

VICTORIAN **ombudsman**

**Investigation into allegations concerning rail safety
in the Melbourne Underground Rail Loop**

October 2012

**Whistleblowers Protection
Act 2001**

**Ordered to be printed
Victorian government printer
Session 2010 - 12
P.P. No. 188**

Letter to the Legislative Council and the Legislative Assembly


To

The Honourable the President of the Legislative Council

and

The Honourable the Speaker of the Legislative Assembly

Pursuant to section 103 of the *Whistleblowers Protection Act 2001*, I present to Parliament my report of an investigation into allegations concerning rail safety in the Melbourne Underground Rail Loop.

A handwritten signature in black ink, appearing to read 'John R Taylor', is positioned above the typed name and title.

John R Taylor
Acting Ombudsman

24 October 2012

Contents	Page
Table of figures	4
Abbreviations	5
Executive summary	6
Background	13
The whistleblower's disclosure	13
Melbourne's rail network	13
The Melbourne Underground Rail Loop and Flinders Street Station	14
The investigation	15
PART 1: The whistleblower's allegations	16
Emergency systems	17
Key issues	17
The history of conditions in the Melbourne Underground Rail Loop	17
Warnings about fire protection at Flinders Street Station	23
Delayed responses	23
Conclusions	26
Recommendations	27
Maintenance and renewal of rail infrastructure in the Melbourne Underground Rail Loop	28
Key issues	28
Maintenance and renewal of the rail network	28
Maintenance and renewal of the Melbourne Underground Rail Loop	30
Investing in the safety of the Melbourne Underground Rail Loop	31
Conclusions	32
Recommendation	33
Emergency plans	34
Key issues	34
Emergency planning deadlines	34
Delays in finalising emergency plans	34
Training and practical exercises	35
Conclusions	36
Recommendations	36
Driver safety skills and incident reporting	38
Key issues	38
Driver safety skills	38
Reporting of rail safety incidents	39

Train fault reporting system	40
Conclusions	40
Recommendation	40
PART 2: The causes	41
Fragmented responsibilities	42
Key issues	42
Emergency management and safety on the rail network	42
Poor communication and coordination	43
Disputes and tensions between parties	44
Conclusions	48
Recommendations	49
Regulatory oversight	51
Key issues	51
Victoria's independent transport safety regulator and Chief Investigator, Transport Safety	51
Involvement of Transport Safety Victoria in the Melbourne Underground Rail Loop	51
Safety monitoring and reporting by Transport Safety Victoria	52
Conclusions	53
Recommendations	53
Inadequate responses by Department of Transport to Melbourne Underground Rail Loop safety issues	54
Key issues	54
The safety obligations of Department of Transport and Public Transport Victoria	54
Inadequate franchise oversight and management	54
Responsibility for safety risks	56
Poor appreciation of safety risks in the Melbourne Underground Rail Loop	57
Incomplete and incorrect advice to Minister	58
Conclusions	59
Recommendations	60
Summary of recommendations	62
Appendix 1 - Melbourne Underground Rail Loop activities	65
Appendix 2 - Breakdown of infrastructure maintenance and renewal planned and actual expenditure 2003 to 2012	68
Appendix 3 - Responsibility for rail safety and emergency management - at 1 April 2012	69

Table of figures

Figure 1: Burnley Loop - severe leached rust water on walkway	20
Figure 2: Burnley Loop - high wall cracking and leaching of concrete	21
Figure 3: Burnley Loop - corrosion	21
Figure 4: Burnley Loop - severe corrosion on fire line	22
Figure 5: Northern Loop - high wall corrosion and cracking	22
Figure 6: Northern Loop - severe corrosion and leaching	23

Abbreviations

DOT	Department of Transport
MFESB	Metropolitan Fire and Emergency Services Board
MURL	Melbourne Underground Rail Loop
EMAC	Melbourne Underground Rail Loop Emergency Management Advisory Committee
PTD	Public Transport Division (formerly with the Department of Transport)
PTV	Public Transport Victoria
SEMD	Security and Emergency Management Division (of the Department of Transport)
SES	State Emergency Service
TSV	Transport Safety Victoria
VMIA	Victorian Managed Insurance Authority
WPA	Whistleblowers Protection Act

Executive summary

Introduction

1. This report details the results, conclusions and recommendations of an investigation into the condition of the safety infrastructure of the Melbourne Underground Rail Loop (MURL) and the fire protection services at Flinders Street Station.
2. This investigation established that key elements of the MURL safety infrastructure had not been adequately maintained or renewed for much of the last decade. The report examines how and why this situation came about notwithstanding seven engineering reports over 11 years which identified the nature and extent of the problems. The report makes recommendations to address not only the safety issues of the MURL, but also to strengthen the framework and approach to rail safety in Victoria.
3. From a public safety perspective, it is important to recognise that, since this investigation commenced, the Chair and Chief Executive of the newly created body Public Transport Victoria (PTV) has advised that a comprehensive program of works has been put in place to remedy the problems identified.
4. Appendix 1 details the works underway or planned to be undertaken since this investigation commenced. They are all scheduled to be completed during 2012-13 except for the ventilation system for which PTV has advised a staged and prioritised scope of modification will be developed once study activities are complete, and capital funding sought as necessary.

The disclosure

5. The Ombudsman received a disclosure under the *Whistleblowers Protection Act 2001* (the WPA) alleging a number of public safety concerns about Melbourne's metropolitan rail network.
6. It was alleged that:
 - The emergency systems in the MURL tunnels are in poor condition, including: the walkways used to evacuate passengers; the services pipes that supply water to fire fighters; and the ventilation and smoke extraction fans.
 - Flinders Street Station does not meet fire regulations.
 - There is no anti-terrorism plan for the MURL and no evacuation plan for an incident in the tunnels.
 - Train drivers lack safety skills and are under-reporting 'near miss' incidents.
 - The rail operator is not meeting its safety obligations, and is diverting funding from safety to other areas.

7. The Ombudsman determined that the disclosure was a public interest disclosure under the WPA. He wrote to the Minister for Public Transport advising him of his intention to investigate the matter.
8. This investigation focused on the conduct of the relevant public bodies, in particular the former Public Transport Division (PTD) of the Department of Transport (DOT). The Ombudsman's jurisdiction under the WPA does not extend to the private sector, however he can require any person to give evidence relevant to his enquiry. I note that senior Metro staff were helpful throughout the investigation providing documents and attending interviews voluntarily.

Key conclusions

9. The MURL is a critical part of the metropolitan rail network's operation. Each weekday more than 700 train services travel through the four underground tunnels of the MURL and an estimated 130,000 people use the three MURL stations (Parliament, Melbourne Central and Flagstaff). A major incident in the MURL could pose considerable risks for commuters travelling through the tunnels, for persons in the MURL stations and in buildings above them. Were the MURL to suffer serious damage, there could be significant costs to the Victorian community and economy.
10. Seven detailed engineering reports over 11 years (from 2001 to 2011) drew attention to deterioration of key infrastructure in the MURL, including its critical safety systems. This was mainly because of groundwater seepage and resultant corrosion in the tunnels. For example, a nine volume report prepared by engineers Connell Wagner Pty Ltd in 2006 and 2007 highlighted:
 - corrosion and cracking of concrete plinths supporting rail tracks
 - poor condition of the emergency walkways
 - corroded fire services pipes and no smoke detectors
 - difficulties in isolating power in the MURL
 - significant deficiencies in the ventilation systems in exhaust mode
 - problems with driver only communication in the event of a disaster or the driver being incapacitated.
11. Under the relevant legislation and contractual agreements, the metropolitan rail operator (currently Metro) has responsibility for ensuring the rail infrastructure is maintained in a condition which enables it to be used safely for its intended purpose. DOT, as the contract manager on behalf of the Victorian Government, had the responsibility of ensuring that the rail operator met this responsibility within the terms of its contracts.
12. However, it was evident from this investigation that little effective action had been taken by the DOT over the last decade to ensure that the safety issues identified in the Connell Wagner report and the other engineering reports on the MURL were properly addressed. Of particular concern was the deteriorated condition of the fire services

pipes (the only fire suppression system in the tunnels) and the emergency walkways. Also, little action, other than testing, had been taken to improve the performance of the ventilation systems. Connell Wagner identified that the ventilation systems, although in reasonable working order, had significant deficiencies when in exhaust mode, with questionable capacity to prevent smoke rising into the stations and back-layering into the tunnels.

13. The current arrangements for rail safety and emergency management are complex, involving four acts of Parliament and 10 separate organisations. Although the legislative intention may be clear, this investigation identified significant uncertainty and tensions both within and between organisations about their respective roles and responsibilities for rail safety and emergency management.

Specific findings

MURL infrastructure

14. The MURL was constructed in the 1970s and early 1980s. Its assets are relatively young compared to the rest of the rail network. However Metro commented in its Asset Management Plan that:

... this being said, the MURL is of such significance to the operation of the Melbourne train network that it requires a higher level of maintenance to ensure that none of the systems fail and consequently have a serious impact on the network operation and safety.
15. This investigation found that the MURL had not attracted the priority or the investment necessary to maintain its assets at a level reflecting its importance to the network and at a standard that would ensure the safety of staff and the public in an emergency.
16. It was only after the commencement of this investigation that a comprehensive program of works was put in place to address the problems identified by Connell Wagner and other engineering and safety experts over the last decade.
17. Emergencies are, by their nature, largely unexpected, but they should be diligently prepared and planned for, however small the likelihood.

Flinders Street Station

18. Flinders Street Station, opened in 1910, continues to be the arrival and departure point for all metropolitan rail services. An estimated 180,000 people and 1,500 train services use the station each weekday.
19. The Victorian Managed Insurance Authority (VMIA), the insurer for the rail network, conducts regular risk surveys of Flinders Street Station and has raised concerns about aspects of the station's fire protection systems since 2006. Progress in implementing the VMIA's recommended improvements has been slow. It is clear that disagreements between DOT

and its metropolitan rail franchisees about responsibility and funding for the improvements have been an issue. An inspection by my investigators in mid September 2012 revealed that work to install automatic sprinklers across the unprotected area of the concourse, where many small cafes and kiosks are located, had just been completed. This was some six years after fire concerns were first raised.

20. PTV, which now has responsibility for managing the contractual agreements with the rail operator, will need to ensure that, in future, any funding disagreements over responsibility for fire protection and any other essential safety measures are resolved within an acceptable timeframe.

Emergency planning and response

21. The MURL poses particular safety and security issues not only because of the challenges of responding to an incident in the underground tunnels (20 to 40 metres below ground) but also because of the locations of the three MURL stations. Parliament Station lies beneath commercial buildings and parkland; Melbourne Central Station is under a shopping complex; and Flagstaff Station is below the Commonwealth Law Courts and public space.
22. Melbourne Central is the most problematic station because of the potential for smoke to rise through the escalator shafts into the Melbourne Central shopping complex. The complex's management has expressed its concern about the potential level of risk.
23. Emergency services representatives (Victoria Police, Metropolitan Fire and Emergency Services Board, Ambulance Victoria) interviewed during this investigation also expressed concerns about the safety of the MURL infrastructure, access and egress in the event of an emergency and the capacity for effective fire response.
24. Since this investigation commenced, Metro has put in place its Emergency and Crisis Management Plan, Security Management Plan and Terrorism Risk Management Plan. It also recently finalised its MURL and Stations Emergency Management Procedures. Evacuation plans for each of the MURL stations have also been updated. However, it was not until 1 April 2012 that Metro's plans were tested with the emergency services.
25. MURL emergency exercises over the past five years revealed significant confusion among relevant parties about their roles and responsibilities during an emergency. This was compounded by conflicting procedures, delays in isolating power and difficulties in assisting people with special needs.
26. Emergency exercises and training are designed to test systems and procedures, and to improve them. It is imperative that emergency planning and response is brought to a level that will be effective in the event of a serious incident in the MURL and that the lessons of these exercises are heeded.

Driver safety training and fault reporting

27. The training and competence of train drivers is fundamental to the safe operation of the metropolitan rail system. A review commissioned by Metro in 2011 identified a number of areas where driver training differed from industry good practice, including:
- no training in operational risk, human factors and error prevention techniques
 - insufficient focus on the underlying issues that result in errors and violations.
28. There has been considerable dispute between Metro and the Rail, Tram and Bus Union about proposed changes to driver training and to the system of train fault reporting by drivers. It is too early to make any judgement about the implications of the proposed changes, but they will need to be monitored closely by the head of the independent rail safety regulator, the Director, Transport Safety to ensure that there is no reduction in public safety standards.

The governance of rail safety and emergency management

29. Victoria has a complex set of arrangements for rail safety and emergency management. They include four Acts of Parliament:
- *Transport Integration Act 2010*
 - *Rail Safety Act 2006*
 - *Terrorism (Community Protection) Act 2003*
 - *Emergency Management Act 1986*.
30. Metropolitan rail safety obligations are also set out in the Franchise Agreement and the Infrastructure Lease between the Government and the rail operator.
31. The complexity of these arrangements is accentuated when there are significant tensions within and between agencies sharing responsibilities for rail safety. Of particular concern was the, at times, difficult working relationship between PTD and Transport Safety Victoria (TSV). Although some level of regulatory tension can be positive and productive, the relationship between the two organisations could not be characterised in these terms and hindered the resolution of some important rail safety issues relevant to this investigation.
32. The Chair and Chief Executive of PTV has acknowledged that there have been 'areas where previous approaches and relationships have been less than ideal'. He said:
- The creation of PTV provides a strong opportunity to take a forward-looking approach to dealing with many of the issues ...
- He also advised that:
- ... PTV is consolidating what was in some respects a disaggregated system.

PTV's new leadership role and structured arrangements (PTV is governed by an independent Board of Directors) empowers PTV to actively pursue avenues of change and improvement.

33. It also became clear during this investigation that poor communication and limitations on the exchange of critical safety-related information hampered working relationships between the PTD, TSV and the insurer for the rail network, VMIA. For example, some of the significant engineering reports on the MURL dating back as far as 2001 were not provided by PTD to VMIA or to an inter-agency committee set up to improve emergency management in the MURL until August 2011.

Ministerial briefing

34. A 12 page briefing provided to the Minister for Public Transport on 30 September 2011 by PTD, following an article in *The Age*¹, omitted important information and contained wrong information. The briefing did not inform the Minister about the degraded condition of the emergency walkways and advised him incorrectly that, after disembarkation, the escape path for passengers is along the rail track. This would be dangerous as gaps between the sleepers are over an open drainage system with up to a 90 cm drop to the base of the drain below. It was also contrary to established evacuation procedures.
35. The briefing advised that the work on the corroded fire services pipes had been completed during the Connex franchise. This was incorrect. Sections of the pipes were replaced in 2005, but reports in 2006 and 2007 continued to express concern about their condition. The briefing also failed to inform the Minister that tests of the smoke exhaust fans had revealed deficiencies in the effectiveness of the smoke exhaust system in the event of an emergency.
36. It might reasonably be expected that, on matters of importance for the security and safety of rail commuters and staff, senior PTD officers would ensure that a briefing to the Minister was accurate and did not omit important information. PTV needs to review the quality of advice to the Minister across the spectrum of rail safety issues.

