EMV
EMERGENCY
MANAGEMENT
VICTORIA

Emergency Management Operational Communications Program

Working in conjunction with Communitites, Government, Agencies and Business

VICTORIA
State Government

Probity

To deliver on the project objectives in a fair way for all industry participants, Government is committed to ensuring that probity is adhered to by government and industry participants. For government participants this includes restrictions on contact with industry participants

All readers of the Emergency Management Operational Communications Program should familiarise themselves with the associated Probity Framework, available on the Emergency Management Victoria website at http://www.emv.vic.gov.au/plans

Acknowledgements

Authorised by the Victorian Government

1 Treasury Place, Melbourne, 3002

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Foreword

The Emergency Management Operational Communications Program was developed to ensure that the in-field operational communications systems used by emergency services responders are contemporary, resilient, fit-for-purpose and affordable. This Program, delivered under the Victorian Emergency Management Strategic Action Plan 2015-2018, is a prime example of the coordinated approach the emergency management sector will take to reduce the effect and consequences of emergencies on Victorian communities.

The Government is committed to keeping Victoria safe, and key to this is providing our emergency services staff and volunteers with the tools they need to perform their vital role.

Modern, robust and reliable radio and data communications provide a key operational tool to enable police and emergency services to serve the Victorian community. To enable rapid response to incidents and promote a safe working environment for our emergency service workers, well planned, fit-for-purpose and interoperable communications are essential.

As technology continues to improve, providing the emergency management sector with the best possible communications infrastructure in an efficient manner becomes increasingly challenging. New technology is expensive to implement, so combining the purchasing power of the sector ensures better value for money.

The Emergency Management Operational Communications Program provides a vision for achieving this, progressively transforming the sector's communications facilities into a world-leading system that enables emergency services staff and volunteers to receive the information they need at the right time to perform their role as quickly, safely, and efficiently as possible.

This Program demonstrates the Government's commitment to improving the capabilities of this vital sector, and to invest in the latest technology to support the work of emergency service responders on the front line. This will enable them to continue the outstanding work they perform.

This Program reflects a whole of sector approach to communications, to build a responsive and flexible system for the future.

The Hon. Jane Garrett
Minister for Emergency Services

Introduction

The Emergency Management Operational Communications Program provides the 2025 operational communications vision of Victoria's emergency management sector and the high level plan to achieve it. The 10-15 year plan aims to transform the sector's communications capability to meet future demand by utilising the latest mobile radio and data technologies.

Victoria's emergency management environment is rapidly changing, with an ageing community and metropolitan population spread increasing the pressure on our health and emergency services. The security threat and the incidence and severity of natural disasters is increasing, placing a heavier burden on the emergency services and their personnel and the operational communications networks and systems that support them.

Smart mobile devices and even smarter mobile applications are increasingly embedded in our community and businesses. Many everyday activities are being performed through mobile applications, and the community is looking to our government agencies to do the same.

There has, and will continue to be, a fundamental shift in how people communicate, from voice-centric to data-centric communications. As a result, the emergency management sector needs to adapt and embrace the opportunities presented by the rapid evolution of operational communications, or it risks being left behind and not satisfying the community need for information.

Faster networks and improved end-user devices offer emergency management the potential to use modern applications, such as video, and access online services resulting in enhanced situational awareness of an emergency event and faster treatment and response times with benefits to the community and workplace safety.

The Emergency Management Operational Communications Program was developed by the emergency management sector, recognising the significant funds Government already invests each year in emergency services operational communications.

To afford the Program, the Government and the sector will work together to make the savings available in the current services by eliminating duplication and aggregating service demand, leveraging joined-up governance and procurement arrangements, to invest in market-contestable, standards-based mobile voice and broadband data capable operational communications.

This document provides the community, the emergency management sector and industry with Victoria's long-term vision for operational communications and an overview of the key steps planned to get there.

