Mental Health Act 2007 (NSW) to Official Visitor Program (Part-time)
> Clinical Coordinator CAMHS Declared Mental Health Facilities in NSW
> Clinical Coordinator Illawarra and Shoalhaven LHD Declared Mental Health Facilities

Monitor the diagnosis, treatment protocols and care of mental health consumers in inpatient and community declared mental health facilities under the provisions of the Mental Health Act 2007. Advocate for consumers, carers and staff for individual and systemic change with direct report to the Principal Official Visitor and Minister for Mental Health.

Feb 2010 – Dec 2013: Mental Health Association NSW. Deputy CEO/Senior Psychologist
Manage day to day work of full-time and part-time staff and provide support to those with a lived experience of mental illness. Oversee all operations and programs of MHA NSW including the Anxiety Self-Help programs, Anxiety Support Groups, Mental Health Information and Referral Service, Workplace Health Promotion Network and Mental Health Promotion programs. Partner with Centre for Emotional Health at Macquarie University in development of Virtual Clinic and online treatment programs for Anxiety, Depression and Drug/Alcohol issues. Present community workshops and seminars on mental health, drug and alcohol issues to wide range of organisations and community groups including Indigenous organisations.

Jan 2002 – present: Private Psychology Practice - Sole Practitioner
Providing education and treatment programs for people experiencing distress from high prevalence mental health issues relating to trauma, drug and alcohol use, depression, anxiety and other mental health and wellbeing issues. Facilitating and leading a range of community based wellbeing programs. Consulting to a range of organisations including the Australian College of Dermatology, Fire and Rescue NSW and Surf Life Saving Australia

2004-2010   Fire and Rescue NSW
> Manager Employee Assistance Program and Workforce Wellbeing.
Develop, implement and evaluate a range of workplace health and wellbeing programs with a focus on mental health and resilience. Provide a confidential counselling and referral service for employees and their families across the NSW. Partner with UNSW and University of Sydney in a range of ARC funded research projects exploring the impact of trauma and vicarious trauma on emergency service personnel and implement early intervention programs, counselling and support programs for those experiencing PTSD. Continued as a Partner Researcher in the Bushfire Cooperative Research Centre. until 2008.

2002-2004   NSW Fire Brigade
                Community Safety Specialist – Behavioural and Social Analysis
Conduct qualitative and quantitative research to promote community safety and develop
appropriate programs. Developed the Intervention and Fire Awareness Program and
training program for firefighters to deliver this program and support young people and
their families who are involved in fire lighting. Initiated Fire Brigade involvement in
Youth Justice Conferencing. Partner Researcher in the Bushfire Cooperative Research
Centre.

1984-2002   NSW Fire Brigade. Station Commander
Research partner with University of Sydney reviewing training within the NSW Fire
Brigade. Developed and Implemented programs for officer selection and training.
Facilitated the transition of promotion by seniority to merit based selection supported by
officer development programs

Community Participation

- Board Member the Blue Knot Foundation and Company Secretary (Adult
  Survivors of Childhood Abuse) 2015 - 2022
- Board Member Northern Beaches Community Connect 2010 – 2013
- Coordinator of Outback Meets the Beach 2008 – 2014
- Continuing active Long Service Member of Surf Life Saving Association of
  Australia (45-year patrol service award).
- Founding President of Sydney Northern Beaches Water Polo, initiating the
  youth and age programs on the Northern Beaches of Sydney in 2001.
- President of the P&C Associations of Freshwater High and The Forest High
  School for six years.

Personal Milestones

- First member of my family to gain a university education.
- Representing Australia at the Surf Life Saving World Championships in Bali 1981
  and Hawaii 1983 and competing in the first Pan-Pacific Masters Swimming
 Championships in 1986.

Background

The Physiology & Neurobiology of Trauma

Evolution has produced the well-known and documented fight/flight/freeze response as a human survival mechanism whenever we encounter a perceived threat. We will experience an involuntary, physiological and neurobiological response to situations of acute stress, threat or trauma. This human response to danger, trauma or threat impacts on how we respond in the immediate situation. When we are hyper-aroused the flight/fight response kicks in and the resulting physiological and neurobiological response can become overwhelming making it difficult to think rationally and logically as well as making it difficult to communicate clearly. Some individuals when they become overwhelmed enter a state of hypo-arousal and the freeze response. In this state they become physically numb and detached from their surroundings dissociating from the trauma of the disaster or situation. In both responses we are unable to fully make sense of the trauma, disaster or event and to integrate our experience, emotional response and cognitive understanding of what is happening. This in turn compromises our ability to process our emotions, thoughts and memory of the situation.

Importantly, these processes remain active, often for years after the actual experience. I provide the following information as background to describe how the trauma and impact of natural disasters impacts on our thoughts, emotions and memories of the event.