Recommendations

37. I have made 15 recommendations, including that:
- PTV report regularly to the Minister for Public Transport on progress made by Metro with programmed remedial works in the MURL until they are satisfactorily completed.
 - PTV ensure that, when the review of tunnel ventilation is completed and the scope of any modifications has been determined, funding issues including any additional capital requirements requiring budget consideration are resolved quickly and work commissioned to bring the ventilation systems to current engineering and safety standards.

¹ *The Age* 'City Loop safety fears', 22 September 2011, page 1, M. Fyfe and C. Lucas.

- PTV commission an independent audit to identify and assess the condition of key metropolitan rail safety infrastructure to guide future asset management planning and to ensure that safety is prioritised during the term of the current Infrastructure Lease and Franchise Agreement, and over the longer term.
- PTV ensure that Metro upgrades emergency training for train drivers and station staff to enable them to respond more effectively in an emergency situation.
- The Director, Transport Safety closely monitor the proposed changes to driver training and train fault reporting to ensure that there are no adverse safety implications.
- The Chair and Chief Executive of PTV continue to review the roles and performance of senior executives transferred to PTV from the former Public Transport Division with respect to rail safety issues, in light of this report.

Response by the Department of Transport

38. The response from the DOT to a draft of this report and its recommendations draws attention to the legislative framework for safety in Victoria and its relationship with the national rail safety legislative regime. It points out that the *Transport Integration Act 2010* makes it clear that the transport system needs to be integrated and sustainable and that transport agencies are required to work together to meet the goals of the Act, one of which is 'safety and health and wellbeing'. It highlights that managing a risk associated with the rail system is the responsibility of the person best able to control that risk and refers also to the role of the independent regulator, the Director, Transport Safety.
39. The department's response makes no reference to its own responsibilities over the last decade as contract manager on behalf of the Victorian Government and, prior to the establishment of PTV, for ensuring that successive rail operators met their obligations under the contractual agreements to ensure the safety of the MURL. This did not happen. This is evidenced by the program of works being undertaken or scoped during 2012-13, following the commencement of this investigation, to repair and renew the safety infrastructure of the MURL.
40. The need to prioritise funding across the rail system is self-evident, but the cost of repairing some of the key safety infrastructure of the MURL including the emergency walkways and the fire services pipes did not require a high level decision by the executive government. These matters ought, with the benefit of seven engineering reports over 11 years, to have been recognised as urgent priorities for the department in managing the contracts with the rail operators.

Background

The whistleblower's disclosure

41. The Ombudsman received a disclosure under the *Whistleblowers Protection Act 2001* (the WPA) alleging a number of public safety concerns about Melbourne's rail network.
42. The whistleblower alleged that:
 - The emergency systems in the Melbourne Underground Rail Loop (the MURL, also known as the City Loop) tunnels are in poor condition, including the walkways used to evacuate passengers, the pipes that supply water to fire fighters and the ventilation and smoke extraction fans.
 - Flinders Street Station does not meet fire regulations.
 - There is no anti-terrorism plan for the MURL and no evacuation plan for an incident in the tunnels.
 - Train drivers lack safety skills and are under-reporting 'near miss' incidents.
 - The rail operator is not meeting its safety obligations, and is diverting funding from safety to other areas.
43. The Ombudsman determined that the disclosure constituted a public interest disclosure under the WPA. The Ombudsman wrote to the Minister for Public Transport advising him of his intention to investigate the matter.

Melbourne's rail network

44. More than 500,000 passengers travel on Melbourne's metropolitan rail network on a weekday.
45. The network currently has 15 suburban lines, 212 stations and 830 track kilometres. There are increasing demands on the network, with patronage increasing by 76.5 per cent in the past 10 years.
46. Since 1999, the Victorian Government has contracted out the operation of the metropolitan rail network to private companies under a series of franchise arrangements.
47. The first franchise arrangement, known as MR1, was intended to operate for 15 years, but ended in 2002 after one of the franchisees withdrew and the government had to take over its operations.
48. The second franchise arrangement, known as MR2, ran from 18 April 2004 to 29 November 2009 with Connex as the sole operator of the network.
49. The third and current franchise arrangement with Metro Trains Melbourne (Metro), known as MR3, began on 30 November 2009. It will run until 2017, with a potential maximum extension of seven years.

50. Under the franchise model:
- The franchisee (currently Metro) is responsible not only for providing the rail service, but also for maintaining the infrastructure that supports the service (rolling stock, track, stations, signals etc). It leases the infrastructure from the government for the period of the franchise.
 - The franchisee's obligations are set out in a Franchise Agreement and Infrastructure Lease.
 - The franchisee receives government funding as well as a share of fare revenue from the public transport system. The government has projected that it will pay Metro just under \$900 million for metropolitan train services in subsidies and other payments in 2011-12.

The Melbourne Underground Rail Loop and Flinders Street Station

51. Flinders Street Station, Southern Cross Station and the MURL are at the centre of the metropolitan rail network and make up what is known as the City Loop.
52. Flinders Street Station opened in 1910. The historic building is registered under Victorian heritage legislation. Flinders Street Station remains the arrival and departure point for all metropolitan rail services. An estimated 180,000 people and 1,500 train services use the station each weekday.
53. The MURL was constructed in the 1970s and early 1980s. It has four underground tunnels totalling 17 kilometres in length. The tunnels skirt the edge of Melbourne's central business district and range from 20 to 40 metres below ground.
54. There are three MURL stations – Parliament, Melbourne Central and Flagstaff. Parliament lies beneath commercial buildings and parkland; Melbourne Central is under a shopping complex; and Flagstaff is below the Commonwealth Law Courts and public space.
55. Each weekday 714 train services travel through the MURL and an estimated 130,000 people use the three MURL stations.
56. Senior officials from Metro and PTD acknowledged that the MURL is critical infrastructure. Critical infrastructure is defined as systems and assets that are essential to the minimum operations of the economy and government and central to the effectiveness of the metropolitan train network. Nearly all of the principal metropolitan rail services feed in and out of the MURL.
57. If the MURL were damaged, it would have significant implications for the Victorian community and economy.
58. As an underground railway, it is also subject to special security considerations.

The investigation

59. My jurisdiction under the WPA extends to public officers and public bodies. For this reason, this investigation focused on the conduct of public bodies responsible for Melbourne's rail network, primarily the former Public Transport Division (PTD) of the Department of Transport (DOT).
60. In the course of the investigation, my investigators interviewed 56 witnesses, most under oath or affirmation. They included witnesses from:
- the key transport agencies – DOT, Transport Safety Victoria (TSV, the independent safety regulator for the rail network) and VicTrack (the government business enterprise that owns Melbourne's rail infrastructure)
 - Metro – although the Ombudsman does not have jurisdiction to investigate Metro, he can obtain evidence from any person that may assist his investigation, including employees of a private company
 - the emergency services – Victoria Police, the Metropolitan Fire and Emergency Services Board (MFESB), the State Emergency Service (SES) and Ambulance Victoria
 - the Victorian Managed Insurance Authority (VMIA), the government authority that provides insurance and risk management services for the rail network
 - the Rail, Tram and Bus Union, which represents train drivers and other rail employees
 - the Public Transport Users Association, a not-for-profit organisation representing public transport users.
61. All witnesses attended voluntarily. Six witnesses from DOT requested legal representation, which was agreed to.
62. In addition, my investigators:
- inspected two of the tunnels in the MURL (the Northern and Burnley Tunnels) in September 2011
 - visited two stations (Melbourne Central and Parliament) in September 2011 and three stations (Flinders Street, Parliament and Flagstaff) in January and February 2012 to view their emergency plans and procedures
 - visited Metrol, Metro's control centre for the operation of the metropolitan rail network, in February 2012
 - reviewed a number of documents from DOT, TSV, Metro and other relevant parties, including copies of emergency plans and safety audit reports.

Part 1 The whistleblower's allegations

Emergency systems

Key issues

- *DOT and its franchisees were advised repeatedly of the condition of key emergency systems in the MURL over the past 11 years.*
- *DOT and its franchisees were advised of the need to improve fire protection systems at Flinders Street Station over the past six years.*
- *There were delays in fixing critical safety issues in the MURL. It was only after this investigation commenced that a comprehensive program of remedial works was scheduled for 2012-13.*

The history of conditions in the Melbourne Underground Rail Loop

Reports on the MURL

63. Over the past 11 years DOT and its franchisees received a series of engineering reports identifying concerns with the condition of the emergency systems in the MURL.
64. In 2001, infrastructure rehabilitation and maintenance company Savcor ART Pty Ltd raised concerns about the walkways in the MURL. The walkways are concrete ledges around 40-50 centimetres wide that run along the tunnels to one side of the tracks. They are used to evacuate passengers in the event of an incident because it is not safe to walk on the tracks.
65. Savcor ART's report assessed 1,146 metres of walkways as 'fair' or 'poor' and blamed high levels of chloride ions in the concrete. It estimated that 4,710 metres were 'corrosively active' and warned that the concrete would continue to deteriorate without repair/maintenance. It recommended a detailed repair and maintenance plan and trial of remediation options.
66. In the same year another contractor, David Mills Plumbing, raised concerns about the fire services pipes in the MURL. These pipes are the only source of water in the tunnels for fire-fighters. The contractor reported that '[i]n all 4 tunnels the corrosion is very bad and some major works will need to be carried out soon'.
67. In 2003, engineering company Kellogg Brown and Root Pty Ltd reported that concerns about the MURL had been raised during a question and answer session it conducted as part of an infrastructure assessment. They concluded that the fire systems may not be up to current standards, and the ventilation system (which would be used to extract smoke from the tunnels in the event of a fire) was 'in poor or substandard condition'.
68. In 2006, a site risk survey conducted by the VMIA raised further concerns about the fire services pipes and the ventilation system. It reported that:

Some of the hydrant piping within the loop was in a poor state ... As the hydrant system is the only form of fire protection in the MURL, it is important that the system is adequate.

69. It proposed testing of the pipes as a medium priority. It proposed a smoke test to confirm the adequate operation of the ventilation system as a high priority.
70. In 2006-2007, a report from engineering firm Connell Wagner Pty Ltd identified a series of concerns with the MURL's emergency systems. This included:
 - Smoke control – the report identified that there were no smoke detectors or cameras in the MURL tunnels, and described the ventilation fans in the tunnels as marginal and not fit-for-purpose for fire/smoke control. It said 'doing nothing' potentially placed the travelling public at risk and recommended action within one to two years. The report also noted that smoke at the MURL stations rises through the escalator shafts, with no apparent means by which smoke extraction can be provided.
 - Emergency communications – the report noted that if the train driver was incapacitated during an incident, there was no way for Metrol (the rail operations control centre) to communicate direct with passengers in the tunnels.
 - Evacuation – the report estimated that it would take 24 minutes to evacuate a whole train of passengers in the tunnels, which it described as a long time in an emergency situation. It recommended consideration of an alternative means of escape, such as an elevated walkway.
 - Fire protection – the report identified corrosion of parts of the fire services pipes. It noted that sections were being replaced but said it 'needs eventual total replacement as failure may occur under fire brigade boost conditions'.
71. In 2011, engineering firm Parsons Brinckerhoff raised further concerns about deterioration of the walkways in the tunnels. It said numerous locations had deteriorated to the stage where it was no longer safe for maintenance crews to walk on them.
72. A second VMIA site risk survey in 2011 reiterated concerns about the ventilation system and walkways, as well as the fact that a response to a fire would be likely to be delayed because of the time required to isolate power before emergency services can enter the tunnels safely. Although the survey gave the MURL an overall rating of 'good', the VMIA's contractor advised at interview that he only undertook a limited inspection and had no experience in tunnel engineering.

Warnings from stakeholders

73. The emergency services and other stakeholders have also warned DOT and its franchisees about the condition of the MURL's emergency systems.

74. In late 2009, DOT established the Melbourne Underground Rail Loop Emergency Management Advisory Committee (EMAC). The EMAC includes representatives from the emergency services, VMIA and DOT. One of its functions is to identify emergency management challenges in the MURL and infrastructure improvements.
75. The EMAC identified a list of problems with emergency systems, including the fire services pipes, ventilation system, walkways and arrangements for isolating power in the MURL.
76. Representatives of the emergency services outlined their concerns during this investigation. A senior representative from Victoria Police said:
- [the MURL is a very high risk area] and not just because of ... some of these individual issues ... [I]f it was just one you could probably say this is really bad, we can deal with it but collectively there are so many things wrong with it, and not just small things.
77. An MFESB representative said the MFESB had raised concerns about the need to test the fire services pipes and the problems with isolating power in the tunnels 'at the highest levels'.
78. An Ambulance Victoria representative said he had a 'great fear of a major incident in the loop'.
79. Other stakeholders raised concerns as well. The Rail, Tram and Bus Union wrote to Metro in September 2011 highlighting a number of problems in the MURL, including the state of the walkways and the need for effective smoke exhaust fans.
80. The managers of the shopping complex above Melbourne Central station wrote to DOT in December 2011 questioning, among other things, the general reliance on the shopping centre's systems to manage smoke from the station. They said these issues had the potential to directly affect their ability to manage an emergency situation and:
- ... in turn this could inadvertently increase the risk to customers, retailers, staff and commuters within the Melbourne Central premises. It also exposes Melbourne Central Emergency Management staff and the premises itself to a heightened level of risk that we believe is unacceptable.

Inspection of the MURL tunnels

81. My investigators inspected the Burnley and Northern tunnels in the MURL in September 2011. A number of the problems raised in the reports and concerns set out as above were still evident.
82. Of particular concern was the deterioration of the evacuation walkways (see Figure 1); the extent of cracking throughout the tunnels and groundwater seepage affecting the internal walls, kerbs and walkways (see Figures 2, 3, 5 and 6); the corrosion of the fire services pipes (see Figure 4); the amount of water spilling down the walls of the tunnels, over the walkways and plinths and onto the tracks; and the state of the ventilation system.

83. Following this inspection, on 7 October 2011 the Ombudsman wrote to the Minister for Public Transport advising him that, while this investigation was at an early stage, he had a number of concerns regarding public safety issues relating to the MURL. The Ombudsman further advised that his preliminary concerns related to the role of the DOT in managing its responsibilities under the Franchise Agreement with Metro including:
- Evacuation procedures under the emergency management plans for the MURL and its three stations.
 - The maintenance of the emergency systems in the tunnels. In particular the capability of the central fire hoses to deliver water under pressure and the ventilation system and extractor fans to control smoke and heat in the tunnels.
 - The effectiveness of the repair and maintenance plan for the infrastructure in the tunnels. In particular:
 - the state of the walkways and plinths to facilitate an emergency evacuation
 - damage to the walls, floor and ceiling of the tunnels in relation to public safety.
84. I subsequently met with the Minister for Public Transport on 24 October 2011 and briefed him on the results of the investigation to date.