Emergency Management Victoria

Emergency Management Victoria (EMV) was established in July 2014 and plays a key role in implementing the Victorian Government's emergency management reform agenda by:

- maximising the ability of the emergency management sector to work together and achieve joined up outcomes that are community focused
- leading and facilitating key initiatives focused on system-wide reform with integrated policy, strategy, planning, investment and procurement
- ensuring a stronger emphasis on shared responsibility, community resilience, consequence management and post emergency recovery activities
- embedding emergency management across government, agencies and business
- leading and coordinating emergency preparedness, response and recovery with the emergency management sector and community.

Strategic Action Plan 2015-2018

The Victorian Government has endorsed a three-year rolling Victorian Emergency Management Strategic Action Plan 2015-2018 (SAP), developed by the State Crisis and Resilience Council (SCRC), as required under the *Emergency Management Act 2013*. The SAP sets out the Government's vision, strategic priorities for the emergency management sector and related actions to support Victoria in achieving its vision. It is the overarching plan that will guide all-hazard, all-agency reform and give the community confidence that progress will be made.

Victoria supports a sector-wide approach to achieve integrated outcomes that are community focused. It is only by agencies, departments, industry, business, all levels of government and community working together will we fully realise a sustainable and efficient emergency management system that reduces the likelihood, effect and consequences of emergencies.

The SAP outlines the Emergency Management Vision, Shared Goal and Values, which provides purpose and strong guidance for how we work together before, during and after emergencies to achieve the best outcomes for the community.

Shared Vision

"Safer and more resilient communities"

Shared Goal

"A sustainable and efficient emergency management system that reduces the likelihood, effect and consequences of emergencies"

"We work as one"

Values

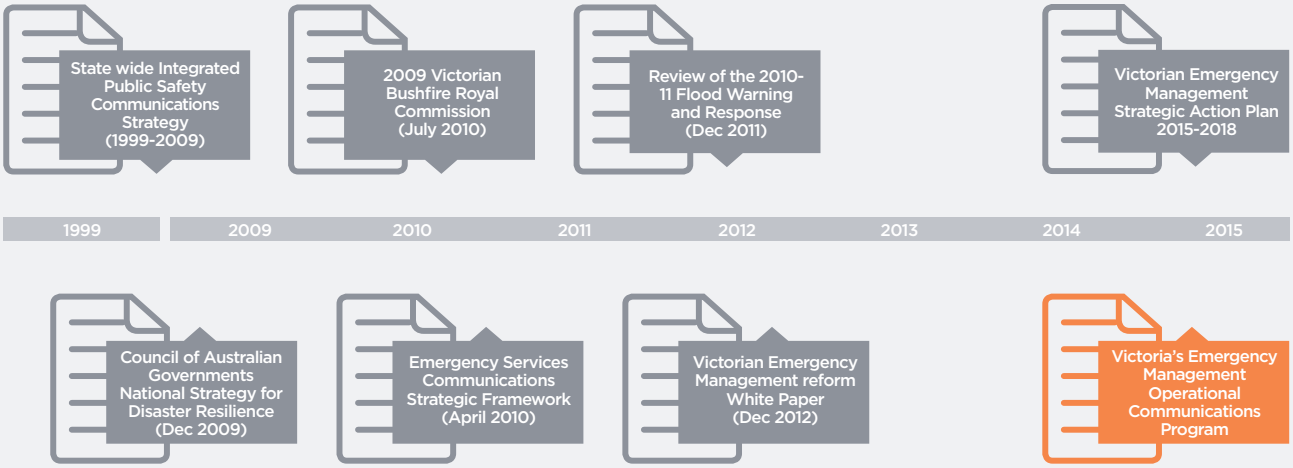
Leadership, Accountability, Integration, Agility.

The Government's endorsement of the SAP includes delivery of Priority 'H: Enhance systems and platforms to deliver integrated services'. The Emergency Management Operational Communications Program is the first action required to deliver this priority.

The objective of this priority is improved connectivity and interoperability between first responders. Improved communication between first responders, support services and the community will improve decision making and community safety.

