2014 Emergency Services Foundation Study Tour Report

Enhancing Emergency Management of Train Incidents in Victoria

A Focus on Preparedness and Response

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Senior Station Officer Paul Elso
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Glossary of terms and abbreviations

CFA – Country Fire Authority

CO – Chief Officer

DCO – Deputy Chief Officer

DEPI – Department of Environment and Primary Industries

DOT – Department of Transport

DHS – Department of Human Services

DPC – District Planning Committee

EPA – Environmental Protection Authority

ESF – Emergency Services Foundation

ESO's – Emergency Service Organisations

FSC – Fire Service Commissioner

MFB – Metropolitan Fire Brigade

SES – State Emergency Service

SOP's – Standard Operating Procedures

TSV – Transport Safety Victoria

Executive Summary

Train fires and accidents are common occurrences that have the potential to cause significant impact. Incidents involving passenger trains have the potential for multiple losses of human life, infrastructure damage, community and economic impact. Incidents involving freight trains have the added potential for significant fire and permanent environmental impact.

For emergency service personnel, the risk is not wholly known or understood. This could lead to a very dangerous situation where hazards are not known and subsequently left untreated at an emergency scene. Emergency management personnel are exposed in this scenario where potentially life threatening situations exist.

The immediate gap, in the Victorian emergency management setting within a 'Safety First' environment, is the lack of well sourced and relevant risk assessment tools, pre-incident response planning methodologies, training systems and response procedures to mitigate the known risks. It is these resources that I intend to research, develop and recommend for implementation.

Having exhausted the limited research avenues within Australia and identifying relevant materials and opportunities abroad, I completed a study tour within the US and UK in order to determine best practise and gather information in order to meet the objective *to enhance the emergency management capability of Victorian emergency management agencies to prepare, respond to and effectively manage train incidents across the state*.

Recommendations

The recommendations of this report are that:

1. Pre-planning is completed at all levels of Emergency Management and is included in State, Regional and Municipal Emergency Management Plans as well as customised for local brigade / unit needs.

2. An enhanced level of collaboration occurs between rail operators and EM agencies, particularly for sharing knowledge and exercising

3. A 'trains' unit of training be developed for delivery to first responders

4. Common doctrine be developed on the topic of safe operations on and around rail infrastructure for use by first responders

Emergency Services Foundation

The **Emergency Services Foundation** was established following the Ash Wednesday bushfires in 1983. It operates as a trust to provide immediate support for those who suffer hardship as a result of the death of a family member or injuries sustained in the line of duty.

The Foundation also provides educational scholarships to members of the industry and conducts support activities such as the annual Emergency Management Conference to increase the understanding of the key issues that challenge emergency services personnel.

Background

Numerous examples of CFA attending train incidents can be sighted for each year. As incidents of this type have various consequences, significant media coverage generally occurs and the potential for lengthy high level investigations and / or inquiries can ensue. Examples of such incidents are:

1. A metropolitan passenger train v heavy vehicle collision at a controlled level crossing in Dandenong South (2013) which resulted in a passenger fatality,
2. The 'Kerang Rail Disaster' (2007) that resulted in twelve fatalities also following a passenger train (V/line – regional service) collision with a heavy vehicle at a controlled level crossing.

The Kerang Rail Disaster resulted in a Coroner's investigation. Coroner, Dr Jane Hendtlass, handed down her findings and gave recommendations on October 21st 2013.

The coronial investigation concentrated on three issues:

- The driver and the road vehicle
- The infrastructure including effectiveness of current level crossing infrastructure; and
- The emergency response in regional areas with particular emphasis on the Kerang incident.

There were 25 recommendations made, eight of these relating to the emergency response.

These included:

> *"23. That Victoria Police ensure that Incident Commanders and Emergency Management Coordinators are aware of the importance of including representatives of all the support organisations involved in the emergency response in the Emergency Management team."*
>
> *"24. That V/Line review their management arrangements to ensure that trained V/Line rail Incident Controllers are within access to all level crossings in regional Victoria in a timely manner to support traincrews and Victoria Police in the case of an emergency."*
>
> *"25. That V/Line involve the train crews and management staff in local desk top and scenario emergency service training so that inadequacies in communication and management can be identified and corrected."*

Further relevant comments and observations contained in the Executive Summary of the Coroner's report can be seen at Appendix B, Page 29.