Figure 1: Burnley Loop – severe leached rust water on walkway



Figure 2: Burnley Loop - high wall cracking and leaching of concrete



Figure 3: Burnley Loop - corrosion



Figure 4: Burnley Loop - severe corrosion on fire line



Figure 5: Northern Loop - high wall corrosion and cracking

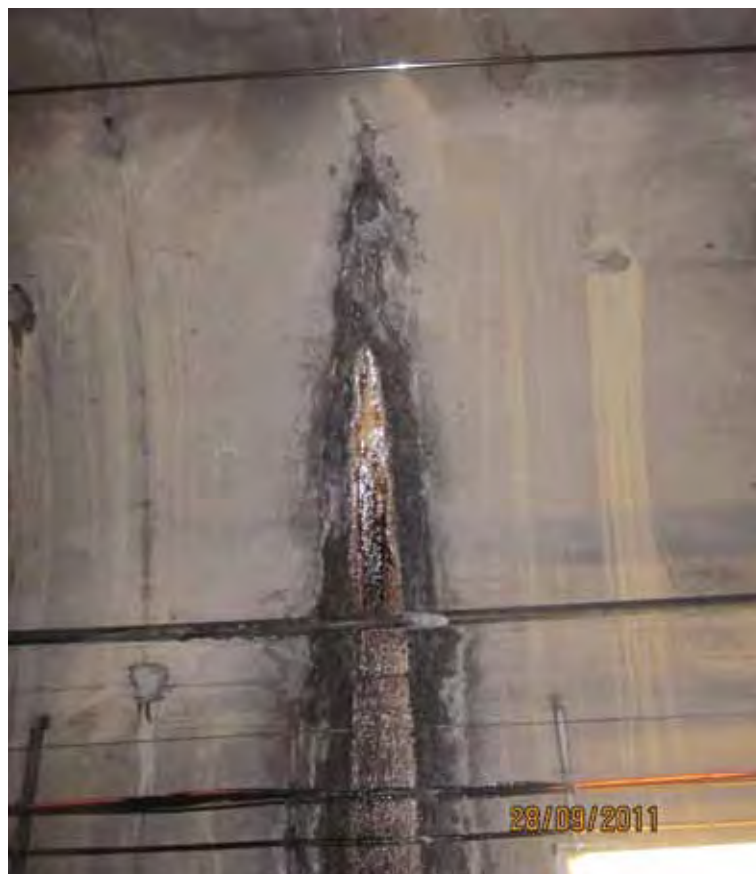


Figure 6: Northern Loop - severe corrosion and leaching

Warnings about fire protection at Flinders Street Station

85. Since 2006 the VMIA has conducted four site risk surveys at Flinders Street Station that have proposed improvements of varying priority to the station's fire protection system.
86. In 2006, the VMIA proposed 13 projects to boost fire protection, including introducing 'fire stop penetrations' in the station's main building to stop fire spreading between levels.
87. In 2008, the VMIA proposed a further 22 projects, including extending sprinklers to the station's concourse (which includes retail shops and kiosks) and upgrading sprinkler protection throughout the main building.
88. In 2009, the VMIA reported that several of its earlier low cost proposals for fire protection improvements had not been progressed. It stated that further consideration should be given to upgrading fire protection services.
89. In 2010, the VMIA noted that some improvements had been made but other works were still outstanding. These included automatic fire protection in the main security server area and the electrical switch room, and extending automatic sprinkler protection to the concourse.
90. Over many years there was repeated failure to complete many of these improvements, as is demonstrated in case study 4. This has now been largely rectified. The majority of these improvements have recently been completed.

Delayed responses

91. DOT officers told my investigators that DOT and its franchisees had carried out a number of significant works in the MURL and had implemented many recommendations. For example, they referred to work on the MURL escalators.

92. In a number of cases, however, it has taken years for DOT and its franchisees to respond to significant concerns. The following case studies are examples.

CASE STUDY 1 – Smoke extraction in the MURL

In the event of a fire, the MURL's ventilation fans have a smoke extraction mode designed to draw smoke and fumes out of the tunnels. This allows passengers to evacuate safely and gives emergency services clear access to the tunnels.

DOT has known of doubts about the capacity of the MURL's ventilation system to cope in a fire for at least six years. In 2006, the VMIA recommended a smoke test as a high priority. In 2007, a report by engineers Connell Wagner raised further doubts. It said there was no smoke control at the MURL's stations and smoke might tend to rise through the escalator passages, one of the evacuation routes for passengers in an emergency.

DOT and Connex, the franchisee at this time, were unable to agree on who was responsible for the issue.

New franchisee Metro conducted air velocity tests in October 2010 and a hot smoke test at Melbourne Central station in August 2011.

These tests confirmed some of the concerns about the system.

The report on the hot smoke test confirmed Connell Wagner's finding that smoke at the stations travels up through the escalator voids and other gaps between the platform levels.

In response to a draft of this report, the former Director of Public Transport stated 'the deficiencies of the ventilation system in an emergency situation appear to be an inherent design fault'.

At the time this report was prepared, Metro had engaged a fan specialist to review the tests and recommend potential improvements. A full fire engineering brief for the MURL is expected to be completed by December 2012.

At the time this investigation concluded there was still no decision about the scope of the works required or when rectification work will commence. Metro has advised DOT that further capital funding may be required.

CASE STUDY 2 – The evacuation walkways in the MURL

The MURL's designers included walkways for passengers to use in the event of an evacuation. They consist of a concrete ledge, 40-50 centimetres in width, running along one side of each tunnel.

During an inspection of the MURL, my investigators observed that parts of the walkways had deteriorated to the extent that walking on them was hazardous (see figure 1).

DOT has known of concerns about the condition of the walkways in the MURL for at least 11 years. In 2001, a report by infrastructure rehabilitation company Savcor ART Pty Ltd noted cracking and

spalling of the concrete and described 12 per cent (or 1,146 metres) of the walkways as 'fair' or 'poor'. Twenty-five per cent of the walkway in the northern tunnel was described as 'fair' or 'poor'.

The report blamed the problem on corrosion of the reinforcement in the concrete and warned that deterioration would continue without repairs or maintenance.

Concerns about the walkways were raised again:

- in 2005 following an emergency exercise in the MURL
- in 2007 in a report by Connell Wagner
- by Metro in its 2009 bid to take over the franchise
- on three occasions in 2011 – in a risk survey by the VMIA; by the Rail, Tram and Bus Union in a letter to Metro; and in a report for Metro by engineering consultants Parsons Brinckerhoff.

This investigation found little evidence of active discussion between DOT and its franchisees about the issue until members of the EMAC raised it as a concern in August 2011.

Metro began trialling a system for cleaning/repairing the walkways in January 2012. A senior officer from Transport Safety Victoria said he inspected part of the tunnels in February 2012 and 'that the walkway condition was generally fit for purpose'. I find this statement puzzling given that the cleaning activities were only completed in September 2012 and Metro anticipates it will not complete the repairs until January 2013.

By that time, it will have been over 11 years since the problem was first raised.

CASE STUDY 3 – The fire services pipes in the MURL

The MURL's fire services pipes give fire fighters access to water in the event of a fire in the tunnels. The pipes run along the length of the tunnels (approximately 17 kms), with connections to town water supplies at all MURL rail stations and tunnel entrances. The pipes have outlets that connect to portable fire hoses every 60 metres.

DOT has been aware of problems with corrosion of the fire services pipes in the MURL for at least 11 years. Sections of the pipes were replaced in 2005, but reports in 2006 and 2007 continued to raise concerns about their condition.

In late 2007, Connex's maintenance contractor, Mainco, advised DOT that the fire main near the rail station at Parliament had burst. It warned:

... if the condition ... at Parliament is typical then there would be insufficient water to fight a fire anywhere in the MURL.

Mainco carried out tests and some repairs with additional DOT funding in 2008, before concluding there was still a need to upgrade the pipes. Metro committed to repairing the pipes when it became the new franchisee in November 2009. However, it was not until late 2011 that Metro conducted hydrostatic (high pressure) tests on the pipes. Ten of the 16 sections tested failed to comply with relevant standards.

Metro advised it is undertaking work to replace affected sections of the pipes and valves. Final hydrant repairs were expected to have been completed in September 2012 with flow and pressure tests scheduled for October 2012. Deburring and pipe cleaning are planned for January/February 2013.

CASE STUDY 4 – Fire protection at Flinders Street Station

The VMIA conducts regular risk surveys of Flinders Street Station. Since 2006, its reports have raised concerns with parts of the station's fire protection systems:

- In 2006, the VMIA recommended 13 projects to boost fire protection.
- In 2008, it recommended a further 22 projects, including extending sprinklers to the station's concourse that includes retail shops and kiosks.
- In 2009, the VMIA reported that several low cost recommendations for fire protection improvements had not been progressed.
- In 2010, the VMIA noted that some improvements had been made but more key issues remain unresolved such as automatic fire protection in the main security server area and the electrical switch room; and repair of buckled sprinkler pipes in the main building.

At the start of May 2011, 13 proposed projects were still outstanding, including two from 2006, seven from 2008, one from 2009 and three from 2010.

According to witnesses and VMIA records, DOT and its franchisees were unable to agree on responsibility for the work. In June 2009, for example, Connex wrote to DOT seeking \$37,237 to address six proposals. It argued the projects were capital improvements and beyond the scope of its maintenance obligations. In response, DOT said it was 'not currently in a position to allocate additional funding to these issues' and suggested Connex re-prioritise.

In 2011, the VMIA decided to give approximately \$200,000 of its own funds to DOT and Metro to address eight of the older recommendations, as well as outstanding work at other sites, because it was concerned about fire risks and the delay in DOT providing funding for the work. The MFESB conducted an inspection at the Ombudsman's request and indicated that the Chief Officer would also be encouraging full sprinkler coverage throughout the concourse including kiosks to bring it into line with the relevant Australian standard.

Metro advised that installation of automatic sprinklers across the unprotected part of the concourse area was due for completion in July 2012. An inspection by this office in mid September 2012 confirmed the work had just been completed.

Conclusions

93. For at least 11 years DOT and its franchisees were advised about problems with key emergency systems in the MURL. Engineering and other reports repeatedly highlighted the poor condition of evacuation

walkways and fire services pipes and questioned the smoke extraction capacities of the ventilation system. Concerns have also been raised by emergency services and the Rail, Tram and Bus Union.

94. For the past six years, VMIA reports have highlighted deficiencies with fire protection systems at Flinders Street Station that put the historic building at risk in the event of a fire.
95. I am concerned that DOT did not ensure that action was taken to address these problems in a timely manner. While action is now being taken, this does not excuse the delays identified by this investigation. I am, however, assured by the Chair and Chief Executive of the new PTV that 'clear arrangements have been put in place to facilitate' dealing with the issues identified in this report.

Recommendations

I recommend that:

Recommendation 1

PTV report regularly to the Minister for Public Transport on the progress made by Metro with programmed remedial works in the MURL including repairs to tunnel cracks, structure, drainage and fastenings, emergency walkways and replacement of defective sections of the fire services pipes, until satisfactorily completed.

Public Transport Victoria's response

Accepted.

Recommendation 2

PTV ensure that, when the review of tunnel ventilation is completed and the scope of any modifications has been determined, funding issues including any additional capital requirements requiring budget consideration are resolved quickly and work commissioned to bring the ventilation systems to current engineering and safety standards.

Public Transport Victoria's response

Accepted in principle. Study activities in relation to the tunnel ventilation systems are expected to be completed by December 2012. PTV will ensure that the results and implications of the study activities are fully understood as a matter of priority.

PTV notes that:

- the allocation of expenditure, including towards new capital works, is ultimately a decision for government. PTV would, of course, advise government on the nature and extent of any desirable activities, and any attendant funding requirements; and
- the priority to be given to any modification activities would need to be considered in the context of other activities needing attention.

Maintenance and renewal of rail infrastructure in the Melbourne Underground Rail Loop

Key issues

- *There is a widely-recognised maintenance backlog in the MURL and across the rail network.*
- *The MURL is critical to the operations of the metropolitan rail network and requires a significant level of maintenance.*

Maintenance and renewal of the rail network

96. The preceding chapter highlighted the failure, over an extended period, to rectify well-documented problems with critical safety and emergency infrastructure of the MURL. These failures are symptomatic of under-investment over the past decade, at least, in the maintenance and renewal of its key assets.
97. This under-investment in the MURL is part of a substantial maintenance backlog across the wider rail network. In 2008, DOT submitted a business case to the Department of Treasury and Finance which identified that:
- Significant additional expenditure was required for the metropolitan rail network.
 - Asset condition was declining across a number of infrastructure groups including safety critical track and signalling assets.
 - Increased service disruption was being caused by infrastructure faults and defects.
 - Maintenance and renewal activity prioritised routine maintenance and reactive works rather than renewal and replacement.
98. The 2008 business case commented on the deficiencies of the MURL and sought additional one-off funding of \$32 million over four years to rectify 'high priority areas' such as:
- emergency services and communications
 - corrosion and cracking protection in the tunnels
 - station lifts and escalators, sewerage and plumbing
 - ventilation, electrical power and drainage.
99. It also highlighted the need to give priority to addressing issues relating to emergency services, including fire engineering and protection. It stated:
- These systems affect safety of occupants and the travelling public, and accordingly some of these items represent the highest priority.
100. Around \$220 million a year is provided by government for maintenance and renewal of rail infrastructure.

101. Work can be changed and funding switched to other projects, provided DOT and Metro agree. Additional funding can be negotiated where work is required that is outside the obligations of the agreed maintenance and renewal regime.
102. Appendix 2 sets out the planned and actual expenditure on maintenance and renewals under the Connex and Metro franchises. It shows that since 2008-09 successive Victorian governments have substantially increased expenditure on maintenance and renewal of rail infrastructure. The current government also committed an additional \$100 million for this purpose.
103. The break-up of the budget for the current franchise is approximately 60 per cent for replacing assets and about 40 per cent on inspections, planned renewals, preventative maintenance and regular maintenance. DOT advised that in the previous Connex franchise it was the reverse.
104. Evidence from a number of witnesses confirmed that substantial additional funding will be required to address some of the asset vulnerabilities in the rail system. In particular a new signalling system is required before more train services can be added to cater for the growth in patronage.
105. According to the then Deputy Director of PTD, the metropolitan rail infrastructure 'is better than what it was but it's got a long way to go'.
106. Commenting on the maintenance budget, the CEO of Metro stated that 'it was a balance between what you want to spend and what you want to get':
- So it's enough money for us to do what we said we'd do, and ... we're contractually held to. Now, when you find cables under the ground are just falling apart - that there [was] no documentation in the [tender] data room [about this] - and pipes within the MURL that need replacing, then it starts to change the landscape somewhat, and you have to make these calls about ... we'll spend the money there instead of there.
107. According to Metro's Network Asset Manager the amount of money allocated for maintenance and renewal is sufficient to make the system 'fit for purpose for its current purpose as well as making it a safer railway'. In that context, for Metro, performance and safety are important purposes. He said that to get the network performing better than the current 92 per cent, the target for punctuality and delivery, more funding is required.
108. He also indicated that Metro has 'struggled to raise awareness of the asset vulnerability of the system to a point at which people are willing to invest more money'.
109. The following case study illustrates the consequences of insufficient renewal investment in track maintenance on the metropolitan network.²

² Based on information contained in Department of Transport Metropolitan Rail Franchising (MR3) Project - Rail Infrastructure Asset Maintenance & Renewal Business Case, dated 5 August 2008, page 14.