Action 1

Implement the sector's long-term communications plan, with the longer-term aim of moving to a single integrated voice network and sector-wide broadband data service. Review and adapt rollout in line with social, technical, industry and economic environments, and emerging technologies where appropriate.



To implement this action, the sector must leverage the planning and strategic analysis completed to date for police and emergency services communications.

Victoria's Emergency Management Sector

Victoria's emergency management sector comprises all Departments, agencies, not for profit organisations and businesses with roles and responsibilities in preventing, preparing for, responding to and recovering from emergencies. First responder agencies, with over 21,000 staff and 90,000 volunteers, make a vital contribution to emergency management. Effective communications within and between these organisations (and from and to the community) are critical to their operations.

The summaries below describe the services provided by these organisations, and underscores the need for the sector to work as one to achieve Victoria's vision for safer and more resilient communities.

Victoria Police provide statewide policing services to the Victorian community. Victoria Police is the control agency for a number of types of emergencies, including security incidents and land and marine search and rescue.

Ambulance Victoria provides statewide emergency and non-emergency medical care to the Victorian community, including emergency medical response, patient transport and retrieval services.

Victoria State Emergency Services (VICSES) is the control agency for flood, storm, tsunami and earthquakes in Victoria. Primarily a volunteer-based agency, VICSES also assist other agencies in emergencies, such as road rescues, bushfires and community planning and education.

Country Fire Authority (CFA) provides a range of emergency services to Victorian communities in regions and outer of metropolitan Melbourne, including firefighting, management of hazardous materials incidents, road accident rescue and fire and community safety education programs. CFA services are provided by a combination of volunteers and career firefighters.

Metropolitan Fire and Emergency Services Board (MFB) provides a range of emergency services to Melbourne communities, including firefighting, emergency medical response, management of hazardous materials incidents, road accident rescue and fire and community safety education programs. MFB services are provided by career firefighters.

Life Saving Victoria (LSV) emergency operations include surveillance of beaches, water rescues, and first aid. LSV is predominantly a volunteer-based organisation.

Sheriff's Office Victoria is responsible for enforcing infringement warrants across the State. Sheriff's Officers work closely with Victoria Police.

Department of Environment, Land, Water and Planning (DELWP) manage land, water, fire and biodiversity, with and for, Victorian communities. Its emergency operations involve managing fires on public (Crown) land.

Emergency Services Telecommunications Authority (ESTA) is not a first-responder organisation, but manages community calls for all emergency response agencies in Victoria, including emergency and non-emergency calls. ESTA also manage some of the major communications service contracts on behalf of the State.

What is Operational Communications?

Operational communications are the communications within and between emergency management agencies, when responding to emergency incidents, performing business-as-usual activities in the field or responding to multi-agency, large-scale emergency events.