This is evolutionary the oldest part of the brain and is called the reptilian brain. It develops in the womb and regulates basic life functions – sleep wake cycle, hunger, breathing and is sensitive to threat throughout life.
The brainstem controls arousal and our automatic 'survival' - fight/flight/freeze response.
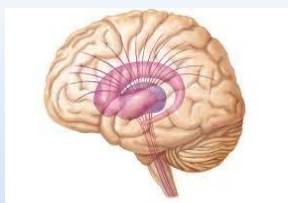
The limbic system and midbrain is called the emotional brain and includes the thalamus, amygdala and hippocampus. Develops in early infancy and throughout childhood and continues to evolve through life experiences, mediating arousal from the brainstem reptilian brain and the processing of the cortex.
This limbic system works like the brain's 'smoke detector'
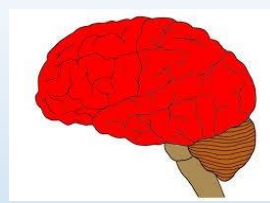
The cortex and neocortex develops into early adulthood and is called the rational thinking and intellectual brain. The neocortex controls executive functioning and enables us to understand the context and experience of events and situations and allows us to reflect providing context controls & more refined responses to sensory input. It is vulnerable to shutting down during perceived threat or extreme stress

How the brain operates

- When any stimulus occurs, whether conscious or not, it is automatically and immediately sensed by the thalamus.
- The thalamus works like a sensory relay centre and plays a major role in regulating arousal and our level of awareness and activity

**Event or Stimulus** → *Automatic and very fast* → **Thalamus**
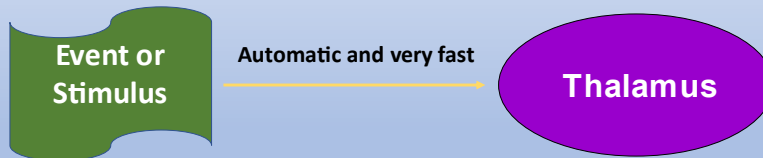
- The thalamus automatically and instantly relays the stimulus to the amygdala.
- The amygdala evolved to ensure our survival and controls the flight, fight, or freeze mechanism.
- If the amygdala perceives a threat it has an immediate and automatic survival response.
- You do not even think about it, it just happens.

Event or Stimulus → *Automatic transmission* → **Thalamus** → *Very fast transmission* → **Amygdala**
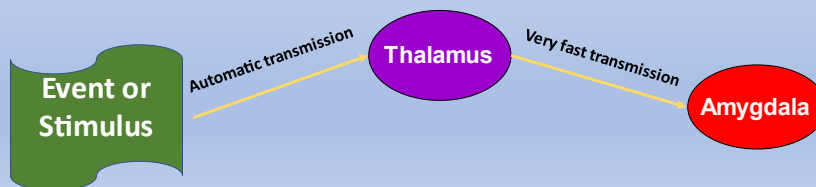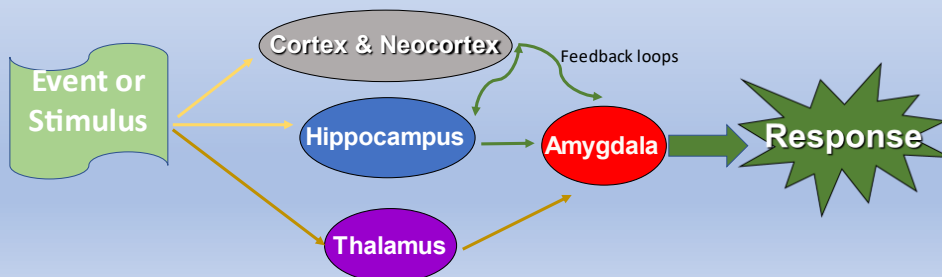

- Then, split seconds later, the same stimulus is relayed to the hippocampus and the cortex.
- This is where rational processing of the information comes into play providing context and making sense of the experience.
- This is a slightly slower process where the cortex and hippocampus together process sensation, emotion and experience to feedback to the amygdala
- This feedback helps facilitate memory of the event or experience.

Event or Stimulus → **Thalamus** → **Amygdala**
Slower → **Cortex & Neocortex**
Slower → **Hippocampus**
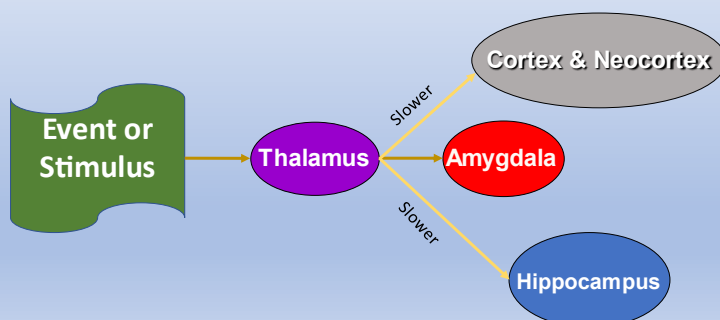
- Then, but slower, the same stimulus is relayed to the hippocampus and the cortex.
- This is where rational processing of the information comes into play providing context and making sense of the experience.
- This is a slightly slower process where the cortex and hippocampus together process sensation, emotion and experience to feedback to the amygdala
- This feedback helps facilitate memory of the event or experience.