CASE STUDY 5 – Track maintenance

There are 761 kilometres of track or 1,522 kilometres of rail on the Melbourne metropolitan network. Given that rail has a serviceable life expectancy of approximately 75 years, a reasonable replacement rate should be approximately 20 kilometres per year.

During the Connex franchise, rail replacement averaged between 5 and 6 kilometres per year. In addition, sleepers and ballast, which are two key components of the rail track, were not renewed or maintained at sustainable levels.

DOT said that the result was a four-fold increase in the number of serious rail track faults which required trains to operate at reduced speed.

110. During this investigation, evidence was given by both DOT officers and Metro that the substantial increase in patronage is placing considerable pressure on the metropolitan rail network. Peak hour rail services are operating at near maximum capacity and this has significant implications for the condition of rail infrastructure.
111. According to the Director, Transport Safety, 'there isn't always a correlation between maintenance and safety and old does not mean unsafe'. That is to say, expenditure on maintenance does not always improve safety. However his sense is that 'they need more money to fix the problems. They can only prioritise for so long'.

Maintenance and renewal of the Melbourne Underground Rail Loop

112. Although the structural assets of the MURL are relatively young, Metro stated in its Asset Management Plan that:

The MURL is of such significance to the operation of the Melbourne train network that it requires a higher level of maintenance to ensure that none of the systems fail and consequently have a serious impact on the network operation and safety.
113. This investigation indicates that the MURL has not attracted the priority or the investment necessary to maintain and renew its assets at a level commensurate with its importance to the rail network and at a standard that would ensure the safety of staff and the public in an emergency.
114. The 2008 business case submitted by DOT to the Department of Treasury and Finance commented that a number of the MURL's systems were approaching 25-30 years of age and 'are either no longer supported or due for major overhaul. Safety systems were constructed in accordance with the standards of the day (circa 1975-83), and as such may not meet contemporary standards'.
115. It referred to the Connell Wagner report of 2006-2007 and warned:

Any significant deferral of the MURL works is likely to impact on the customer experience and operational performance of key stations in the underground loop and lead to a further increase in safety risks (e.g. relating to tunnel emergency, public address and communication systems).

116. DOT advised that only \$1.3 million per annum rather than the requested \$32 million over four years was allocated by Department of Treasury and Finance to address the recommendations in the Connell Wagner report for the MURL.
117. However, in 2008 the then Minister for Public Transport approved \$20 million for CBD station improvement works. The scope of this work was to include repairs to escalators, a control system for the ventilation systems and an investigation into the cracking in the tunnels.
118. On 18 November 2009, DOT approved the diversion of \$4.8 million of that funding for additional rail grinding and rail replacement works across the rail network. DOT advised Connex to bring forward these works since 'it is not practical to achieve the entire scope of CBD stations improvement works' as originally planned.
119. Metro was then allocated an additional \$380,000 top-up funding in July 2010 to undertake works in the MURL that comprised upgrading the switchboard at Melbourne Central Station; replacement of drainage pumps; and replacement of standby generators and fuel tanks.
120. DOT also approved an additional \$6.98 million in top-up funding in November 2011 for escalator works, repairs to cracks in the MURL ventilation shafts and in other regions of the MURL and repairs to the main air handling units in the MURL. The full program of works which has now been scheduled is at Appendix 1.

Investing in the safety of the Melbourne Underground Rail Loop

121. Metro has legislative and contractual responsibilities to ensure safety on the rail network.
122. The *Transport Integration Act 2010*³ requires that all transport agencies including DOT, PTV and TSV work together to meet the objectives of the Act, including that the safety performance of the rail network should be continually improved. It also requires that the risk of harm arising from the operation of the transport system should be avoided and minimised.
123. The *Rail Safety Act 2006*⁴ imposes a number of safety obligations on Metro including a duty, so far as is reasonably practicable, to ensure the safety of its rail infrastructure and rolling stock operations. This includes maintaining safe infrastructure and rolling stock.
124. These obligations are supplemented by the Franchise Agreement and Infrastructure Lease. For example, Metro must ensure that the infrastructure is maintained in a condition which enables it to be safely used for its intended purpose.
125. Metro's Asset Management Plan states that high priority works required to maintain safety standards throughout the network are its primary focus.

³ Section 13.

⁴ Sections 13 and 14.

126. During the first two years of Metro's franchise, emphasis was placed on addressing immediate shortfalls on the rail network. According to Metro, while some maintenance and renewal projects were deferred, the work that was undertaken reduced the number of incidents on the network.
127. Metro has been introducing changes to its maintenance program. It is moving to what it calls a 'reliability centred' maintenance and asset approach. This process collects information about the operational performance of assets and predicts when maintenance should occur to avoid failure.
128. The delays with fixing emergency systems identified in the previous chapter raise concerns about whether operational considerations have been prioritised over emergency management and safety. One emergency management witness said it had been difficult to get franchisees to give priority to emergency management in the past. He said:
- The private operators have a whole range of issues that affect them but predominantly the ones that affect them are those where the public have issues – timetabling etc, and also the performance of the system being measured by government. That's where all of their focus goes ...
- [The] low risk high consequence issues, such as the ones that we deal with, because they don't occur on a day to day basis ... it is very hard for us to keep it front of mind for them ...
129. Metro and DOT witnesses disagreed. A senior Metro infrastructure manager said 'the safety criticality of an issue is always the basis [on] which a priority is assigned'. The former Deputy Director of PTD said in response to this draft report that reliability centred maintenance 'has as its key focus that the system must operate safely'.
130. The then Deputy Director of Public Transport and a number of other witnesses responsible for the MURL infrastructure repeatedly stated that the MURL systems were 'fit for purpose' although noting that some of its assets were getting towards the end of their useful life cycle.
131. In response to this draft report, the former Deputy Director of Public Transport stated 'the term "fit for purpose" is one used to describe that it is considered safe to operate today'. He said:
- The actions that have been taken to date, and are being taken is a clear demonstration that there is a strong desire to not just lift reliability, but not compromise safety and indeed lift the safety standard by reducing the risk to operate the asset safely and reliably.

Conclusions

132. Under-investment in the infrastructure and safety systems of the MURL reflects the historic under-investment in the rail network during the MR1 and MR2 franchises and for decades prior.
133. The MURL is of such significance to the operation of the Melbourne rail network that it requires a high level of maintenance and renewal of critical infrastructure. This is to ensure that none of its systems fail, particularly in an emergency, but also to avoid serious impact on the

operations and safety of the overall network. This has not occurred in a planned and timely way during the past decade.

134. The 2006-2007 Connell Wagner report provided a clear strategy for addressing issues relating to the MURL infrastructure. Since then there have been delays in undertaking the maintenance and renewal work that was identified.
135. I am of the view that the term ‘fit for purpose’ is unhelpful in relation to the critical safety issues identified in this report. It obscures the fact that the essential safety infrastructure and services of the MURL have degraded over the past decade to the point where public safety in an emergency could be compromised in the event of a serious incident.
136. Senior management of PTD, as contract manager on behalf of the Victorian Government, did not ensure over the past decade that:
- those obligations were met
 - rail operations through the MURL could be conducted safely under all conditions
 - emergency infrastructure and response systems were fully capable in the event of a serious incident.
137. I consider that it is essential that PTV and TSV retain sufficient expertise so PTV can independently monitor and TSV can audit the safety and overall condition and performance of rail infrastructure across the network, including the MURL.

Recommendation

I recommend that:

Recommendation 3

PTV commission an independent audit to identify and assess the condition of key metropolitan rail safety infrastructure to guide future asset management planning and to ensure that safety is prioritised during the term of the current Infrastructure Lease and Franchise Agreement, and over the longer term.

Public Transport Victoria’s response

Accepted in principle. It is considered that the condition of the metropolitan rail network is adequately understood. However, in light of the Ombudsman’s report PTV would be happy to work with Metro (and, if considered necessary, an independent party) to re-validate this proposition. The concept of “key metropolitan rail safety infrastructure” in the recommendation would require elucidation with Metro.

Emergency plans

Key issues

- *It took two years for Metro to finalise key emergency management plans for the rail network, including the MURL.*
- *In the interim, employees were reliant on out of date plans to manage emergencies.*
- *Further work, including staff training, is needed to ensure an effective response to an emergency situation.*

Emergency planning deadlines

138. The Franchise Agreement required Metro to prepare its own emergency plans for the rail network after it took over the franchise in November 2009.
139. The timetable required Metro to submit a draft Emergency Management/Response Plan by 31 May 2010. This plan needed to incorporate:
 - an emergency plan that complies with the requirements of the *Rail Safety Act 2006*
 - a risk management plan that complies with the requirements of the *Terrorism (Community Protection) Act 2003*
 - emergency management and response arrangements consistent with the Emergency Management Manual Victoria
 - a business continuity management plan which complies with the Australian Standard Handbook, Business Continuity Management.
140. The timetable also required the then Director of Public Transport to give Metro any comments on the draft plan by 30 June 2010. Metro was required to submit its revised plan by no later than 31 August 2010.

Delays in finalising emergency plans

141. Metro did not meet the emergency planning deadlines set out in the Franchise Agreement.
142. Metro finalised and submitted its *Emergency & Crisis Management Plan*, *Security Management Plan* and *Terrorism Risk Management Plan* on 28 October 2011, nearly 14 months after the 31 August 2010 deadline. These plans were not tested with the involvement of the emergency services, as required by regulation 11 of the *Rail Safety Regulations 2006*, until 1 April 2012.
143. Metro's *Business Continuity Management Plan*, which outlines the action to be taken in response to an emergency or crisis to keep the network operating, was not completed and submitted until 1 April 2012, 19 months after the 31 August 2010 deadline.

144. Other key emergency plans and procedures were also delayed. In July 2011 my investigators reviewed emergency response plans at the three MURL stations. The stations were still using Connex's plans, even though one and half years had passed since its franchise ended. Flagstaff Station's emergency response plan was dated 23 November 2005. Melbourne Central Station's plan was dated 15 March 2006. Parliament Station's emergency response plan was dated 15 March 2006.
145. The plans were short on detail and out of date. They still included Connex personnel as contact officers in the event of an emergency. They contained no instructions for evacuating passengers from trains at the MURL stations.
146. Metro did not finalise its emergency management procedures for the MURL and its stations, which provide instructions on evacuating passengers from trains in the tunnels, until 1 December 2011, two years after it took over the franchise.
147. In response to this draft report, the former Director of Public Transport argued that 'some delay' in completion of a final plan was of less concern if drafts were under discussion and were being incorporated into operating procedures, and there was in effect a workable plan in place.
148. Further work was still under way at the conclusion of this investigation. An inspection by TSV in late 2011 and early 2012 identified that Metro was relying on an unsigned 2003 agreement between a former franchisee and the managers of the Melbourne Central shopping complex to document management of risks at Melbourne Central. In June 2012 TSV issued 10 improvement notices to Metro requiring it to produce an action plan with proposed dates for rectifying issues relating primarily to the procedures for the maintenance and inspection of fire safety systems in the MURL.

Training and practical exercises

149. Metro has legislative and contractual obligations to test its emergency plans and procedures. It is required to run an anti-terrorism exercise every year, as well as a general emergency exercise every six months.
150. The importance of undertaking emergency training in the MURL was emphasised by emergency services, union representatives and rail station personnel. Practical exercises in the MURL over the past five years have identified a number of recurring shortcomings in practice, including:
- conflicting procedures
 - confusion about the roles and responsibilities of the various agencies
 - difficulties in assisting people with special needs
 - delays in isolating power in the MURL.

151. This investigation also identified problems with staff preparedness. At one station, it took 20 minutes for a senior staff member to locate and provide a copy of the station's emergency plan to my investigators. At another MURL station, the Chief Fire Warden said that he had not had any fire training for the past four years. Another station master said there are high levels of casual employment and staff turnover at stations and therefore regular security training is essential.
152. The Rail, Tram and Bus Union wrote to Metro in September 2011 complaining that train drivers were receiving no training in evacuation procedures. It said problems had been highlighted by a 2010 incident involving a disabled train in the MURL, when it took over 45 minutes to evacuate all passengers to a safe location.
153. One train driver said that it had been 10 years since he had received any practical training in evacuation procedures in the MURL.
154. The CEO of Metro advised that, in future, evacuation in the MURL would be covered in refresher training for train drivers. Union representatives subsequently advised that Metro had produced a DVD for drivers on evacuation procedures in the MURL, which was under review by WorkSafe. It said drivers were still being denied access to the MURL for emergency training purposes.

Conclusions

155. It is essential that there is common understanding by all parties about the procedures to be followed in response to a serious incident in the MURL.
156. Metro took up to two years to finalise its key emergency management plans for the metropolitan rail network including the MURL. DOT should have ensured that Metro complied with the timelines set out in the Franchise Agreement.
157. The evidence obtained by this investigation shows there is still work to be done to ensure agencies are prepared for an emergency on the metropolitan rail network. Training and emergency exercises are critical components of any preparation for a major emergency or crisis and should be a priority. The deficiencies identified by earlier training exercises need to be addressed and remedied.

Recommendations

I recommend that:

Recommendation 4

The DOT, in conjunction with PTV, Metro and participating agencies, including Victoria Police, review the outcomes of exercises undertaken in the MURL over the past five years and report to the Minister for Public Transport and the Premier within three months on actions taken or proposed to remedy identified shortcomings in emergency planning and implementation.

Public Transport Victoria's response

Although this recommendation is not directed to PTV, PTV would be willing to participate in any such review.

Recommendation 5

PTV ensure that Metro upgrades emergency training for train drivers and station staff to enable them to respond more effectively in an emergency situation.

Public Transport Victoria's response

Accepted. PTV is happy to request Metro to assess whether current emergency training procedures require upgrade, and to implement any outcomes of such assessment.

Driver safety skills and incident reporting

Key issues

- *Safety training for drivers needs to be upgraded to meet good practice industry standards.*
- *Drivers need to be encouraged and supported to report all safety incidents.*

Driver safety skills

158. There have been incidents on the metropolitan rail network in which poor driver safety skills have put public safety at risk. Case studies 6 and 7 are two examples.
159. At present train drivers are required to undertake 73 weeks training before they can operate across the whole metropolitan network and on the different types of trains.
160. A review of driver training and competence commissioned by Metro in 2011 identified areas where this training program differs from industry good practice. The review identified two deficiencies regarding safety:
 - There is no structured training in operational risk, human factors and error prevention techniques.
 - There is a need for greater focus on addressing the underlying issues resulting in errors and violations. The review found that the current process is limited to post-incident monitoring. Operational incidents such as excess speed, which are a significant risk for Metro, are not included.