A third example is the 'Waterfall Rail Accident' (NSW) of January 2003. This was a high speed electrified passenger train derailment that resulted in seven fatalities, including the train driver. I include this example because of the relevance and significance of recommendations made by The Honourable Peter Aloysius McInerney QC who conducted a special commission of inquiry.

Some pertinent points from the final report include:

Executive Summary

Emergency preparedness

- *Emergency response planning was inadequate and those plans in existence were not tested; and*
- *There was no co-ordination of these plans with emergency services.*
- *The rail commander on site failed to perform the emergency response function intended for that role.*
- *The procedure for identifying a site controller in charge of the accident site was not followed.*
- *The emergency services were not operating under a co-ordinated response plan.*

Key recommendations

10. A railway disaster plan, or rail displan, should be developed by RailCorp and the emergency services to ensure co-ordinated inter-agency response to rail accidents and incidents on the RailCorp network.

13. The rail displan should provide for the site controller to have complete control of the site, with other agencies co-ordinating with and supporting him or her, until the rescue phase of the emergency response has been completed.

14. The incident command system should clearly identify the roles of the rail commander, site controller, police commander and commanders of the other emergency services, and the way in which each is to work together during the recovery phase of any rail accident.

21. The RailCorp emergency response plan should be provided to all emergency response agencies. The officers of each emergency service should be trained in any rail specific features of the plan, so as to better ensure inter-agency co-ordination in the circumstances of an emergency.

23. All emergency response personnel should be specifically trained in the features of railways which are relevant to their work, such as the location and means of operation of all emergency door releases on trains, the location and use of signal telephones, the methods by which electrical power can be isolated and the means by which they can readily identify and obtain information from the on-site rail commander.

24. Regular field training exercises should be conducted by RailCorp with the emergency services to ensure that the incident command system and rail displan are able to be fully implemented as quickly as possible and are reviewed and improved.

28. A training centre for emergency services personnel should be established by RailCorp. The emergency services personnel should be required to undertake training at such a centre, which should be equipped with features replicating railway infrastructure and rolling stock.

Further relevant comments and observations contained in the Executive Summary and recommendations of the final report can be seen at Appendix C, Page 31 and 32.

Annual incident statistics for Heavy Rail for 2012, obtained from the Transport Safety Victoria website, demonstrates the type and increasing number of incidents that occur.

Incident type	Quantity	Passenger Trains	Freight Trains	Metro Area	Regional Area	5 year Average
Derailment	11	2	9	NA	NA	15
Collision (train to train)	2	1	1	NA	NA	4
Collision with road vehicle	5	5	0	NA	NA	4
Level crossing collision with road vehicle	17	12	5	NA	NA	16
Level crossing near miss with road vehicle	171	NA	NA	NA	NA	168
Track and civil infrastructure irregularity: • broken rail • buckled track	 124 24	 NA	 NA	 67 5	 57 19	 122 32
Train parting	84	4	80	NA	NA	71
Wheel/axle failure	13	3	10	NA	NA	10
Fire	20	15	5	NA	NA	20

Source: Transport Safety Victoria: Heavy Rail Incident Statistics 2012

Victoria's rail system – current and future

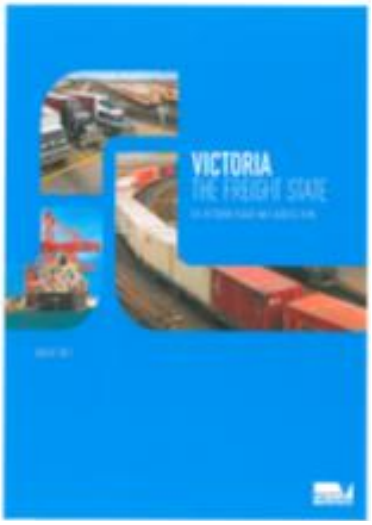
Victoria's rail system can be broken down to three distinct components; metropolitan passenger, regional passenger and freight.

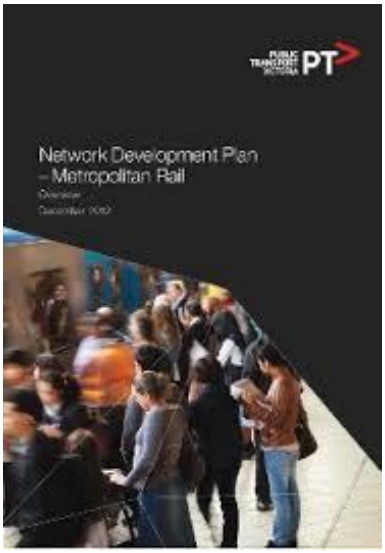
All modes have had increases of their use and projections indicate that this will continue and accelerate in the years to come.