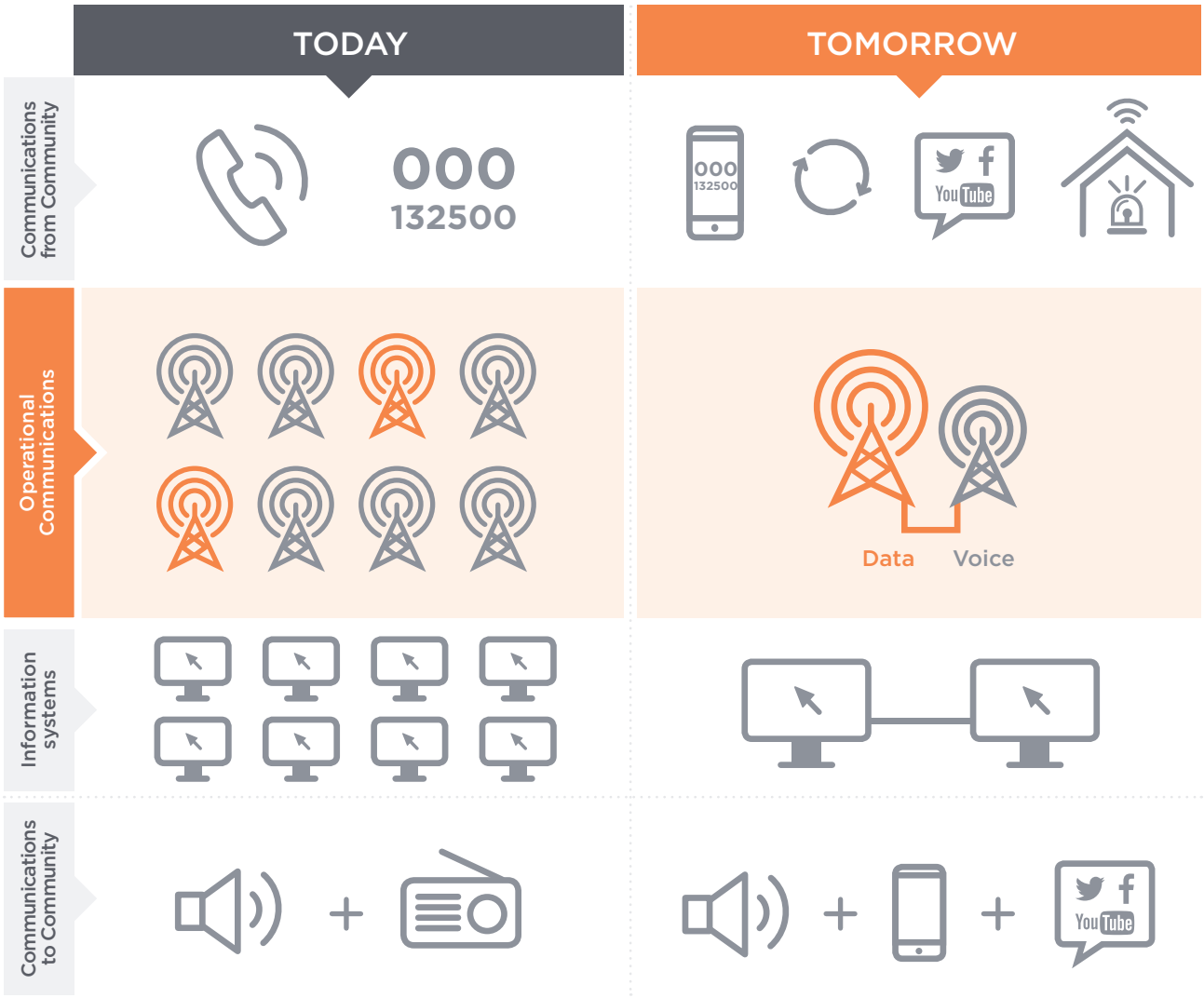
Examples include:

- instructions to fire fighters over radios when they respond to events such as a bushfire or fire in a domestic setting in Melbourne
- police using mobile data terminals to conduct licence checks
- paramedics receiving radio instructions to assist in patient transfers
- communications between command personnel of different agencies in multi-agency events, such as large bushfires or potential terrorist events.

The Emergency Services Communication Strategic Framework made the distinction between:

- communications from the community
- operational communications
- information systems
- communications to the community.

These four areas outlined below are fundamentally related, such that investment in the underlying operational network infrastructure can enable activities in these other communication areas.



Victoria's Operational Communications

Victoria spends up to $150 million plus per year on operational communications systems to support emergency management agencies. A summary of the major systems is provided below.

Voice

The **Metropolitan Mobile Radio (MMR)** provides Ultra High Frequency (UHF) emergency management-grade digital voice communications across the metropolitan Melbourne and Geelong regions. Components of the service include the network, radio terminals (including hand-held, in-vehicle and fixed in-building) and support services. The MMR is used by Victoria Police, Ambulance Victoria and MFB. The MMR service is provided by Motorola Solutions Australia Pty Ltd (Motorola).