CASE STUDY 6 - Failure to stop at red signals

On 4 May 2010 a Flinders Street to Craigieburn suburban train ran into the rear wagon of a stationary freight train midway between Roxburgh Park and Craigieburn stations. At the time, the freight train was stopped at a signal waiting for the departure of another suburban train.

The driver and 14 passengers on the suburban train were treated by paramedics on site with the driver and four passengers subsequently taken to hospital. The two crew members on the freight train were uninjured. Both trains were extensively damaged.

The investigation determined that the driver of the suburban train had passed two signals after departing Roxburgh Park that indicated stop. When passing the signals the driver did not comply with the network rules and operating procedures. The train was then operated at speeds up to 69 km/h, also in contravention of rules and operating procedures.

The reason for the driver's actions could not be determined.

CASE STUDY 7 – Signal passed at danger

On 15 October 2009, train 1003 was to operate empty from Flinders Street Station to the Epping maintenance facility after completing services during the morning peak.

At 8.53 am, train 1003 departed platform 14 when the signal controlling its departure was indicating stop. As the train passed the signal the device for automatically applying the brakes was activated, bringing the train to a stop.

The effect of passing the signal was that the train was now on the wrong line. After about 30 seconds the train recommenced its journey, ran through a set of points before travelling towards Jolimont Station on the Up Clifton Hill line; against the flow of traffic. When the driver realised the train was travelling on the Up line instead of the Down line he stopped the train. When the train stopped, the lead car was facing train 1242 and about 46 metres from it.

There was no injury to any person or damage to either train. Points received minor damage and required repair.

161. The review recommended that Metro develop a new set of competence criteria for drivers specific to its operational risks. One of the suggestions was to include specific competencies to cover high risk activities such as working in the MURL.
162. At the time of this investigation, Metro was negotiating changes to training arrangements with its drivers.

Reporting of rail safety incidents

163. Regulations 43 and 44 of the *Rail Safety Regulations 2006* require accredited rail operators to report to TSV certain types of accidents or incidents that occur within their operations.
164. TSV receives approximately 15,000 notifications per year from accredited rail operators in Victoria.
165. Data published by TSV demonstrates that there have been increases in some types of safety incidents on the rail network in recent years.
166. Senior officers from PTD and TSV claimed that all data was being captured by Metro's system. Other witnesses, however, agreed that under-reporting of incidents is an issue and could be as high as 30 per cent.
167. One senior Metro officer said serious incidents are reported because drivers 'want to justify why they're running late' but minor problems are not. Other witnesses said that in some instances drivers only report what they know they cannot get away with. Our enquiries indicate that this situation is not unique to Victoria and occurs in most other jurisdictions.

Train fault reporting system

168. With the substantial increase in patronage on the metropolitan train network, Metro is making operational changes to improve the reliability and efficiency of train services. One of the changes involves introducing a different train fault reporting system which is based on engineering standards.
169. The new fault management procedures state that the intention is that a train with only a minor fault will not be removed from service during peak times, unless there is a risk to the safe or reliable operation of the train. At the time of preparing this report a WorkSafe review is being undertaken in response to union concerns about changes to the fault deferment periods. Among other things, the union is concerned by a proposal that, if passenger emergency intercoms are inoperative, the train would remain in service for up to 24 hours before the fault is attended to.
170. The union officials negotiating with Metro on this issue stated that 'this transcends any industrial matter - this is really a bread and butter safety issue'.

Conclusions

171. The case studies in this chapter highlight the potential consequences of inadequate driver safety skills.
172. This investigation did not identify significant systemic safety issues with drivers on the metropolitan rail system, but it did identify that driver training in Victoria falls short of industry good practice.
173. The precise extent of under-reporting of incidents by drivers cannot be confirmed. Transparent reporting is essential to ensure that Metro and public agencies get comprehensive data on the causes of accidents.

Recommendation

I recommend that:

Recommendation 6

The Director, Transport Safety closely monitor the proposed changes to driver training and train fault reporting to ensure there are no adverse safety implications.

Director, Transport Safety response

Accepted.

The causes **Part 2**

Fragmented responsibilities

Key issues

- *Arrangements for emergency management and safety on the rail network are complex and fragmented. They involve four Acts of Parliament and ten separate organisations.⁵*
- *There has been a history of poor communication and disputes between a number of organisations with responsibilities for emergency management and safety on the rail network.*
- *The emergency services need to play a stronger role in ensuring that DOT and its franchisees meet their emergency management responsibilities.*

Emergency management and safety on the rail network

174. Victoria has a complex set of arrangements that are meant to promote good safety and emergency management on the rail network.
175. They include at least four Acts of Parliament:
- *Transport Integration Act 2010*
 - *Rail Safety Act 2006*
 - *Terrorism (Community Protection) Act 2003*
 - *Emergency Management Act 1986*, supported by the more detailed Emergency Management Manual Victoria.
176. They also include the Franchise Agreement and the Infrastructure Lease between the government and the rail operator.
177. At the time of this investigation, there was a series of public bodies and officers with an interest in the rail network (see Appendix 3):
- **VicTrack** – VicTrack is a government business enterprise that acts as the ‘custodial owner’ of Victoria’s rail land and infrastructure. It leased the rail land and infrastructure to DOT for a nominal sum and the then Director of Public Transport subleased the rail land to the franchisee. The Director of Public Transport was the contractual party to the Franchise Agreement and Infrastructure Lease. The Director’s role in these contracts has now transferred to PTV.
 - **DOT** – At the time of this investigation, DOT had three divisions with an interest in safety and emergency management on the rail network. PTD leased rail infrastructure from VicTrack and subleased it to the franchisee. It administered maintenance and renewal funding and was responsible for ensuring Metro met its obligations under the Franchise Agreement and Infrastructure Lease. These responsibilities have now been transferred to PTV. The Security and Emergency Management Division (SEMD) provided

⁵ As at 2 April 2012.

specialist advice on security and emergency management, and the Regulation, Governance and Law Division (formerly known as the Legal Division) coordinated insurance for the rail network.

- Emergency services – the emergency services (Victoria Police, the MFESB, Ambulance Victoria and the SES) respond to emergencies on the rail network in conjunction with DOT and its franchisee.
- The VMIA – The VMIA insures rail land and infrastructure and recommends ways to mitigate risks on the network.
- TSV – TSV, headed by the Director, Transport Safety, acts as Victoria’s independent transport safety regulator. It safety accredits franchisees and monitors their compliance with the Rail Safety Act.
- Office of the Chief Investigator, Transport Safety – The Chief Investigator investigates and reports on public transport safety matters to the Minister for Public Transport.

178. In late 2011, the government created a new agency, Public Transport Development Authority that operates as PTV. PTV combines DOT’s Public Transport Division with another agency Metlink, which provided information about public transport to the public. It commenced operations on 2 April 2012.

Poor communication and coordination

179. The legislative framework for the rail network emphasises the need for a common, coordinated approach among the different bodies and officers with an interest in the network.

180. While the legislative intentions are commendable, this investigation identified numerous examples of poor coordination and failures to inform other interested agencies and officers about problems in the MURL, including:

- Victoria Police and the MFESB said DOT had not involved them in planning for emergency exercises until ‘the last minute’, limiting their ability to contribute.
- TSV said most of its information about the problems in the MURL had come from the Rail, Tram and Bus Union, not from DOT.
- SEMD said it had found out about incidents on the rail network from third parties rather than PTD, even though they were part of the same department.
- The VMIA said it did not see the engineering reports on the MURL until August 2011.

181. The Melbourne Underground Rail Loop EMAC had the potential to overcome these problems by, in the case of the MURL, bringing together key DOT and Metro officials and the emergency services. However, coordination and communication were still a problem. For example:

- Members were not given copies of the engineering reports on the MURL until August 2011, 20 months after the EMAC was established.

- The EMAC's role is advisory only. It depended on Metro and PTD, which manages the franchise arrangements, to take action.
- TSV is not a member of the EMAC and some interested bodies, such as the VMIA, said they had only joined recently.
- The representatives from Metro and PTD on the EMAC were relatively junior and did not have the authority to commit to actions or funding.

Disputes and tensions between parties

182. There were also a number of instances where action to fix emergency management and safety problems in the MURL and across the rail network was delayed by arguments between different bodies and officers. The following are some examples.

Disputes between DOT and its franchisees

183. As case studies 1, 3 and 4 in this report show, DOT and its franchisee became involved in disputes about who should pay to fix a number of the problems with the emergency systems in the MURL and at Flinders Street Station.

184. During the MR2 franchise, Connex denied it was responsible for funding a hot smoke test to check the operation of the ventilation system, or improving some of the fire protections at Flinders Street Station. The then Deputy Director of PTD said:

Mainco [Connex's maintenance contractor] at the time kept saying they didn't have any money. We kept saying, "Well, it doesn't matter, it's your responsibility, you've signed up for this deal, you need to address it".

185. The result was a stalemate. There was no further progress on these issues for the remainder of Connex's franchise.

186. Some witnesses said the situation has improved since Metro took over the franchise in November 2009. The increased funding for infrastructure maintenance and renewal since that time has eased some of the earlier tensions about who should pay to fix problems.

187. However, some issues persisted. In relation to fire protection systems at Flinders Street Station, a VMIA officer said:

We had some pushback from [Metro] saying, 'Well they weren't ours, they pre-dated our involvement' and my understanding was that DOT viewed them as maintenance issues that were within [Metro's] budget to rectify ... [Metro] had the view that they were really DOT's issues because they were more of a capital expenditure nature than maintenance.

188. The VMIA has since funded some of the work itself because it was concerned about fire risks and the delay in DOT providing funding for the work.

Disputes between DOT and TSV

189. My investigation also identified a history of tension between DOT and TSV about some safety issues. The following case studies are examples:

CASE STUDY 8 - DOT's safety management system

Since at least 2009, the Director, Transport Safety has been arguing that DOT (and now PTV) should have its own safety management system (SMS) under the Rail Safety Act.

An SMS documents the standards, practices and procedures that promote safety in an organisation. It is intended to be a tool for identifying risks to safety and ways they can be controlled before incidents occur.

DOT took the position that it had no obligation to prepare such a system under the *Rail Safety Act 2006*. On 15 November 2010, the Director, Transport Safety served an Improvement Notice on DOT. The worsening tension between the two organisations is evident from their correspondence. For example:

- On 10 December 2010 the then Director of Public Transport requested formal reasons for the decision to issue the Improvement Notice. On 12 January 2011, the then Director of Public Transport reserved his rights to institute proceedings in the Victorian Civil and Administrative Tribunal.
- On 21 January 2011, the Director, Transport Safety advised that he was not prepared to cancel the notice.
- On 29 March 2011 DOT provided a draft 'Safety Framework Document', leading to further negotiations. However, DOT continued to reiterate its position that the Improvement Notice was invalid. The Director, Transport Safety wrote to the Secretary of DOT expressing his continuing dissatisfaction. He wrote:

I have been trying for almost four years to understand how rail safety matters that affect passengers, members of the public and staff ... are properly considered, prioritised, and dealt with by [DOT] ...

In October 2011 the government amended the Transport Integration Act to exempt DOT from any requirement to prepare an SMS. On 19 June 2012 the Director, Transport Safety made a recommendation to the Chair and Chief Executive of PTV that PTV put in place an SMS to reflect 'good world practice' and to assist PTV's identification and management of rail safety risks. On 6 August 2012 the Chair and Chief Executive of PTV advised TSV that in view of the legislative changes it would not be appropriate for PTV to prepare an SMS. PTV has recently given TSV a draft 'Statement of Understanding' intended to concisely set out PTV's role in operational rail safety matters. The Director, Transport Safety advised that it was a useful first step.

In response to a draft of this report, the Acting Secretary of DOT stated:

Persons are only required to have safety management systems if they are required to be accredited under the RSA [Rail Safety Act], a matter which has been considered by Parliament on several occasions. Accreditation is required for persons who actually operate

rolling stock or manage track. DOT does not do either of these things (nor does PTV and before that the Director of Public Transport) and it is therefore not required to be accredited or to have a safety management system.

CASE STUDY 9 – Passenger doors on Comeng trains

In 2007 the Director, Transport Safety raised concerns with DOT and its franchisees about the passenger doors on Comeng trains.

The Comeng trains were introduced to the rail network between 1982 and 1989 and make up more than half of the metropolitan rail fleet. Their doors have internal and external handles.

There has been a history of incidents associated with the doors including passengers (or objects such as prams) being caught in the doors and passengers forcing open the doors, including while the train is moving. This has led to one recorded fatality.

On 21 September 2011, the Director, Transport Safety issued a safety recommendation to the then Director of Public Transport. The Director, Transport Safety in his media release expressed frustration that:

There has been extensive consultation with [DOT] and Metro Trains about the issue and we still do not have any committed plans to address the safety risks.

Metro subsequently estimated the cost of the project at \$12.9 million.

PTD advised TSV in March 2012 that the safety benefits did not justify expenditure on the doors but it would address the issue if there was a major refurbishment of Comeng trains in the future.

On 18 April 2012 the Director, Transport Safety wrote to the Chair and Chief Executive of PTV reaffirming his resolve to ensure action was taken to address the safety issues with the doors. On 13 October 2012 the Chair and Chief Executive of PTV advised that at this time there are no plans to extend the life of the Comeng fleet. To address the continued uncertainty, the Director, Transport Safety is now in the final stages of putting a condition on Metro's accreditation to put the matter beyond doubt.

CASE STUDY 10 – Train protection warning system for V/Line trains

In 2007, the Director, Transport Safety began to raise concerns with DOT about the lack of a train protection warning system (TPWS) for regional V/Line trains entering the metropolitan rail network.

TPWS automatically activates the brakes on a train that has passed a stop signal or is speeding. V/Line trains do not have a system that works on the metropolitan rail network. The Director, Transport Safety raised the issue with DOT after some V/Line trains failed to stop at signals in the metropolitan area over several years leading up to 2007.

The then Director of Public Transport gave an assurance on 5 June 2008 that 'DOT is committed to see [these] safety improvement projects delivered in a timely and cost efficient manner'. However, despite the following series of correspondence, no progress was forthcoming:

- On 10 March 2010 the Director, Transport Safety issued a recommendation proposing DOT fit TPWS trackside equipment on four metropolitan rail lines and at one station.
- On 9 May 2010 the Director, Transport Safety wrote to the Director of Public Transport expressing concern about the slow progress with the matter.
- Four months later, the Director of Public Transport arranged a trial of the TPWS at one location.
- On 5 November 2010, the Director of Public Transport said it would fund a roll out of TPWS trackside equipment at six to eight sites per year for the next four years, at a cost of \$1.4-1.9 million per year.
- In response, the Director, Transport Safety noted that, under this proposal, it would take more than two decades to address all of the signals it had identified for work.