The Victorian Government, various departments and agencies, have developed plans, implemented programs and are delivering major projects in order to cater for the demand.

Some of these significant pieces of work include:

- 'Network Development Plan – Metropolitan Rail (Public Transport Victoria, 2012)
- 'Victorian Freight and Logistics Plan (State Government of Victoria, 2013)
- 'Mode Shift Incentive Scheme' (Department of Transport, 2013)
- 'Regional Rail Link' project – Fully funded and underway
- 'Port of Hastings' development – $110m funding for four year business case build up and various studies
- Metro rail tunnel

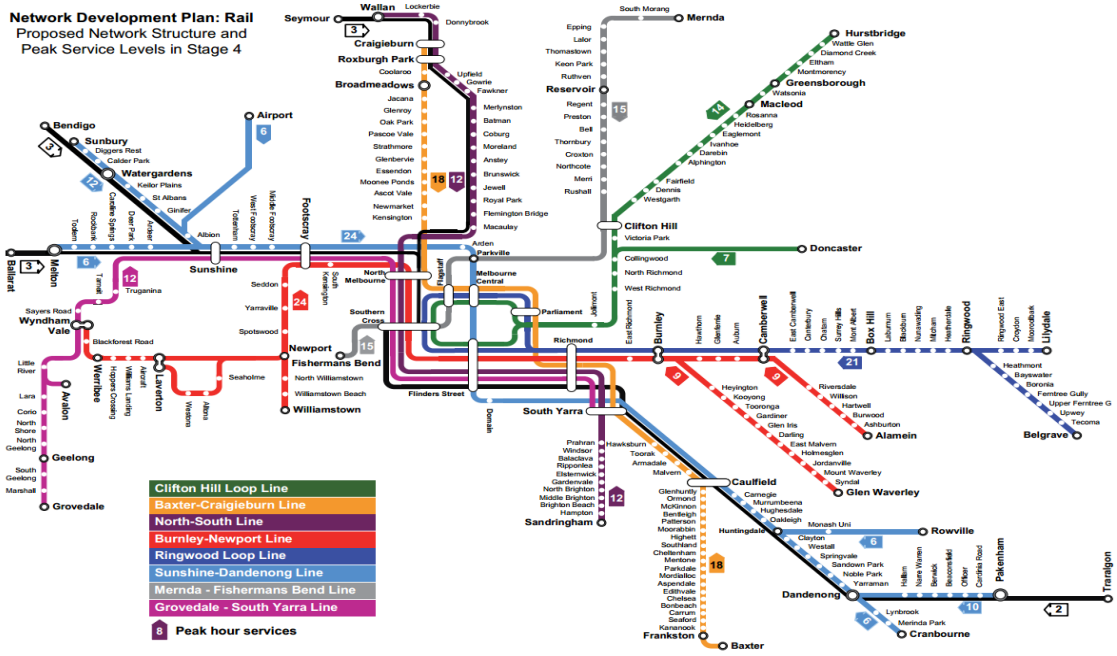




Significantly, the Network Development Plan – Metropolitan Rail outlines the projected capacity increase of the network:

- Number of peak hour train services into the city increased by 34% within 10 Years
- Number of peak hour train services into the city increased by 76% within 20 Years
- Peak hour capacity into the city increased by 51% within 10 Years
- Peak hour capacity into the city increased by 130% within 20 Years
- Extra passengers that can be carried in peak hour; 50,000 within 10 Years
- Extra passengers that can be carried in peak hour; 130,000 within 20 Years

Figure 6-3: Schematic diagram of Stage 4 Network Development Plan



Objectives

There are six main objectives of the study tour

- Investigate a method to risk assess likelihood and consequence of different train incidents at different locations
- Investigate a template or system to pre-plan for these incidents
- Investigate Training methods for emergency management personnel
- Investigate response procedures from receipt of notification of an incident to dispatch of resources
- Investigate other required SOP's
- Investigate the engagement and collaboration with Rail authorities in emergency management relating to train incidents

Key outcomes

The major tangible outcomes from the study tour will be:

- A document detailing world best practise and recommendations for emergency management arrangements around preparedness and response to train incidents, including:
  - A model for the risk assessment of train emergencies
  - Planning considerations, opportunities and methods
  - Training methods and systems
  - Response procedures
  - SOP's
  - Engagement of and collaboration with relevant stakeholders

Study Tour Objectives

1. Investigate a method to risk assess likelihood and consequence of different train incidents at different locations

Having such variations throughout the state in terms of rail crossings, the individual controls employed at each location, the amount and type of train traffic, the amount and type of road traffic, train and road speed limits, road surfaces and many other factors, means that each crossing will have its own set of circumstances, different likelihood and consequence factors and therefore different risk ratings.

