

IMMEDIATE & LONG TERM IMPACT OF BUSHFIRE ON STORAGE OPERATIONS



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ABSTRACT

Climate change hypothesis', if correct, points towards bushfires becoming increasingly prevalent in Eastern Australia. Consequently it is imperative that rural utilities implement sound bushfire risk management protocols across all aspects of their business operations. Similarly recovery from bush fires is optimised through advanced planning.

This paper identifies a number of short, medium and long-term bushfire risks confronting water authorities, with assets in rural areas, and suggests treatments for those risks.

Above all else it endeavours to evoke an awareness of the risks and the associated potential for damage to assets, degradation of water quality and mental trauma to staff that is created by bushfire. It also aims to highlight the need for sound advanced preparation for, and management of, future events.

DEFINITIONS

Wildfire:- Uncontrolled fire moving rapidly through a natural environment.

Bushfire:- A managed (not necessarily controlled) fire occurring within native vegetation.

1.0 INTRODUCTION

Southern Rural Water (SRW) operates several large dams and smaller diversion weirs in southern Victoria. Amongst these are two high hazard dams (Lake Glenmaggie and Blue Rock Lake), and a major diversion weir (Cowwarr Weir) located in Gippsland. These sites are critical to water harvesting and delivery for a variety of stakeholders. They provide raw water to Victoria's major power generators, industrial and urban consumers within the Latrobe Valley, Macalister Irrigation District customers and environmental flows to the rivers of the Gippsland Lakes system.

Lake Glenmaggie spans the Macalister River; Blue Rock Dam the Tanjil River and Cowwarr Weir diverts water from the Thomson River.

In December of 2006 these sites were all threatened by fire designated as the Great Divide South Bushfire. Concurrently several staff and the assets at Cowwarr Weir were placed at threat as a consequence of deliberately lit wildfire.

The lessons learned by SRW from the Great Divide South bushfire and the associated wildfire can be utilised to enable water authorities to better prepare for future bushfire or wildfire events and ensure improved risk management of fire threat to capital infrastructure, physical and natural environments and trauma to individuals and the broader organisational community.

2.0 DISCUSSION

2.1 Climate Change & Storage Management

As storage operators we often view floods as the predominant risk to our structures, but climate change may soon escalate bushfires to a similar level of risk.

The Bureau of Meteorology suggests “Australia and the globe are experiencing rapid climate change. Since the middle of the 20th century, Australian temperatures have, on average, risen by about 1°C (see Figure 1) with an increase in the frequency of heatwaves and a decrease in the number of frosts and cold days. Rainfall patterns have also changed - Australia’s northwest has seen an increase in rainfall over the last 50 years while much of eastern Australia and the far southwest have experienced a decline (see Figure 2).