At the time this investigation concluded, Metro had identified 37 high risk sites that should have TPWS installed. Equipment had been commissioned for three sites, with a further 14 sites due to be commissioned by Easter 2013 and assessment of an additional 16 sites. The former Director of Public Transport said funding was provided for sites nominated as likely to give the best safety improvement (on the basis that a more limited program would return a higher safety return on investment than TSV's recommendation).

At the time this investigation concluded, limited progress had been made with rolling out the equipment. This can be partly attributed to the delay in developing a standards document for the work to be undertaken.

It is now more than 5 years since this important safety improvement was suggested by the Director, Transport Safety.

190. In response to this draft report, the former Director of Public Transport said that it is not mandatory to implement TSV recommendations. He said he is required to conduct a cost/benefit analysis where TSV recommendations would result in significant costs or expenses. He said that PTD's response to the two TSV recommendations had been 'prompt and appropriate'.
191. The train protection warning system was eventually funded in a limited number of sites as a stand alone project by DOT. More than five years have elapsed and little progress made since these safety issues were first raised by the Transport Safety Regulator with DOT.

Disputes within DOT

192. A senior officer from the SEMD told this investigation there had also been 'a little bit of friction' between SEMD and PTD in the past about their respective roles. He said:

... it's the typical 'our space, your space' ... the Public Transport Division, I think, in fact I know, has seen at times that we are stepping into their space ...

we have to effectively put a lot of effort into even cajoling within the department.

193. The officer said SEMD had 'struggled' to get copies of the engineering reports on the MURL, something the former Deputy Director of Public Transport denies.

194. The officer said PTD had also insisted that all contact with the franchisees should be channelled through them:

... the Public Transport Division has been quite blatant to us unofficially in conversations where they've said 'you don't go to the operator. If something happens, you come to us, we'll go to the operator, they'll come back to us, we'll come back to you' ... that is absolutely untenable in an emergency.

Limited involvement of emergency management experts

195. Emergency management stakeholders expressed concern about their inability under the current arrangements to ensure Metro meets its emergency management obligations.

196. A senior representative from Victoria Police said '[DOT] are responsible for making sure they have the plans, not me. And that's the difficulty'. He said he had to rely on 'cajoling and friendships and twisting arms' to get appropriate plans in place.

197. A senior SEMD officer said that SEMD had no formal role in reviewing Metro's emergency plans, although it had been able to comment on Metro's risk management plan that is required under the *Terrorism (Community Protection) Act 2003*. He advised:

The issue for us is ... that whilst Part 6 of the Act is very clear on the obligations of the operators ... the capacity for my division, PTD or any other party to compel the operator to do something specific is very difficult unless it can be shown that they have not met their obligations ... We can only provide advice and guidance to assist operators to get to where we think they should be when we receive copies of their risk management plans. We don't even conduct the audit of the plans, the operators by virtue of section 32 of the Act are at liberty to use any auditor that they choose It is my opinion that the process of using any auditor reduces the ability to ensure consistency across operators ...

198. The officer said there needed to be better coordination between anti-terrorism planning, which falls within SEMD's responsibilities, and emergency planning generally.

Conclusions

199. In a 2011 speech to the Parliament of Victoria, the Minister for Public Transport described Victoria's public transport system as a 'confused "spaghetti jungle"', 'fragmented and lacking accountability' and 'a tangled web of bureaucracies that did not always talk to one another'. He said:

As the stresses and strains on the public transport system worsened, nobody seemed to be in charge, nobody wanted to accept responsibility, nobody was prepared to be accountable. It was always somebody else's fault.

200. Similar comments might be made about the arrangements for emergency management and safety on the rail network.
201. Lack of communication and coordination and the lack of powers vested in emergency management experts, contributed to the problems with emergency management identified in this report.
202. There is evidence that these problems extend across the rail network. It is unfortunate that an independent safety regulator should have to resort to formal action to ensure a department takes action on safety issues.
203. I consider that an independent review should be undertaken of security and emergency management arrangements for the rail network to clarify their future governance and to resolve the tensions and conflicts which at present affect them.
204. In response to a draft of this report, the Chair and Chief Executive of PTV stated:

The safety framework in operation in Victoria also operates in many transport systems throughout the world. Safety responsibilities and accountabilities are considered to be well understood between PTV and the rail operators. To the extent there is any perceived lack of consensus between PTV and TSV, steps are being actively taken to address this.

205. In response to this draft report, the Director, Transport Safety stated:

TSV is a regulator and as such you would expect to see 'tension' between ourselves and regulated parties as ultimately if we cannot achieve the level of safety we need to achieve (so far as is reasonably practicable) – that is why Parliament has given me appropriate powers. As you know I have used these powers on a number of occasions but if cooperation fails I must use my powers.

Recommendations

I recommend that:

Recommendation 7

The Minister for Public Transport consider conducting an independent review of security and emergency management arrangements for the rail network to assess their effectiveness and recommend optimal arrangements for their future governance.

Recommendation 8

The Minister for Public Transport consider seeking amendments to the *Rail Safety Regulations 2006* and the *Terrorism (Community Protection) Act 2003* to require the DOT to conduct the review and audit of the emergency management plans and risk management plans of rail operators in Victoria to ensure consistent standards across operators.

Recommendation 9

PTV, in conjunction with the relevant franchise operator, continue to address the issues of Comeng train doors and train protection warning systems for V/Line trains operating on the metropolitan rail network as a priority and advise the Minister for Public Transport on the action proposed to be taken.

Public Transport Victoria's response

Accepted. PTV notes that work is being, or has been, conducted on these matters.

A train protection warning system installation program is being progressed by Metro, with a further 14 sites due to be commissioned by Easter 2013 and assessments currently being conducted in relation to an additional 16 sites.

In relation to the Comeng doors ... PTV has recently been engaged in dialogue with TSV on this matter, and has advised TSV that:

- any upgrade to the doors would be considered in the context of any life extension to the Comeng fleet; and
- at this time, PTV does not anticipate putting in place a plan to extend the life of the Comeng fleet.

Regulatory oversight

Key issues

- *TSV had little focus on the emergency systems in the MURL until late 2011.*
- *Tensions between TSV and PTD have been neither positive nor productive in terms of rail safety outcomes.*

Victoria's independent transport safety regulator and Chief Investigator, Transport Safety

206. Victoria has two independent offices with responsibilities for safety issues on the rail network.
207. The primary object of TSV, headed by the Director, Transport Safety, is to seek the highest transport safety standards reasonably and practicably consistent with the statutory vision and objectives of the transport system.
208. The Chief Investigator, Transport Safety's role is to conduct 'no-blame' investigations into transport safety matters and report to the Minister for Public Transport.
209. From 2013, a national rail safety regulatory scheme agreed by the Council of Australian Governments will begin to take effect. The new scheme will include a National Rail Safety Regulator based in Adelaide, with uniform national safety standards for the accreditation of rail operators, and auditing and investigation. Victoria will need to pass legislation to implement the new national scheme. At the time this investigation was conducted, it was envisaged that day-to-day regulatory functions would continue to be performed in Victoria under delegation from the national regulator.

Involvement of Transport Safety Victoria in the Melbourne Underground Rail Loop

210. Despite the critical nature of the MURL to the rail network and its special safety and security challenges, Transport Safety Victoria had limited involvement with the MURL.
211. Until late 2011, the Director, Transport Safety had conducted no compliance inspections of the emergency systems in the MURL's tunnels but had undertaken two inspections in relation to MURL stations. An inspection in 2007 reviewed the risk register and local risks at Melbourne Central Station. In 2009, TSV undertook an inspection checklist of some documents relating to fire safety systems and emergency response at Flinders Street Station, Melbourne Central Station and Parliament Station. Both inspections identified the majority of the documents were out of date.
212. The 2009 report also noted lack of training for fire wardens at two MURL stations and that deficiencies were to be 'closed out in accordance with the agreed corrective actions and timeframes', but these problems were still there in late 2011 when this investigation was undertaken.

213. The Director, Transport Safety said that he was aware of one of the reports on the MURL's emergency systems, but it was not one of the issues TSV had been discussing with DOT. He said he had been more concerned about other issues on the rail network such as train protection warning systems.
214. TSV conducted a further inspection of fire safety systems in the MURL in late 2011 and early 2012 after concerns were raised with TSV by the Rail, Tram and Bus Union and in the media. This inspection identified a number of problems with Metro's safety management system, including lack of procedures for maintenance and inspection of the MURL's tunnel hydrant system and tunnel fans. The Director, Transport Safety issued 10 improvement notices to Metro as a result.

Safety monitoring and reporting by Transport Safety Victoria

215. A review of TSV's monitoring work over the past six years revealed that the focus of its work has changed significantly. In 2006-2007, 42 rail safety audits and 29 compliance investigations were undertaken. In 2010-2011, six safety audits and 128 compliance investigations were conducted.
216. A TSV officer said the new approach had been 'far more effective' than the previous audit program because it focused on actual implementation of the rail operator's safety management systems.
217. However, TSV's oversight of rail infrastructure as a whole is limited. In 2010, for example, TSV undertook a compliance inspection of one rail bridge nearing the end of its life cycle. Engineering reports have identified that there are over 64 rail bridges of a similar status.
218. In response, a TSV officer said:

We don't review whole asset classes (ie all the track or all the bridges) because [we] are not resourced to do that and it isn't really justifiable.

... The prioritisation of bridge repairs is important (and was the subject of an improvement notice) but it is the responsibility of the accredited organisation - our focus is that [they] are complying with their safety obligations.
219. The TSV officer said TSV audits rail operators' maintenance records and inspection reports and looks at sample assets. He said TSV had inspected four bridges and those inspections had confirmed the veracity of Connex's and Metro's reviews.
220. TSV's capacity to influence government policy and practice on rail safety has been adversely affected by its poor working relationship with DOT.
221. Case studies 8, 9 and 10 highlight a series of unsuccessful attempts by TSV to raise safety issues on the wider rail network with DOT. At the time this investigation concluded, none of the Director's recommendations had been implemented in full. Both independent offices have the power to report and make recommendations to the Minister for Public Transport independently of DOT.

222. TSV has the capacity to raise safety issues publicly. The Director, Transport Safety has, on occasion, issued media releases about his work. TSV also publishes a regular document called 'Statistics @ a Glance' which includes graphs on rail incidents, but it contains no analysis. An earlier series of annual rail industry safety reports that analysed safety performance and highlighted trends was discontinued in 2008.
223. In response to a draft of this report, the Director, Transport Safety stated 'analysis is difficult on generic performance data and too much detail tends to not get read which is why we moved away from this approach. I am though happy to reconsider and learn from others on this'.

Conclusions

224. Strong independent oversight and regulation is a key tool for promoting good emergency management and safety on the rail network. The evidence obtained by this investigation suggests that, in a number of respects, Victoria's system of oversight is not working as well as it could.
225. TSV should review its audit methodology to include a risk based approach and give a higher priority to critical assets such as the MURL. I also consider there would be merit in the Director, Transport Safety publishing an annual review on rail safety and his activities on TSV's website.
226. In response to this draft report, the Chair and Chief Executive of PTV stated:
- PTV is establishing a fresh working relationship with TSV, is keen for this to be an open and constructive relationship. PTV has responded appropriately to issues raised by TSV since its inception, including some of the matters set out as case studies in the draft report. PTV is meeting with TSV in early September 2012 to continue a dialogue which endeavours to reach consensus on PTV's appropriate role in the realm of rail safety given disagreements which have apparently existed in the past.

Recommendations

I recommend that:

Recommendation 10

The Minister for Public Transport arrange for an independent review of the capacity of TSV to meet its statutory obligations for rail safety, including with respect to the requirements of National Rail Safety law and the National Rail Safety Regulator.

Recommendation 11

The Director, Transport Safety produce an annual review of rail safety that includes analysis and trends and make the document available via the TSV web site.

Director, Transport Safety response

Accepted.

Inadequate responses by Department of Transport to Melbourne Underground Rail Loop safety issues

Key issues

- *Senior DOT officers demonstrated inadequate appreciation of the risks to public safety in the event of an emergency in the MURL.*
- *DOT did not take prudent and timely action to fix problems with the emergency systems in the MURL.*
- *After problems in the MURL were raised in the media, senior DOT officers provided incomplete and incorrect advice to the Minister for Public Transport.*

The safety obligations of Department of Transport and Public Transport Victoria

227. At the time this investigation was conducted, the Director of Public Transport had a statutory function to improve the safety of public transport in collaboration with other relevant bodies. PTD was also responsible for managing the rail franchisee and ensuring Metro's compliance with the safety and emergency management obligations outlined in the Franchise Agreement and Infrastructure Lease.
228. These responsibilities have now been transferred to the new PTV. Its statutory objectives include collaborating with relevant bodies 'to improve the safety of public transport for public transport users'.

Inadequate franchise oversight and management

Poor franchise planning

229. DOT set clear deadlines in its Franchise Agreement with Metro for the delivery of emergency plans, but set no deadlines for the remediation of emergency systems in the MURL.
230. Metro offered to address the emergency systems in the MURL in its 2009 bid to DOT. It proposed an upgrade of the ventilation system, tunnel lining and crack repairs (including repairs to the evacuation walkways) and replacement of the corroded and leaking fire pipes at an estimated cost of \$35 million. It included the projects in a list called 'priced options', on top of its base offer of \$18 million for MURL works.
231. DOT officers said they instructed Metro to remove the 'options' from their bid because Metro was expected to ensure the safe condition of all infrastructure under the Franchisee Arrangement. A senior DOT officer said that, as Connex was already funded for and delivering some of the projects, it was also agreed that Metro would need to assess what work remained after it took over the franchise.

232. DOT officers claimed that the Infrastructure Lease negotiated with Metro does impose contractual obligations on Metro to undertake the work. A review of that document, however, does not show clear timeframes for completion of the works. The Asset Management Plan approved by DOT also commits \$18 million to work in the MURL over 12 years, well below the \$35 million estimated by Metro in its initial bid.

Inadequate contract management

233. Statements made by the then Deputy Director of PTD and another senior DOT manager during this investigation raise doubts about how closely they had monitored Metro's progress in fixing the identified problems in the MURL. For example:

- They said the corroded fire services pipes had been replaced or repaired during the Connex franchise. While it is correct that 1,000 metres of the 17 kms of pipes were replaced by Connex in 2005, further concerns about their condition were raised as early as 2006 and had not been addressed.
- The then Deputy Director of PTD referred to Metro's testing of the ventilation system but, when asked if he knew what was going on at the time, said, 'not at this point in time, no. I know ... there's been some discussion, but ... I haven't been doing that discussion myself'. In response to a draft of this report, he stated 'I am not personally across every detail piece of work on every day, but I am broadly across activities that are being undertaken'.
- He said that, 'if passengers need to evacuate a train in the MURL, they would use the tracks not the evacuation walkway'. This was wrong. The evacuation procedures used by both Connex and Metro state:

It is imperative that when walking through [the] tunnel the walkway only is used, as the drain areas between the concrete sleepers (Tracks) are open and not suitable for walking safely.