Currently, there is no way of quantifying the risk rating for rail crossings in regards to emergency incidents.

No such assessment tools currently exist across the broader national emergency management sector that addresses this issue.

2. Investigate a template or system to pre-plan for these incidents

A key outcome and recommendation of different investigations in to rail incidents and the subsequent response is preparation and planning. One way this can be achieved is through familiarisation and pre-planning.

Planning, whether it be at an organisational or a local level, will encourage emergency management agencies to be familiar with the systems in place and the opportunities and issues present.

At local level, a pre-plan could include aspects such as access points, type and quantity of train traffic (ie passenger or freight), known issues, a communications plan, considerations for resourcing and key local contact names and numbers, to name a few aspects.

Testing plans periodically and checking and reviewing them annually will not only provide comfort in knowing information is accurate but will have the added benefit of building relationships across emergency management agencies and train authorities at a local level.

No such planning tools currently exist across the broader national emergency management sector that addresses this issue.

3. Investigate Training methods for emergency management personnel

There is currently no formal training package on trains*, the train system or train incidents across Victoria or the national emergency management sector.

**Chapter nine of the joint 'Road Rescue learning manual' titled 'VLocity Train Emergency Procedures' deals with some specific operations with that type of train.*

In order to achieve safety of first responders and effective and efficient emergency management of an emergency of this type, training is another required aspect of preparedness.

Through my research I have learnt that the fire services across Australia have a varying level of information available. Invariably, this is paper based and distributed to personnel in manuals as part of a self-administered continuation training program. Research further abroad has revealed other models that are available and appear quite successful when conducted in collaboration with train authorities and involving a practical aspect.

I intend to explore the options available, the relationships involved, and the time and cost requirement of these various options in order to achieve a model that can be developed for our situation in Victoria.

4. Investigate response procedures from receipt of notification of an incident to dispatch of resources

Different emergency types achieve differing emergency responses. I intend to investigate the response procedures for this incident type and compare them to other systems.

The inclusion of the many other state agencies such as Police, Ambulance, allied health services, DHS, EPA, DEPI, DOT in an initial response to a major train incident will enhance the emergency management of the incident.

There is a raft of specialist skills and equipment available within the fire services that are available to respond to emergency situations. This is currently underutilized for this event type. Ladder Platforms, Rope Rescue, Hazmat, Hazmat Detection and Urban Search and Rescue capability all exist and may have a role to play at this event type.

A timely response of the correct resources can contribute significantly to the safety of first responders, the efficient and effective combat of an incident and therefore an improvement to community service.

5. Investigate other required SOP's

I will investigate what SOP's exist in other jurisdictions, how they may be relevant to the Victorian situation and whether enhancements to various SOP's could be recommended.

6. Investigate the engagement and collaboration with Rail authorities in emergency management relating to train incidents

The train network involves many different agencies and operators. For a state wide 'package' to be successful including risk assessing, pre-planning and a training program which includes a practical aspect, the engagement of and collaboration with the various agencies and operators is critical.

I intend to investigate how this has been made a success elsewhere, how this is relevant to our situation and how it can then be applied to our system.

Study Tour: Organisations Visited & Overview

My proposal to the Emergency Services Foundation was to visit the following organisations that I had identified as being able to assist in achieving the objectives.

CSX Transportation,

Jacksonville, Florida, USA

CSX Corporation, together with its subsidiaries based in Jacksonville, Florida is one of the nation's leading transportation suppliers. The company's rail and intermodal businesses provide rail-based transportation services including traditional rail service and the transport of intermodal containers and trailers.
Overall, the CSX Transportation network encompasses about 21,000 route miles of track in 23 states, the District of Columbia and the Canadian provinces of Ontario and Quebec. Our transportation network serves some of the largest population centres in the nation. Nearly two-thirds of Americans live within CSX's service territory.