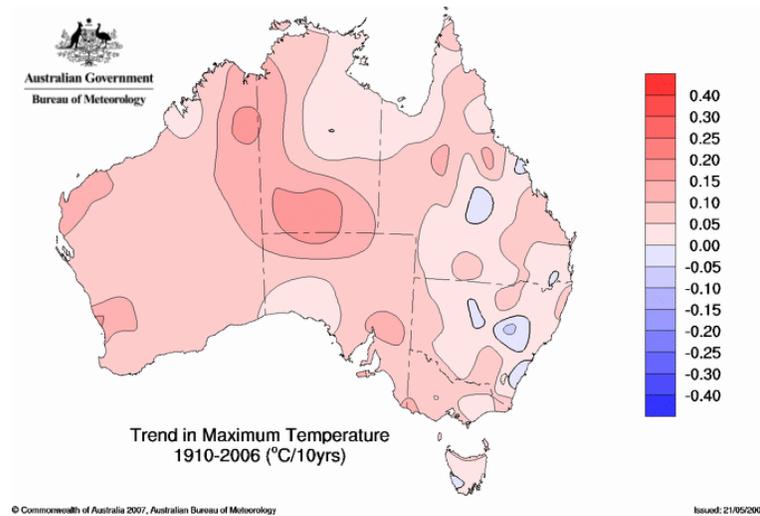


Figure 1: *Changes in Temperature*

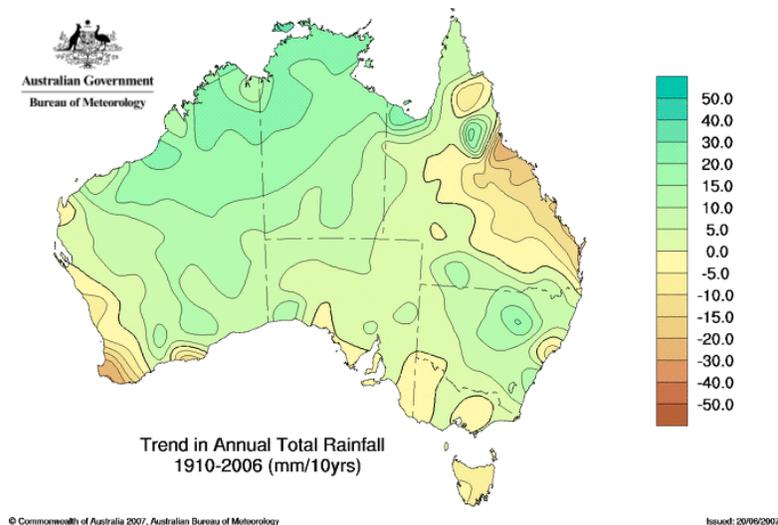


Figure 2: *Changes in Rainfall*

This change in climate may well result in more intense and variable rainfall followed by long periods of hot dry weather such as has been experienced over the last decade. Potentially this will lead to periods of rapid growth followed by long dry spells that dry vegetable matter quickly and create increased natural dry fuel loads.

The consequential threat to capital infrastructure, physical and natural environments and trauma to individuals and the broader organisational community is immediately apparent.

2.2 Case Study of a Wildfire event

In December 2006 SRW recognised that the Great Divide South fire had the potential to place several of its sites at risk and consequently rapid action was taken to prepare them for potential onslaught of that fire. All sites were assessed for risk and priorities set for protection of those potentially affected.

Lake Glenmaggie was subsequently assigned a high priority as the infrastructure for that site was located within a natural bush environment. Subsequently, available resources were concentrated on protecting that asset against threat from fire or ember attack. In order to protect the integrity of that site all overground plastic water pipes were either buried or replaced with steel, all building apertures were screened against ember intrusion, fire protection equipment was tested, sprinkler systems were installed on critical buildings and residences, excess dry fuels were cleared from critical infrastructures, spouting was filled with water, personnel fire protection kits were prepared (torches, woollen blankets, fire beaters etc), fire reports were monitored continually and personal and corporate fire plans reviewed and communicated.

Cowwarr Weir and Blue Rock Dam, on the other hand, were classified as low risk as they were located in large cleared areas and surrounded by pasturelands. Consequently minimal resources were assigned to fire protection at those sites. This proved to be a mistake that would later place two staff and a family member at extreme risk and expose the broader organisational community to unnecessary trauma.

On December 19th a deliberately lit wildfire (ancillary to the Great Divide South bushfire) broke from nearby bushland and raced at an alarming and unchecked rate across dry farmland towards the Cowwarr Weir. Staff preparing the site against potential fire threat were suddenly forced to flee to the protection of the nearby weather board residence. The fire then spread rapidly to the adjoining garage and immediately placed the residence under dire threat. (Fortunately staff had all completed the DSE Basic Wildfire Awareness accreditation and were well skilled enough to manage the fire threat.)

Concurrently stored mulch heaps and exposed fodder ignited, stored tyres smouldered, and fencing commenced to burn and the fire entered the office/workshop complex. At the height of the firestorm power, phone and water supply failed, daylight was obliterated and windstorms created by the fire battered the area. Consequently the people at threat became uncertain about the ability of the wooden residence to withstand the onslaught of the fire and made plans to evacuate to a safer location. They were able to communicate with their supervisor and emergency services but no direct support was available and, at that time, they believed they were at extreme risk of being engulfed by fire. During lulls in the wind they were able to leave the building and extinguish spot fires threatening it.