234. Metro's track engineer explained that this is because there are open gaps between the sleepers, with a 90 cm drop to the base of the drains below. The then Deputy Director of PTD later claimed that the evacuation procedure had changed and he was not aware of that at the time. This is not correct. The same statement was contained in the previous procedure.

235. This lack of knowledge may be explained in part by DOT's failure to seek regular reports from Metro on these issues. The Infrastructure Lease requires Metro to submit monthly maintenance and renewal reports to DOT, but limits their safety content to information about injuries to rail personnel and specific incidents. In 2011, Metro's monthly reports described works on the MURL escalators, tunnel lining and the ventilation system, but said nothing about the fire services pipes or walkways.

236. DOT also did not set deadlines for resolving the issues. It was only towards the end of this investigation, when officers were invited to comment on this draft report, that they were able to provide a proposed timetable for the remedial works. This timetable had been provided to DOT by Metro in February 2012, more than two years after it took over the franchise.
237. The Deputy Director of PTD stated in response to this draft report that PTD had been closely monitoring Metro and had withheld funding to ensure compliance with its obligations. The evidence to this investigation does not support this claim so far as the MURL and emergency planning are concerned.

Responsibility for safety risks

238. Despite the Director of Public Transport's statutory safety functions, DOT officers repeatedly told my investigators that Metro, not DOT, is responsible for the safe operation of the rail network. They also claimed that TSV, not DOT, is responsible for making sure Metro complies with those obligations.
239. Senior DOT officers acknowledged that the government has a long term interest in the condition of the infrastructure beyond the lease term.
240. In terms of day-to-day safety issues, they stated they had structured the new franchise arrangements so Metro bears responsibility for safety issues. The then Director of Public Transport said he had no power to direct Metro on safety issues. He said:
- the arrangement was intended to ensure there's a clear accountability for safety as the rail operator ... the last thing you would want would be a person on the other side of the contract having a right to tell them to do something that was unsafe.
241. A senior DOT manager justified this approach in terms of good risk management practice. He said:
- Although it is obviously a matter for the State to ensure that there is a viable rail network, this has been done by allocating risk to the party best able to control it, in accordance with understandings of risk allocation in light of many years of study and experience.
242. The evidence in this report shows this approach has not achieved timely remediation of problems in the MURL. Irrespective of contractual obligations and responsibilities for the safety of the network, it is inevitable in the event of a rail emergency that the public would expect the government of the day to take responsibility for emergency management and public safety.
243. The former Director of Public Transport said:
- The Metropolitan operator has all the tools needed to manage safety on a day to day basis ...
- PTD relies on TSV's accreditation as the first line protection that the operator is a safe operator.
- The operator is responsible for ensuring the daily safe operation of the services ...

244. Both TSV and PTD have an interest in ensuring day-to-day safety (in PTD's case by dealing only with accredited operators) as well as an interest in the long term functionality and safety of state assets.

Poor appreciation of safety risks in the Melbourne Underground Rail Loop

245. DOT officers showed little appreciation at interview of the public safety implications of the problems in the MURL. The then Director of Public Transport said:
- ... there are bits of [infrastructure] that need maintenance [and] renewal on an as required basis everywhere. The MURL is ... in that sense, no different to anywhere else ... [Y]es there are issues with infrastructure in the MURL. There are programs in place to fix those over time ... I'm reasonably comfortable with the way it's working.
246. Other officers expressed similar views. The then Deputy Director of PTD said there were no 'immediate issues' with the MURL to the best of his knowledge. Despite the series of reports and stakeholders raising concerns about the MURL's emergency systems, both he and another senior manager claimed the MURL's infrastructure remains 'fit for purpose'.
247. The officers expressed little concern about the time taken to address these issues. The then Director of Public Transport said 'it's a piece of critical infrastructure, [but] it's not our only piece of critical infrastructure'. These comments contrast with the view of the emergency services. Victoria Police and the MFESB both expressed concern about delays with the fire services pipes testing at an EMAC meeting. A senior Victoria Police officer told my investigators, 'for an event that could happen right now, we need to know whether or not [the pipes will work] and I'm still pushing to get that done'. The MFESB's representative on the EMAC also said the issue had been 'on the books ... for far too long'.
248. An emergency management witness questioned PTD's expertise to manage these types of issues. He said:
- ... the responsibility for managing the franchise agreement is with engineers and public transport people ... not people who are trained emergency managers or crisis managers who understand the potential impacts on public transport systems.
249. In response to a draft of this report, the former Director of Public Transport said he was not aware of the detail of the problems in the fire services pipes and ventilation system at the time he was interviewed. The former Director of Public Transport stated that 'if there was an immediate concern then trains would not be operating', a point also made by the former Director of Public Transport. In my view, this does not justify the delays in addressing identified safety issues with emergency infrastructure.

Incomplete and incorrect advice to the Minister

250. On 22 September 2011, *The Age* published an article⁶ raising a number of concerns about the MURL's emergency systems. It appeared to refer to a number of the findings in the various engineering reports on the MURL.
251. As a result, a senior PTD officer prepared a 12 page briefing for the Minister for Public Transport about the article. The briefing was endorsed by the former Deputy Director of Public Transport.
252. The briefing described the allegations in *The Age* article as 'unfounded and at best exaggerated'. It advised the Minister that safety and emergency systems were 'fit for purpose' and, where reports had recommended improvements, they had been or were in the process of being implemented. It also said the number of reports and the depth of their findings was 'testimony to a proactive and healthy risk management framework for its safety critical assets'.
253. A review of the briefing identified a number of incomplete statements and inaccuracies. For example, the briefing stated that the condition of the tunnel walkways had been addressed in the 2011 Parsons Brinckerhoff report. However, it did not inform the Minister that the report had identified cracking and spalling in the tunnels. Nor did it note Parsons Brinckerhoff's observation that the problem had been identified by Savcor ART Pty Ltd in 2001 and Connell Wagner in 2006-2007, but it appeared none of their recommendations were being trialled.
254. The briefing further advised the Minister that:
- It is important to note that the emergency walkway is only used to assist passengers from disembarking from the train and once clear of the train the escape path is along the track.
255. This advice was incorrect. The track has gaps between the sleepers which are over an open drainage system with up to a 90 cm drop to the base of the drain below. It was also contrary to established evacuation procedures.
256. The briefing stated that 'work on the corroded fire pipe had been completed in the Connex franchise'. It failed to mention that further concerns had been raised since that time which had not been resolved.
257. The briefing stated that '[s]moke exhaust fans are already present at a number of points of the network to effectively remove smoke from a tunnel in the event of fire'. It referred to the testing of the fans and described some of the findings. However, it did not inform the Minister that the tests raised doubts about the effectiveness of the smoke exhaust system in an emergency.
258. Following his interview, when these issues were raised, the then Deputy Director of Public Transport emailed my investigators, stating that '[t]he Department will need to review the advice given to the Minister to ensure it is correct'.

6 *The Age* 'City Loop safety fears' op cit.

259. In response to a draft of this report, he stated that '[t]he briefing reflected the accurate knowledge at the time of the briefing, and the department was informed that the information had changed after the briefing was completed'.
260. This is not supported by the evidence. Connex submitted reports expressing concern about the fire services pipes to a committee chaired by the then Deputy Director of Public Transport in 2008 and 2009. The then Deputy Director was emailed a report outlining the results of early tests on the ventilation system in August 2011, the month before the briefing was drafted. That report stated:
- Based on [the observations from the test] the current smoke extract system does not function in a way that would permit the development of a simple and consistent evacuation strategy for cases where the train cannot exit the tunnel.
261. This information was in PTD's possession at the time the briefing was prepared.
262. I consider that it is a fundamental obligation of any officer providing advice to a Minister, particularly in relation to public safety concerns, to ensure that advice is correct. This did not happen in this case. PTD only took steps to correct the advice to the Minister after this office raised concerns about the accuracy of the briefing with PTD officers at interview.

Conclusions

263. Senior officers in PTD have not acted in a prudent and timely way to ensure that significant public safety risks in the MURL were remedied, and up to date emergency plans were in place across the rail network.
264. During this investigation, senior DOT officers demonstrated little appreciation of the risks posed by these delays. In my opinion, the use of the term 'fit-for-purpose' obscures the risks posed by the unsatisfactory condition of the MURL emergency systems in the event of a significant, unforeseen incident.
265. The former Director of Public Transport, in response to this draft report, claimed it had 'not made the case that every issue that had arisen in reports relating to aged infrastructure in the loop is worthy of prioritisation above a range of projects competing for limited funding over the whole of the Victorian public transport network'.
266. While the MURL may be only one part of the rail network, it is used by tens of thousands of passengers each day. An emergency incident in the MURL may have a lower likelihood than other risks on the rail network, but the consequences are potentially severe.
267. The former Deputy Director of Public Transport stated that the actions of DOT and Metro have been 'timely and appropriate' and DOT is taking steps 'to reinforce all obligations not just safety ones'. He further stated that 'immediate concerns are being addressed in a practical timeframe

and longer term ambitions to lift the safety, reliability and overall condition of the network are being prioritised in the most affordable manner possible'. He stated that 'the culture within PTD [is] that safety is not an option, it is a given, and it is part of everything we do'.

268. I consider that the evidence obtained by this investigation points to an organisational focus within DOT on the performance and reliability of the metropolitan rail system with insufficient weight given to safety. This is clearly the case with respect to the demonstrable neglect of the emergency infrastructure and systems of the MURL.
269. I note that a number of senior DOT officers responsible for these issues have transferred to the new PTV. I consider that the Chair and Chief Executive of PTV should review their roles and performance in light of this report. I also consider that PTV needs to retain sufficient in house safety and emergency management expertise to ensure these issues are better managed contractually in future.
270. In response to this draft report, the Acting Secretary of DOT stated:
- I am ... concerned that the findings are used to criticise the conduct of particular officers, particularly when those officers had limited means to influence some of the outcomes in question.

Recommendations

I recommend that:

Recommendation 12

PTV negotiate with Metro on amending the Infrastructure Lease to require Metro to continue to report on potential public safety risks on the rail network and proposed actions in its monthly reports to PTV.

Public Transport Victoria's response

Accepted in principle. PTV is willing to consider changes to reporting, and seek to implement any necessary amendments. PTV notes that any amendment to the Infrastructure Lease would require the agreement of Metro.

PTV notes that there are existing reporting obligations that touch upon this recommendation:

- the Infrastructure Lease sets minimum requirements for Metro's monthly reports. This includes information in relation to safety (set out in Part 2 of Schedule 13); and
- the Franchise Agreement also imposes obligations on Metro to notify PTV of matters pertaining to safety (clauses 11.24 and 11.25) and issues pertaining to Metro's safety accreditation (clause 11.9).

Recommendation 13

PTV make public safety on the metropolitan rail network a standing agenda item for all meetings of the Maintenance and Renewal Review Group and the Network Development Partnership.

Public Transport Victoria's response

Accepted

Recommendation 14

PTV should ensure that notice by either party of any proposed changes, for safety reasons, to Metro's Asset Management Plan specify the assessed safety risk and the consequences of failure to implement the recommended changes.

Public Transport Victoria's response

Accepted

Recommendation 15

The Chair and Chief Executive of PTV continue to:

- review the roles and performance of senior executives transferred to PTV from the PTD with respect to rail safety issues, in light of this report
- ensure PTV has sufficient expertise to enable a more timely and improved contract management response in the future to identified rail safety issues
- ensure that all senior staff involved in overseeing maintenance and renewal are aware of both PTV's and Metro's responsibilities in relation to rail safety.

Public Transport Victoria's response

Accepted.

Summary of recommendations

I recommend that:

Recommendation 1

Public Transport Victoria report regularly to the Minister for Public Transport on the progress made by Metro with programmed remedial works in the MURL including repairs to tunnel cracks, structure, drainage and fastenings, emergency walkways and replacement of defective sections of the fire services pipes, until satisfactorily completed.

Recommendation 2

Public Transport Victoria ensure that, when the review of tunnel ventilation is completed and the scope of any modifications has been determined, funding issues including any additional capital requirements requiring budget consideration are resolved quickly and work commissioned to bring the ventilation systems to current engineering and safety standards.

Recommendation 3

Public Transport Victoria commission an independent audit to identify and assess the condition of key metropolitan rail safety infrastructure to guide future asset management planning and to ensure that safety is prioritised during the term of the current Infrastructure Lease and Franchise Agreement, and over the longer term.

Recommendation 4

The Department of Transport, in conjunction with Public Transport Victoria, Metro and participating agencies, including Victoria Police, review the outcomes of exercises undertaken in the MURL over the past five years and report to the Minister for Public Transport and the Premier within three months on actions taken or proposed to remedy identified shortcomings in emergency planning and implementation.

Recommendation 5

Public Transport Victoria ensure that Metro upgrades emergency training for train drivers and station staff to enable them to respond more effectively in an emergency situation.

Recommendation 6

The Director, Transport Safety closely monitor the proposed changes to driver training and train fault reporting to ensure there are no adverse safety implications.

Recommendation 7

The Minister for Public Transport consider conducting an independent review of security and emergency management arrangements for the rail network to assess their effectiveness and recommend optimal arrangements for their future governance.

Recommendation 8

The Minister for Public Transport consider seeking amendments to the *Rail Safety Regulations 2006* and the *Terrorism (Community Protection) Act 2003* to require the Department of Transport conduct the review and audit of the emergency management plans and risk management plans of rail operators in Victoria to ensure consistent standards across operators.

Recommendation 9

Public Transport Victoria, in conjunction with the relevant franchise operator, continue to address the issues of Comeng train doors and train protection warning systems for V/Line trains operating on the metropolitan rail network as a priority and advise the Minister for Public Transport on the action proposed to be taken.

Recommendation 10

The Minister for Public Transport arrange for an independent review of the capacity of Transport Safety Victoria to meet its statutory obligations for rail safety, including with respect to the requirements of National Rail Safety law and the National Rail Safety Regulator.

Recommendation 11

The Director, Transport Safety produce an annual review of rail safety that includes analysis and trends and make the document available via the TSV web site.

Recommendation 12

Public Transport Victoria negotiate with Metro on amending the Infrastructure Lease to require Metro to continue to report on potential public safety risks on the rail network and proposed actions in its monthly reports to PTV.

Recommendation 13

Public Transport Victoria make public safety on the metropolitan rail network a standing agenda item for all meetings of the Maintenance and Renewal Review Group and the Network Development Partnership.

Recommendation 14

Public Transport Victoria should ensure that notice by either party of any proposed changes, for safety reasons, to Metro's Asset Management Plan specify the assessed safety risk and the consequences of failure to implement the recommended changes.

Recommendation 15

The Chair and Chief Executive of Public Transport Victoria continue to:

- review the roles and performance of senior executives transferred to PTV from the Public Transport Division with respect to rail safety issues, in light of this report
- ensure PTV has sufficient expertise to enable a more timely and improved contract management response in the future to identified rail safety issues
- ensure that all senior staff involved in overseeing maintenance and renewal are aware of both PTV's and Metro's responsibilities in relation to rail safety.