- *Operates an average of 1,350 trains per day.*
- *Transports an average of 20,000 carloads per day.*
- *Transports more than 6 million carloads of products and raw materials a year.*
- *Maintains a fleet of more than 4,000 locomotives.*
- *Maintains a fleet of approximately 70,000 freight cars*

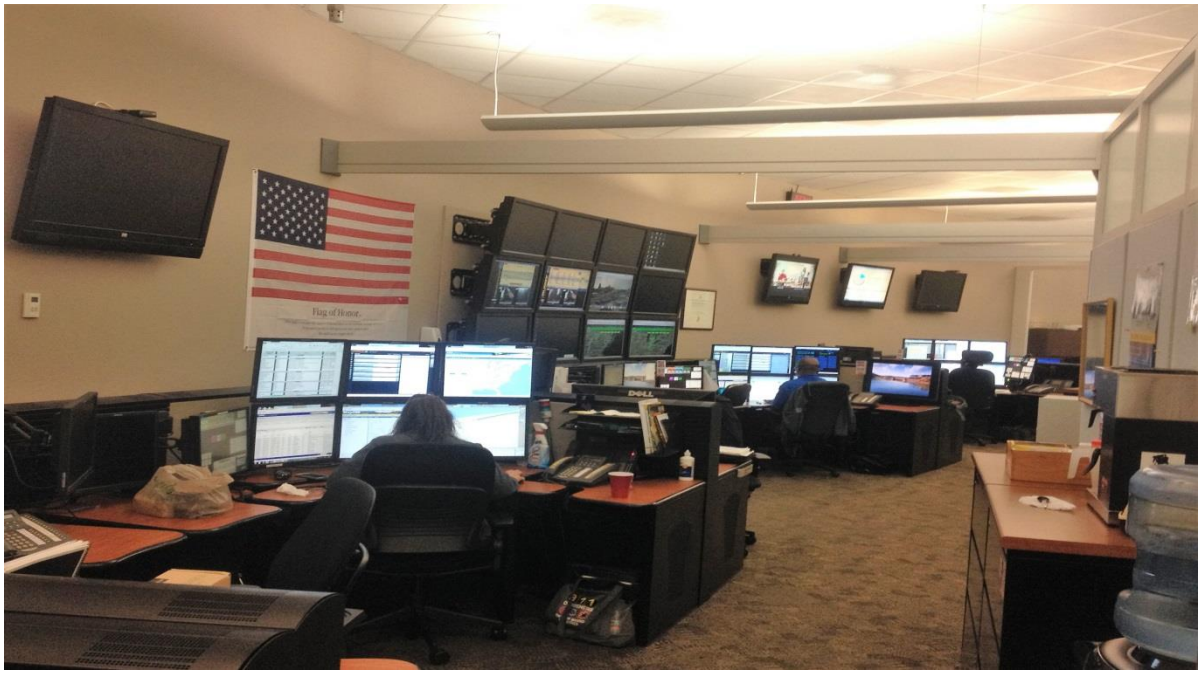
Key observations: CSX is a very efficient, pro-active entity committed to Emergency Management. They have numerous and significant programs in place focused on community and emergency service engagement in order to understand their risk and consequence and work together with these groups for common outcomes.

Considering CSX tracks could circumnavigate Australia more than twice, they have significant planning, arrangements and resources in many varying states, communities and environments. They have public meetings where they operate to understand concerns and priorities, and they engage, contract and maintain panels of local contractors for regular and emergency works.

For emergency services, they have a training complex where they deliver a variety of practical training courses free of charge, from basic railroad awareness to Heavy Rescue and HAZMAT skills. This practical training is supported by online training courses as well as printed and further reference material on CD's / DVD's. CSX have also developed an App for use by emergency responders to assist in their decision making, knowledge and safe operations.

CSX Transportation HQ, Jacksonville, Florida, US

CSX Transportation Emergency Operations Centre



CSX Transportation Operations & Customer call taking centre

Inspection of CSX transportation rail yards

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

Department of Homeland Security

Transport Safety Administration,

Washington DC, USA

The Transportation Security Administration (TSA) was created in the wake of 9/11 to strengthen the security of the nation's transportation systems while ensuring the freedom of movement for people and commerce.

