



**Cost of Fire Conference
Reducing Water Pressure “What are the Implications”
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Agenda

- **Introduction**
- **State Government Policy-Victoria**
- **Pressure Management**
- **Victorian Fire Services/Water Industry Reference Group**
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- **Operational Impacts**
- **System Compliance**
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Introduction

From a fire service perspective, the strategy of reducing the availability of water for fire fighting may present some issues relative to the overall operational response strategies of the responding fire crews.



Introduction

Such tactical considerations are:

- availability of reticulated water supplies
- alternative sources of water supply
- effect of pressure reduction on existing installed fire safety systems
- system failure
- resource critical impacts on the fire crews



Introduction

What do we do if systems fail and cannot action the desired performance levels?

A number of questions need to be asked.

- Who pays for retrospective compliance?
- What is the potential outcome for insurers?
- What is the outcome for the owner / occupier?
- What is the impact on the State & Water Authorities?



State Government Policy (Victoria) Our Water Our Future Strategy (2004)

This strategy was developed to address a range of issues for the management of water resources across the State of Victoria.

The strategy identified the need for a number of water conservation initiatives to ensure a secure water supply could be provided into the future. As part of the implementation of this strategy, the Government has set a water conservation target of a 15% water reduction per capita by 2010.



State Government Policy (Victoria) Our Water Our Future Strategy (2004)

To achieve the required reduction, a number of strategies have been employed by various authorities which include:

- education & awareness programs
- leakage reduction programs
- implementation of pressure management to targeted areas



Pressure Management

Pressure management is the process by which areas within a supply network are identified as being subjected to excessively high pressures.

In an effort to reduce these pressures and therefore minimise the impacts of leakage & pipe bursts, the water authorities reconfigure their supply networks and also install pressure reducing stations. These stations are fitted with automated “smart controllers” that manage the pressure & flow within the pressure grid.



Victorian Fire Services / Water Industry Reference Group

The fire services realised that after the deregulation of the Melbourne Metropolitan Board of Works, there had been no regular contact with the water authorities to address issues that have arisen over a period of time of some 10 years.

As a result, the fire services began the process of formally establishing a reference group to enable the flow of information between nominated stakeholders where practical issues can be discussed in support of government policy to better facilitate each others requirements and expectations.



Australian Fire Authorities Council (AFAC)

AFAC have established a Water – Pressure & Flow Project Group which was formed primarily to negate the need for individual member agencies, being all fire services nationally, to develop positions on this issue in isolation.

The AFAC Council deemed it appropriate that the organisation should support its members in researching the issues and developing sustainable approaches in both the fire service operations and built environments.



Australian Fire Authorities Council (AFAC)

The focus areas of the project group are:

1. Investigate whether a reduction of water pressure & flow is a strategy being implemented through all States & Territories.
2. Research whether programmed pressure & flow reduction is negatively impacting:-
 - Fire fighting operations
 - the performance of installed fire protection systems
 - the cost benefit



Operational Impacts

A.S.2419.1 (2005) states the minimum water supply pressure “for the fire hydrant system design, to satisfy the required flow for the most hydraulically disadvantaged fire hydrants, shall be based on the residual pressure available to the property from the source of supply at the required flow”.



Minimum Fire Hydrant Outlet Flow Rates and Pressures

Fire Hydrant Type	Minimum Flow Rate (L/S)	Minimum Required Residual Pressure (kPa)	
		NSW	All other States & Territories
Feed Fire Hydrant Unassisted	10	150	200
Attack Fire Hydrant Unassisted "Internal"	10	250	350
Internal / External at Boost by Fire Brigade Appliance	10	700	700



Operational Impacts

This suggests that the minimum required performance of a street fire hydrant should effectively be 10 L/S @ 150 kPa (NSW) and 200 kPa (all others).

Research suggests that not all states are the same and that there is no consistency in the minimum volume and maximum pressure delivered to service different risk profiles.



Operational Impacts

If the design of the system is supplemented or solely based on the unassisted criteria of Table 2.2 of AS2419.1 (2005), fire brigade intervention becomes critical in the overall fire protection strategy.



Determining System Compliance

To determine compliance it is essential that building owners and managers comply with State legislation in the maintenance of their fire safety systems.

The new Maintenance Standard AS1851-2005 sets out the required schedules for the maintenance of fire protection systems although it has not been adopted by the Building Code of Australia.



What Does This Mean?

The maintenance of fire protection systems will identify system performance and whether system complies with the applicable Australian Standard.

This does not imply that the system will not work; it does suggest that it may not be as effective in controlling or suppressing a fire as it was designed to do initially. Once again there may be a reliance on fire brigade intervention.



What To Do If Systems Fail / Cannot Achieve Performance?

To alleviate the direct risk factors of systems not being able to achieve performance, there is a need to identify what the possible direct and indirect risks may be.



What To Do If Systems Fail / Cannot Achieve Performance?

The direct risks are:

- the potential for injury & life loss to occupants and possibly fire fighters
- the loss of building contents
- the loss of the building itself
- business interruption



What To Do If Systems Fail / Cannot Achieve Performance?

The indirect risks are:

- possible legal action against the owner/manager of the premises
- insurers may not pay claims



What To Do If Systems Fail / Cannot Achieve Performance?

If it is identified that systems may fail, consultation with the water authority may lead to a change or modification of their pressure management strategy.

Alternatively rectification work may need to be undertaken through an assessment of the fire safety systems in an effort to ensure compliance.



Impacts

A major impact of such a strategy that has a direct effect on property developments is the additional costs associated with compliance due to re-design of fire safety systems.

New developments will require that the water authorities data be managed and be accurate, in order for the design of fire safety systems to reflect the current strategy of the water authority.



Impacts

Another direct effect is relative to new building design, whereby in an effort to offset or balance the cost of safety, fire engineered designs may impact other systems and construction methods



Impacts

For future designs there is a need that developers and the water authorities work together to ensure that:

- data capture from the water authorities is accurate
- if the pressure management strategy changes, will it effect new developments?
- the design of new fire safety systems reflects the new minimum



Who is Responsible?

A number of questions are posed:

- Who pays for retrospective compliance?
- What is the potential outcome for insurers?
- What is the outcome for the owner/occupier?
- What is the impact on the State & Water Authorities?



Who is Responsible?

Each State and Territory has legislation that provides the minimum acceptable levels for community safety.

Strict adherence to the maintenance of fire safety systems will go a long way to maintaining the community standard.



Conclusion

The discussion focused upon a range of areas from what pressure management aims to achieve and how fire services and AFAC are responding to Government direction.

Identification of system performance is a key element relative to system maintenance and system compliance.



Conclusion

When this is impacted upon by a change in Government direction, who bears the cost?

- the owner
- the insurer
- the State
- the Water Authority

Until this is tested, the answer is unclear, but there is still a requirement to comply with legislation.



Thank you

Adam Dalrymple