The **StateNet Mobile Radio (SMR)** is a Very High Frequency (VHF) analogue radio network service that primarily serves emergency management agencies operating in rural and regional areas. The service includes access to the network and some interfaces, with each agency responsible for their own radios. The SMR is used by Victoria Police, Ambulance Victoria, DELWP, VICSES and Sheriff's Office Victoria, and includes various network sets of individual infrastructure to meet requirements of individual agencies. The SMR network service is provided by Telstra Corportation Ltd (Telstra).

The **Regional Radio Dispatch Service (RRDS)** is an emergency management-grade digital VHF network service covering regional and rural Victoria. The service includes access to the network and interfaces. Initially established to provide CFA responders with direct communications with incident dispatchers, the service was established as a State contract to enable other users to access the network over time. It is now often referred to as the **Regional Mobile Radio (RMR)** service. The RMR network service is provided by Telstra.

Data

The **Mobile Data Network (MDN)** is a digital mobile data communications service that provides Automatic Vehicle Location, dispatch information and access to a range of databases to vehicles in the field. Components of the service include the network, terminals (including handheld, in-vehicle and desktop software capability), support services, and interfaces. The MDN is used by Victoria Police and Ambulance Victoria, primarily in metropolitan Melbourne. The MDN service is provided by Motorola.

The **Emergency Alerting System (EAS)** is a statewide, one-way pager service used to alert emergency service volunteers and paid staff to incidents. It is used by the CFA, VICSES, and Ambulance Victoria in regional areas. The EAS assets were acquired by the State when the contract ended in late 2012, and the State contracts out the operations and maintenance of the service, currently to Visionstream Australia Pty Ltd.

In addition to the major service contracts above, various other agency specific emergency management and commercial networks are used across the state, which serve to meet specific coverage, operational and redundancy requirements.

Each system is made up of a number of physical and service components necessary for operation (for further detail refer to table on page 26). Each Victorian system is provided under a different service model - some system's components are provided entirely by a single supplier, some systems are provided entirely by an individual agency and some are a combination. The nature of emergency management operations means that each system component requires a high level of resilience, in terms of durability, reliability and back-up provisioning.

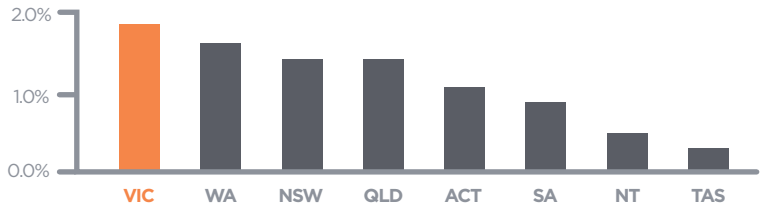
" The nature of emergency management operations means that each system component requires a high level of resilience, in terms of durability, reliability and back-up provisioning."

Although the Emergency Management Operational Communications Program must address the many changes occurring in the sector, it must also account for the constants, which inevitably shape the future direction of operational communications. Victoria has an area of approximately 223,000km^2, made up of approximately 32% sparsely populated national parks, state forests and conservation reserves. The current emergency management communications networks cover in excess of 96% of the geographic land mass of the state and more than 99% of the population. Any upgrades to the operational communications capabilities of the sector must ensure the level of coverage currently enjoyed by the sector is not diminished.

What is changing?

Highest population growth rate in Australia in 2014

(ABS Australian Demographic Statistics December 2014 - VIC 1.8%, WA 1.6%, NSW&QLD 1.4%, ACT 1.1%, SA 0.9%, NT 0.4%, TAS 0.3%)



33%

INCREASE IN VICTORIANS OVER 65 IN 10 YEARS

2004-2014, Australian Bureau of Statistics, Australian Demographic Statistics: December 2014

13 Seconds

FREQUENCY OF CALLS MADE FOR VICTORIAN POLICE AND EMERGENCY SERVICE ASSISTANCE

Emergency Services Telecommunications Authority, Annual Report 2013-14

$12b

COST OF NATURAL DISASTERS TO AUSTRALIANS EACH YEAR BY 2030

Deloitte Access Economics, Building Australia's Resilience to Natural Disasters (2013)