TSA employs a layered, risk-based approach to secure U.S. transportation systems, working closely with stakeholders in aviation, rail, transit, highway, and pipeline sectors, as well as the partners in the law enforcement and intelligence community. The agency continuously sets the standard for excellence in transportation security through its people, processes, technologies and use of intelligence to drive operations.

Key observations: TSA play a major role in prevention and preparedness activities across the US. They have a significant focus on the security aspect however a number of their programs and initiatives are relevant in the broader emergency management framework. TSA administers a grant program for agencies to bid for funding related to security and emergency management initiatives, has a national exercising capability, provides intelligence for operational response and facilitates collaboration between numerous rail providers across the country. One simple initiative in this area is a hosted monthly teleconference to discuss current and emerging issues across the sector and connect like agencies that may have experience or solutions in certain areas to assist others.

Dept. of Homeland Security, Transport Security Administration, Washington DC, US

DHS, TSA resources working with EM agencies in Washington DC

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

Washington Metropolitan Area Transit Authority

(WMATA), Washington DC, USA

Metrorail provides safe, clean, reliable transit service for more than 700,000 customers a day throughout the Washington, DC area. The system is the second busiest in the United States, serving 91 stations in Virginia, Maryland, and the District of Columbia.

WMATA works closely with many agencies and stakeholders in relation to safety and security including a training facility for emergency responders.

Key observations: WMATA have comprehensive emergency management practices in place. Preparedness extends to community education and contingencies for commuters as well as business continuity planning. As stated above, they also play an important role in the preparedness of emergency responders through the provision of training and safety equipment. WMATA have a comprehensive purpose built training environment. Response activities are supported through comprehensive preplanning activities across their network and the provision of equipment.

WMATA 'Station' training facility

WMATA 'rollover rig' training facility

WMATA pre-positioned resources to support emergency response operations

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

New York Fire Department (FDNY)

New York, USA

The Fire Department of the City of New York (FDNY) is the largest Fire Department in the United States and universally is recognized as the world's busiest and most highly skilled emergency response agency, providing fire protection, search and rescue, pre-hospital care and other critical public safety services to residents and visitors in the five boroughs. Since its inception in 1865, FDNY has helped lead efforts to make New York the safest big city in the nation. This accomplishment requires a steadfast and daily commitment to maintaining the Department's core values of Service, Bravery, Safety, Honor, Dedication and Preparedness. To that end, FDNY members are sworn to serve and protect life and property.

FDNY not only responds to more than a million emergencies every year, its personnel also strive to prevent them by continually educating the public in fire, life safety and disaster preparedness, along with enforcing public safety codes.

FDNY employs:

- *More than 10,000 Firefighters and Fire Officers*
- *More than 3500 EMTs, Paramedics and EMS Officers*
- *More than 100 Fire Marshals*
- *More than 300 Fire Inspectors*
- *More than 400 Dispatchers*
- *More than 800 Support Personnel*

Key observations: As a response agency, FDNY have extensively tried and tested training and procedures in place for dealing with their extensive subway system. With incredible patronage and the risks of underwater tunnels and the like comprehensive processes are employed. At their training ground, they have a purpose built section for trains where recruit firefighters receive initial training and substantive firefighters regularly return for skills maintenance and enhancement. FDNY also have response SOP's and a risk based approach to determining resource needs for different despatch types and locations.