Event or Stimulus → **Thalamus** → **Amygdala**

Slower → **Cortex & Neocortex**

Slower → **Hippocampus**
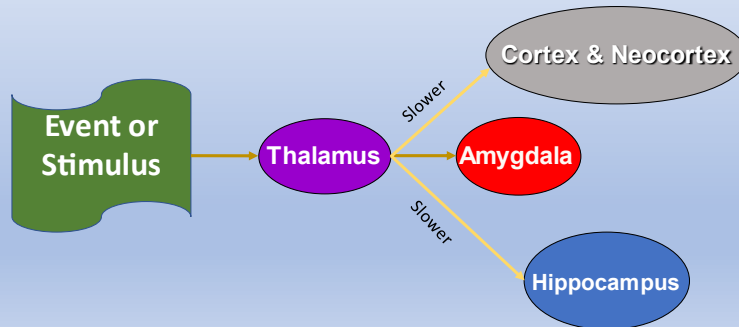
- When the thalamus senses alarm automatically the amygdala kicks in and you immediately are on high alert and highly aroused

- But then your cortex and hippocampus kick in to process the stimulus and context and you realise it was the door slamming and you are safe.

- So your response is to quickly settle and calm down and get back to what you were doing and you can recall the experience without any arousal

Event or Stimulus → **Cortex & Neocortex**, **Hippocampus**, **Thalamus** → **Amygdala** → **Response**

Feedback loops

Trauma and the resulting stress from the natural disaster overloads the ability to cope, to process and integrate the context, compromising our emotions and memory associated with the experience – we become overwhelmed

The trauma response can be triggered, even years after the event, causing us to respond automatically back into survival mode, initially bypassing any processing or control from the thinking and rational part of the brain and we experience the same level of arousal as at the time of the event or situation.

Cognition

Stimulus → **Response**

Traumatic trigger or reminder

Traumatic State
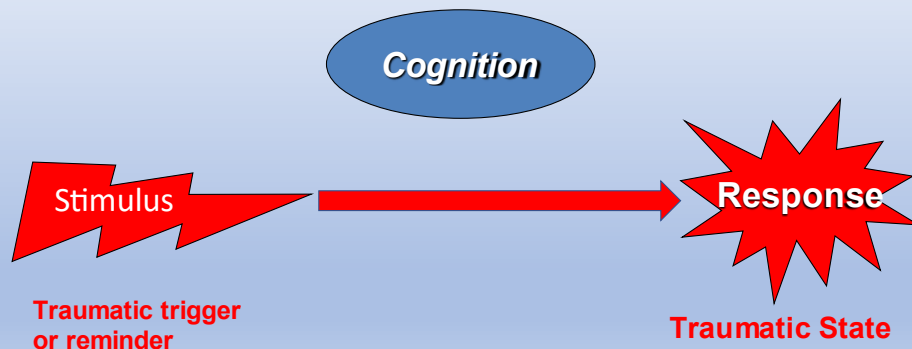
The trauma response spiral

- When our ability to cope with trauma is overwhelmed we can develop an overly responsive amygdala that generates a survival and trauma response more frequently and to a broader range of events, experiences and situations

- The resulting emotional and behavioural over response is in large part due to the impairment of the prefrontal cortex's ability to inhibit or modify the amygdala's automatic trauma response to internal or external stimuli.

- The processing of the event or experience by the prefrontal cortex and hippocampus is interrupted and the limbic system stores the experience of trauma in our bodies as body memories and emotions making our threat detection system and amygdala even more sensitive and over responsive years after the experience.

Trauma impacts on emotion and behaviour

- Shock, denial, disbelief
- Anger, irritability, mood swings
- Guilt, shame, self-blame
- Feeling sad or hopeless
- Confusion, difficulty concentrating
- Anxiety & fear
- Withdrawing from others
- Feeling disconnected
- Difficulties maintaining healthy relationships
- Lead to substance abuse issues

- Contribute to mental health issues
- Sudden mood changes
- Flashbacks
- Nightmares
- Intrusive memories
- Strong reactions to situations/sights/sounds which trigger a reminder of the trauma experiences.
- Re-experiencing the traumatic event
- Feeling unsafe

Physical impacts of trauma

- Insomnia and sleeping disorders
- Being startled easily
- Racing heartbeat
- Aches and pains
- Fatigue
- Difficulty concentrating
- Edginess and agitation
- Hypervigilance
- Muscle tension
- Chronic medical problems
- Sweating, palpitations, panic attacks

Mental health disorders associated with trauma

- Anxiety disorders
- Depressive disorders
- Mood and personality disorders
- PTSD

In many cases the link between mental illness and the underlying trauma experiences are not clear. This is particularly the case when an emerging adult mental illness is associated with childhood trauma.

Trauma including the experience of major bushfires produces a radical shift in the way an individual thinks about themselves and how they respond to the world