Figure 3: *Wildfire at Cowwarr Weir*

At the same time reports were being received at ABC radio that the Cowwarr Weir residence was on fire and two women residents were missing. Consequently the broader communities (both domestic and organisational) were exposed to trauma as they were unable to gain concise information about the destiny of the people. Unfortunately this report continued to receive national airplay for a further 12 hours regardless of the fact that the ABC was contacted and informed about the true situation. Consequently, after the fire front had passed several people placed themselves at extreme (and unnecessary) risk by returning to the site to provide immediate assistance to the supposedly trapped people.

During the event the supervisor was provided with constant updates via mobile phone communication with the effected staff. However logistical problems arose as the event unfolded caused by the unprecedented number of calls being made to the affected staff by concerned third parties. Consequently there was concern that mobile phone batteries would fail.

After several hours the fire front had passed and the affected people emerged to survey the damage and advice emergency services that they were no longer at risk.

Rehabilitation of the physical assets commenced immediately and was still in progress several months later. Throughout the recovery period SRW relied heavily on support and assistance from external utilities.

SRW also elected to invest heavily in ensuring that risks from would be reduced should bushfire threaten any site in the future.

2.3 Lessons Learned from a Bushfire Incident

The knowledge gained from the Wildfire event at Cowwarr Weir can be summarised as follows:

- The firestorm that struck Cowwarr Weir on December 14th enabled SRW to gain considerable learning about potential future events.
- The Cowwarr Weir wildfire event highlighted potential for risk to staff, contractors and physical assets.
- Incident of wildfire/bushfire is emerging as the most prevalent risk for water storage authorities.

- Fire activity cannot be predicted with any accuracy. Consequently similar standards of protection must be applied to comparable sites.
- Water authorities who have assets in rural locations must ensure there is a clearly enunciated and communicated fire action plan in place at all times.
- Resources must be invested in preparing rural water locations for the eventuality of Wildfire/ Bushfire attack.
- Water authorities must undertake regular fire reviews and audits at all sites at risk of bushfire.
- Fire plans must be tested and rehearsed regularly.
- It is advantageous to ensure all staff undertake Basic Bushfire Awareness accreditation (Course available at www.dsetraining.org.au)
- Sensible actions will ensure that firestorms can be confronted and managed if required.
- Comprehensive preparation for a firestorm is required if mental and physical trauma is to be avoided.
- Personnel external to the fire can be traumatised by the uncertainty surrounding a fire event (The SRW CE stated after the fire “I never want to have staff placed at such a risk again”)
- It is essential to establish a working relationship with local media to ensure released information is accurate and does not place others at risk.
- Reliable communication with staff is essential. (SRW Headworks staff have been issued with trunk radios, their vehicles fitted with tracking devices and a procedure developed requiring them to divert their mobiles to a central location during emergency incidents in order to minimise the drain on their mobile phones and allow them to concentrate their energies on the incident.)

3.0 CONCLUSIONS

Bushfires threaten infrastructure, water quality and organisational capacity to cope. They have dire and long-term consequences that impact on organizations, individuals and natural environments for many years after their passing. If severe enough, they will have a cascading effect on ongoing operations for many years.

Climate change theory suggests that the length and magnitude of dry weather will increase but be interspersed with periods of intense rainfall

Recovery from any incident invariably requires co-operative actions from a number of associated organizations. Bushfire is no exception to this. Consequently it is essential that partnership arrangements be established and maintained, in advance, with external support organisations and utilities.

As in all incidents, good communications assist in managing that incident. Communications of accurate, timely and succinct information to the media plays a vital role and organisations need to develop strategies for managing this in advance of any such event.

The best defence against the mental traumas and physical impact of bushfire is to **develop, review and rehearse bushfire action plans on a regular basis.**

4.0 REFERENCES

Bureau of Meteorology Australian Climate Variability and Change.