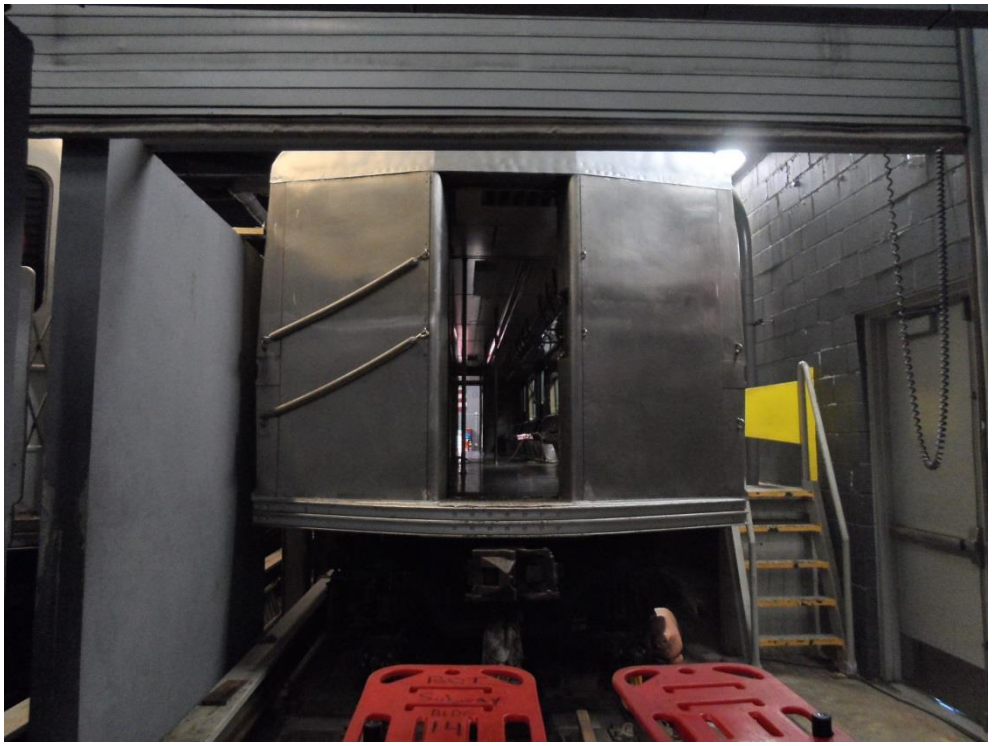
FDNY built to scale subway training facility

FDNY training facility replicating actual subway environment

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

FDNY training facility

FDNY training facility resources



FDNY training facility indoor environment

FDNY training subway station built to scale

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

London Fire Brigade

London, England

London Fire Brigade is London's fire and rescue service - the busiest in the country and one of the largest firefighting and rescue organisations in the world protecting people and property from fire within the 1587 square kilometres of Greater London. We are here to make London a safer city.

Our vision is to be a world class fire and rescue service for London, Londoners and visitors

We will always respond to fires and other emergencies but our work has changed over the years, with a much stronger emphasis now on fire prevention and community safety.

The Brigade is part of a group of organisations that make up the Greater London Authority.

Key observations: The LFB have a dedicated 'transport unit' which includes air, sea, road and rail transport. This approach is relevant having regard to the similar risks faced across each method, their importance and the integration between each method. LFB include training to their first responders on transport type emergency responses from recruit firefighter onwards. They also contribute to community safety in the prevention and preparedness areas through active participation in infrastructure design and compliance activities. A lot of the motivation for the LFB work in this area is the recognition and determination to manage the consequences of disruption to any of their transport networks.

Visit to London Underground Infrastructure with LFB

Communications points for emergency responders at London Underground

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

Kent Fire and Rescue,

Folkestone, England

Kent Fire and Rescue Service is the statutory fire and rescue service for the administrative county of Kent and the unitary authority area of Medway, covering a geographical area south of London, to the coast and including major shipping routes via the Thames and Medway rivers

With 55 fire stations and 1,200 operational members of staff, Kent Fire and Rescue Service has a fleet of more than 75 fire engines and other operational vehicles.

Every year firefighters deal with around 16,500 incidents. These include nearly 1,000 road crashes, around 750 house fires, over 2,400 non-fire rescues, including flooding incidents.

With more than 400km (250 miles) of motorway and major trunk roads, we are used to dealing with a huge range of hazardous and dangerous incidents every day.

More than 225km (139 miles) of coastline, inland waterways and the busiest sea channel in the world means we work closely with HM Coastguard and the Royal Air Force when called upon to deal with off-shore ship fires and rescues. Firefighters also get called upon to help with many smaller incidents on our inland waterways and the Thames Estuary. The White Cliffs at Dover present their own unique challenge each time the service's technical rope rescue team is called out to pluck people to safety.
Kent also has a diverse range of industries including paper-making factories, processing plants, nuclear power generators and other potentially hazardous businesses.

Key observations: Kent Fire & Rescue have a contractual obligation to provide a dedicated service within the Channel Tunnel. They have a dedicated compliment of staff for this task 24/7 as well as customised appliances. Their responsibility includes a patrol of the tunnel itself, checking on detection and suppression systems and an Incident Management capability including maintaining an Incident Control Centre. This is an interesting space given the commercial interests and National importance of this infrastructure as well as the complicating fact that half of the responsibility is shared with another country, being France. This takes a great deal of cooperation and collaboration.

Kent Fire & Rescue custom made appliances for Channel Tunnel response

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

Kent Fire & Rescue testing Suppression systems at the Entrance / exit of the Channel Tunnel.