Appendix 1 – Melbourne Underground Rail Loop activities

Public Transport Victoria
Response to Draft Report on investigation into the Melbourne Underground Rail Loop

Attachment 2 – MURL activities

Walkways

Walkway deterioration is associated with water ingress.

A program for walkway remediation has been implemented, involving:

- Documenting the degree of deterioration
- Cleaning of walkway and drainage channels with high pressure water to remove sedimentation/calcite deposits
- Repairing cracking using epoxy grout to minimise water ingress
- Removing spalled/delaminated concrete and repairing with quick curing cementitious grout, and coating reinforcing steel where corroded
- Reinstating reflective linemarking for walkway amenity.

The cleaning activities have been undertaken, as has a trial of the repair methodology. All repair works are expected to be completed by January 2013.

A trial removal of noise baffles currently sitting along the walkways is being undertaken in conjunction with the Victorian Managed Insurance Authority. Increases in noise will be monitored and compared with a view to assessing a potential long-term approach to removal of the baffles.

Tunnel cracks

A ground penetrating radar program is being undertaken to map the cracks in the MURL tunnel. This assists in determining the tunnel wall thickness and leak locations. A visual inspection and condition report has been undertaken by a UK concrete expert, feeding into a package of works in relation to the cracks.

The proposed actions arising from these activities are:

- Repairing cracks as required, including through grouting injections
- Removing and decalcifying "C" channel water seepage drains
- Using the mapping data as a reference point
- Carrying out 2-yearly mapping program.

All mapping is anticipated to be completed by November 2012, and repairs are anticipated to be completed by June 2013.

Track fastenings

Bolt failures may occur where the bolts are joined to the track base plate.

A program of activities has been implemented, involving:

- Inspecting bolts on a 3 monthly cycle and implementing temporary solutions where necessary, pending bolt replacement works
- Conducting a trial installation of new baseplates, to remedy identified track geometry issues causing the bolt failures
- Conducting a feature survey of proposed work locations for the new baseplates
- Designing new track geometry where required.

Works are expected to be completed by January 2013.

Appendix 1 – continued

Track structure

Some deterioration (cracking and spalling) of sleepers in the MURL tunnels has occurred over a number of years due to compressive forces being greater than compressive strength of the sleepers; and twisting/oscillating of the sleepers under load.

Previous preventative/rectification techniques have involved the splicing of sleepers with steel plates to provide tensile strength, and patching spalled locations with cementitious grout.

A program of remediation works is now underway, involving:

- Replacing high priority sleepers
- Identifying priority locations for other work based on the extent of cracking
- Producing a maintenance specification for repair works for low and moderate priority works, involving pressure grouting hairline cracks with epoxy, and patching spalled sections with cementitious grout
- Producing a specification for the diversion of water seepage away from the track structure.

A staged delivery of works is underway, with works expected to be completed by June 2013.

Drainage

Degradation of drainage systems (corrosion of pit lids) has occurred due to the ingress of water through cracks.

A program of works is underway to address this, involving:

- Tunnel washdowns occurring under a 6 monthly cycle
- Cleaning and decalcifying C-channels
- Installing additional C-channels where required or repairing relevant cracks (see above)
- Analysing current water ingress locations
- Installing spoon drains to facilitate water flow over walkways and plinths to drainage channels.

All works are expected to be completed by June 2013.

Tunnel ventilation

A program of activities has been carried out in relation to the ventilation system, involving:

- Reviewing the tunnel ventilation system to establish whether it still performs in accordance with its original design, and then aligning that against current standards
 - Air velocity tests have been carried out to assess the impact of the existing system
 - Localised fan tests have been carried out for comparison against original commissioning data
- Completing a desktop simulation of a smoke emergency situation, and validating the results of that via a hot smoke test
 - Hot smoke test has occurred at Melbourne Central Station
- Developing procedures for effective smoke/vapour management and/or extraction
- Engaging CSIRO to develop a Fire Engineering Brief.

A staged and prioritised scope of modification will be developed once the study activities are complete, and capital funding sought as necessary.

The study activities are expected to be completed by December 2012.

Appendix 1 – continued

Fire hydrant testing

Fire hydrant testing in the tunnels has been undertaken, and corrective works to pipes in the tunnels have been carried out. Final hydrant repairs are expected to be completed this month, with flow and pressure tests scheduled for October 2012.

Deburring and pipe cleaning are planned for January/February 2013.

Queen Street fan shaft

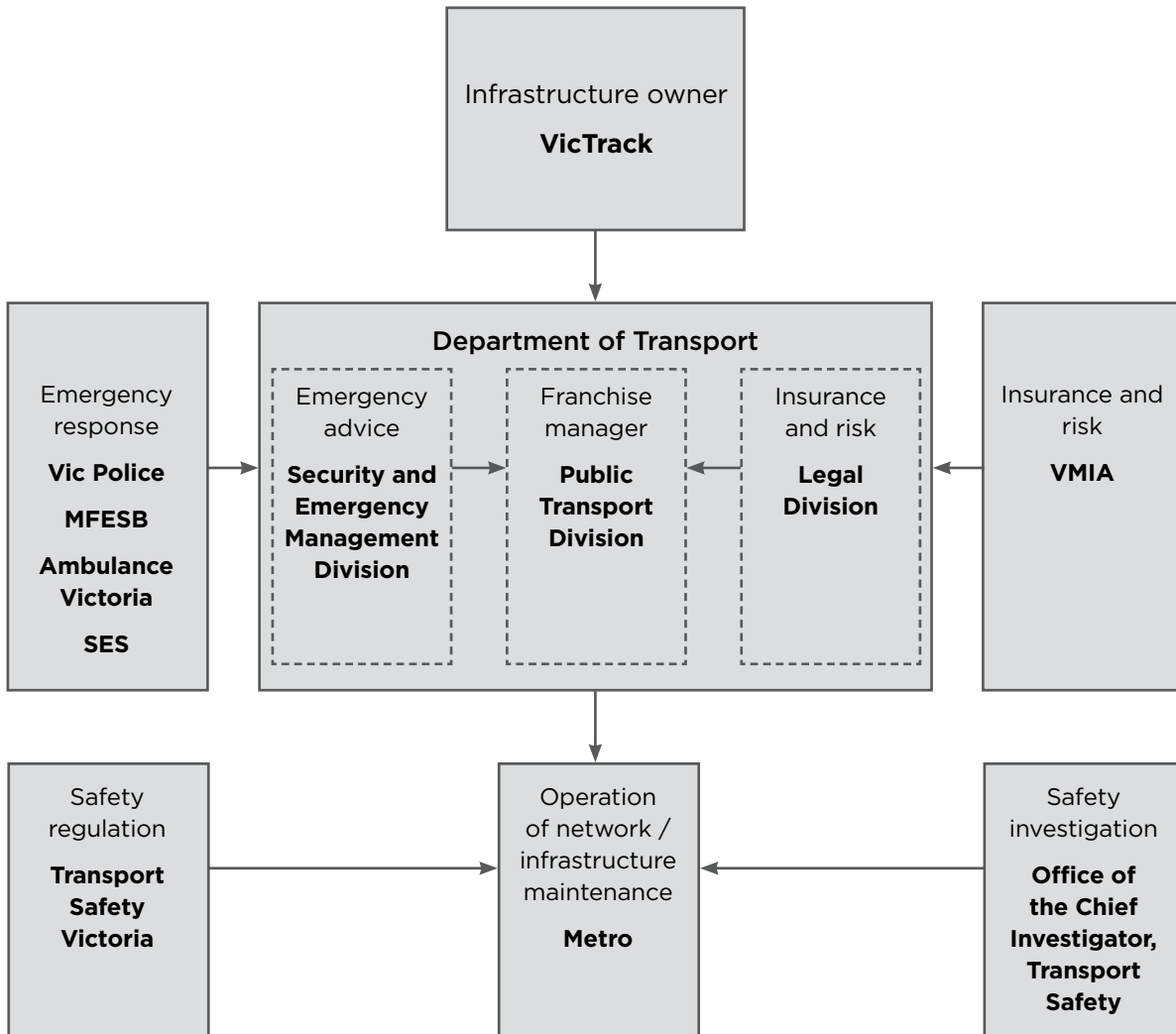
The Queen Street fan shaft suffered mechanical and structural damage in the June 2012 earthquake.

Repairs have been completed and are expected to be commissioned this month.

Appendix 2 – Breakdown of infrastructure maintenance and renewal planned and actual expenditure 2003 to 2012

	Planned \$	Actual \$
Connex Lease Year 1 (03-04)	12,776,520	9,970,120
Connex Lease Year 2 (04-05)	74,950,291	70,180,639
Connex Lease Year 3 (05-06)	78,418,157	86,223,655
Connex Lease Year 4 (06-07)	80,717,676	88,173,328
Connex Lease Year 5 (07-08)	82,013,800	92,602,424
Connex Lease Year 6 (08-09)	81,344,573	110,856,077
Connex Lease Year 7 (to Nov 09)	37,904,856	57,436,010
Metro Lease Year 1 (from Dec 09-10)	143,929,604	134,366,463
Metro Lease Year 2 (2010-11)	219,622,571	232,571,862
Metro Lease Year 3 (2011-12)	218,910,271	230,280,973

Appendix 3 – Responsibility for rail safety and emergency management (at 1 April 2012)



Ombudsman's Reports 2004-12

2012

Whistleblowers Protection Act 2001 Investigation into allegations of improper conduct by CenITex officers
October 2012

Whistleblowers Protection Act 2001 Investigation into allegations of improper conduct involving Victoria Police
October 2012

Whistleblowers Protection Act 2001 Investigation into allegations against Mr Geoff Shaw MP
October 2012

Investigation into the temporary closure of Alfred Health adult lung transplant program
October 2012

Investigation into an alleged corrupt association
October 2012

Whistleblowers Protection Act 2001 Investigation into allegations of detrimental action involving Victoria Police
June 2012

Own motion investigation into Greyhound Racing Victoria
June 2012

The death of Mr Carl Williams at HM Barwon Prison - investigation into Corrections Victoria
April 2012

Whistleblowers Protection Act 2001 Conflict of interest, poor governance and bullying at the City of Glen Eira Council
March 2012

Investigation into the storage and management of ward records by the Department of Human Services
March 2012

2011

Investigation into the Foodbowl Modernisation Project and related matters
November 2011

Investigation into ICT-enabled projects
November 2011

Investigation into how universities deal with international students
October 2011

Investigation regarding the Department of Human Services Child Protection program (Loddon Mallee Region)
October 2011

Investigation into the Office of Police Integrity's handling of a complaint
October 2011

SafeStreets Documents - Investigations into Victoria Police's Handling of Freedom of Information request
September 2011

Investigation into prisoner access to health care
August 2011

Investigation into an allegation about Victoria Police crime statistics
June 2011

Corrupt conduct by public officers in procurement
June 2011

Investigation into record keeping failures by WorkSafe agents
May 2011

Whistleblowers Protection Act 2001 Investigation into the improper release of autopsy information by a Victorian Institute of Forensic Medicine employee
May 2011

Ombudsman investigation - Assault of a Disability Services client by Department of Human Services staff
March 2011

The Brotherhood - Risks associated with secretive organisations
March 2011

Ombudsman investigation into the probity of The Hotel Windsor redevelopment
February 2011

Whistleblowers Protection Act 2001 Investigation into the failure of agencies to manage registered sex offenders
February 2011

Whistleblowers Protection Act 2001 Investigation into allegations of improper conduct by a councillor at the Hume City Council
February 2011

2010

Investigation into the issuing of infringement notices to public transport users and related matters
December 2010

Ombudsman's recommendations second report on their implementation
October 2010

Whistleblowers Protection Act 2001 Investigation into conditions at the Melbourne Youth Justice Precinct
October 2010

Whistleblowers Protection Act 2001 Investigation into an allegation of improper conduct within RMIT's School of Engineering (TAFE) - Aerospace
July 2010

Ombudsman investigation into the probity of the Kew Residential Services and St Kilda Triangle developments
June 2010

Own motion investigation into Child Protection - out of home care
May 2010

Report of an investigation into Local Government Victoria's response to the Inspectors of Municipal Administration's report on the City of Ballarat
April 2010

Whistleblowers Protection Act 2001 Investigation into the disclosure of information by a councillor of the City of Casey
March 2010

Ombudsman's recommendations - Report on their implementation
February 2010

2009

Investigation into the handling of drug exhibits at the Victoria Police Forensic Services Centre
December 2009

Own motion investigation into the Department of Human Services – Child Protection Program
November 2009

Own motion investigation into the tendering and contracting of information and technology services within Victoria Police
November 2009

Brookland Greens Estate – Investigation into methane gas leaks
October 2009

A report of investigations into the City of Port Phillip
August 2009

An investigation into the Transport Accident Commission's and the Victorian WorkCover Authority's administrative processes for medical practitioner billing
July 2009

Whistleblowers Protection Act 2001 Conflict of interest and abuse of power by a building inspector at Brimbank City Council
June 2009

Whistleblowers Protection Act 2001 Investigation into the alleged improper conduct of councillors at Brimbank City Council
May 2009

Investigation into corporate governance at Moorabool Shire Council
April 2009

Crime statistics and police numbers
March 2009

2008

Whistleblowers Protection Act 2001 Report of an investigation into issues at Bayside Health
October 2008

Probity controls in public hospitals for the procurement of non-clinical goods and services
August 2008

Investigation into contraband entering a prison and related issues
June 2008

Conflict of interest in local government
March 2008

Conflict of interest in the public sector
March 2008

2007

Investigation into VicRoads' driver licensing arrangements
December 2007

Investigation into the disclosure of electronic communications addressed to the Member for Evelyn and related matters
November 2007

Investigation into the use of excessive force at the Melbourne Custody Centre
November 2007

Investigation into the Office of Housing's tender process for the cleaning and gardening maintenance contract – CNG 2007
October 2007

Investigation into a disclosure about WorkSafe's and Victoria Police's handling of a bullying and harassment complaint
April 2007

Own motion investigation into the policies and procedures of the planning department at the City of Greater Geelong
February 2007

2006

Conditions for persons in custody
July 2006

Review of the *Freedom of Information Act 1982*
June 2006

Investigation into parking infringement notices issued by Melbourne City Council
April 2006

Improving responses to allegations involving sexual assault
March 2006

2005

Investigation into the handling, storage and transfer of prisoner property in Victorian prisons
December 2005

Whistleblowers Protection Act 2001 Ombudsman's guidelines
October 2005

Own motion investigation into VicRoads registration practices
June 2005

Complaint handling guide for the Victorian Public Sector 2005
May 2005

Review of the *Freedom of Information Act 1982*
Discussion paper
May 2005

Review of complaint handling in Victorian universities
May 2005

Investigation into the conduct of council officers in the administration of the Shire of Melton
March 2005

Discussion paper on improving responses to sexual abuse allegations
February 2005

2004

Essendon Rental Housing Co-operative (ERHC)
December 2004

Complaint about the Medical Practitioners Board of Victoria
December 2004

Ceja task force drug related corruption – second interim report of Ombudsman Victoria
June 2004