Senior Station Officer Paul Elso
Country Fire Authority, Victoria

Recommendations

Preparedness

1. **Pre-planning is completed at all levels of Emergency Management and is included in State, Regional and Municipal Emergency Management Plans as well as customised for local brigade / unit needs.**

- Through the existing multi-agency emergency management structures incorporating State, Regional and Municipal Emergency Management Planning Committees, ensure this risk is identified and assessed.
- Develop and provide a pre-incident response planning template for individual brigade / unit use.
    - As a minimum, this should include key local contacts from rail companies, an understanding of the rail operators that use local lines, access points and access arrangements.

2. **An enhanced level of collaboration occurs between rail operators and EM agencies, particularly for sharing knowledge and exercising**

- Rail companies / operators are actively represented at the various emergency management committees
- Rail companies / operators collectively share relevant information on their infrastructure and equipment to contribute to training programs and documents for first responders.
- Rail companies / operators initiate and resource emergency management exercises in a variety of agreed locations on numerous agreed occasions throughout the state annually

3. **A ‘trains’ unit of training be developed for delivery to first responders**

    - Delivered from the beginning of each members career, whether paid or volunteer, this training should include such components as an overview of the states’ rail system including train agency emergency response capability / expectations, safety considerations of working on or near train lines, electricity systems, terminology, identifying visual markers within the train line environment, consideration of various resources available for response, features of various trains particularly focusing on dangers to first responders, agency procedures.
    - Additional units of training to be considered including Rescue operations, HAZMAT specific considerations for tank cars.

Response

4. **Common doctrine be developed on the topic of safe operations on and around rail infrastructure for use by first responders**

    - A single Standard Operating Procedure be developed and adopted for use by all responder agencies.

    - Inclusion of such material in to publications such as CFA's Field Emergency Response Guide

5. **Consideration be given by responder agencies to appropriate resource despatch on receipt of call**

    - At times, multiple water sources will be required for fire, particularly in a rural setting, other times, multiple Rescue appliances or perhaps aerial appliances will be required. BA van/s or HAZMAT appliances may be necessary and usually, a significant health response will be required. USAR trained operators could assist at times. There's also potential for large scale evacuation and traffic management needs from Police. Fortunately, we have the resources available for these scenarios.
      An efficient response will be assisted through forethought on the type and weight of resourcing despatched early.

    - Other than response to the scene, consideration should be given to automatic response of relevant agency personnel to rail authority emergency operations centre/s for liaison purposes.

Conclusion

Now, more than ever, agencies are required to work together in the emergency management environment in order to deliver more favourable outcomes for the community. An opportunity exists in this area to make improvements that will achieve this goal whilst enhancing the safety of first responders.

It is well known that preparedness is the key to safe, effective and efficient operations. Preparedness in this context relates to collaboration between numerous agencies, identifying, analysing, documenting and accepting the risk within various geographical areas of responsibility, training first responders how to be safe and how to deal with this type of emergency and exercising our skills, processes and procedures, together, in order to remain current and identify continuous improvement opportunities.

Fortunately, within Victoria, our various responder agencies are well resourced to deal with this type of emergency. Through the careful consideration and coordination of human and physical resources, any task can be completed. To guide this type of response, common doctrine is essential. Leading to common understanding, terminology, processes and procedures, there's less grey, less apprehension and a greater cohesive team response. The only possible outcome of this is increased safety for first responders and an improved service delivery to the community.

Conducting this study tour and being exposed to what respected public and private organisations have in place has given me a collective understanding of what we need to achieve. It has confirmed that there are some areas we are performing well in and will therefore stand up well for this type of emergency and it has also confirmed that we have some gaps that need addressing. Accepting and acting on the recommendations I've put forward will address these gaps and satisfy the requirements on the rail authorities and emergency management agencies and committees with responsibilities for this event type in Victoria.

Fortunately, the gaps I've identified have been acknowledged by different responder agencies and I'm therefore confident that this work, all or in part, will be supported and put in place.

I sincerely thank the member organisations and board of the Emergency Services Foundation for giving me the opportunity to conduct this study tour and contribute this work to the sector and our communities.

Acknowledgements

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Timothy Fox	Fire Rescue NSW
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Ken Mc Cully	Dept Homeland Security, Transport Security, Washington DC, USA
Ndanaan Jallow	Washington Metro Area Transit Authority
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