2x Faster

RATE AT WHICH MOBILE DATA TRAFFIC IS GROWING COMPARED TO FIXED DATA TRAFFIC

(Cisco Visual Networking Index: Forecast and Methodology, 2014–2019)

100 Million

INCREASE IN DEVICES USED BY AUSTRALIANS WITHIN THE NEXT 5 YEARS

(Cisco Visual Networking Index: Forecast and Methodology, 2014–2019)

80%

OF DATA TRAFFIC THAT IS VIDEO BY 2019

(Cisco Visual Networking Index: Forecast and Methodology, 2014–2019)

Victoria's needs are changing. An ageing community is increasing the pressure on our health services. Population growth is helping drive the volume of emergency assistance calls. Natural disasters can take a devastating toll through loss of life, injuries and property damage. As the demand for emergency services increases each year, this places a heavier burden on our operational communications personnel, networks and systems.

Smart devices and even smarter applications are increasingly embedded in our community and businesses. Many everyday activities are being performed through mobile applications, and the community is looking to our government agencies to do the same.

There has, and will continue to be, a fundamental shift in how people communicate, shifting from voice-based to data-based communications. As a result, the emergency services sector needs to adapt and embrace the opportunities presented by the rapid evolution of operational communications or risks being left behind.

Broadband enables a much greater amount of data to be exchanged and is thus a key factor in the emergency management sector's ability to use data-rich devices and capabilities. There are a myriad of data-intensive capabilities, either on personnel (such as biometric monitoring) or vehicles (such as location tracking) that agencies could use if broadband were available. Not only will these capabilities provide benefits critical for emergency situations, but also during business-as-usual incidents.

Strategic Context

Investigating global trends in ICT and public safety communications further informs how Victoria needs to adapt to changes in the way capabilities are delivered to our emergency management organisations.

Information	Multimedia and data-intensive information has become an integral part of day-to-day life. As such, there is an increased expectation that richer information should similarly be available to use in emergency management operations.
Communications Technology	There are currently two public safety communications standards widely adopted across the world - 'TETRA' and 'P25'. While these standards relate to mobile voice communications and low-speed data, over time a public safety grade standard for Long Term Evolution (LTE) technology will be developed. LTE, together with 3G , enables broadband data such as video and image, as well as voice communications (Voice over LTE – VoLTE).
Commercial Networks	Emergency management agencies are leveraging the network investments of commercial service providers. Commercial networks can offer greater utility and capability at lower cost, and providers have an interest in investing to improve the quality and reliability of their networks.
Commercial Models	Alternatives to traditional build, own and operate commercial models are being adopted successfully in other jurisdictions. It may not be necessary to invest significant capital to upgrade or replace infrastructure to access the services required by emergency responders.
User Devices	Commercial grade devices, such as smartphones and tablets, are being used informally by operational personnel to supplement existing operational communications equipment, such as radio. Commercial devices are cheaper, and often provide more familiar and contemporary functionality, but are not suitable in all emergency management scenarios.

Global benchmarking undertaken as part of the development of the Emergency Management Operational Communications Program has revealed that the State currently pays a premium for its operational communications. In fact, most emergency management sectors globally currently pay a premium over commercial communications for the same services. This premium is related to the emergency management sector's unique product specifications and the limited market depth of the equipment manufacturer market.

The State and its counterparts must seek to deepen the existing operational communications market and ensure there are contestable and competitively priced service offerings that avoid commercial lock-in, and preserve the ability to respond to opportunities in the future. With this program, all stakeholders are working together to maximise scale efficiencies, unbundle network, services and terminal (user device) procurements, and avoid proprietary products and service offerings.

The public safety sector and industry is moving towards open standards that support service interoperability, and have agreed to adopt an open commercial based standard (LTE) to ensure that, in the future the sector can leverage commercial scale and economy. Governments must ensure that procurement decisions do not further consolidate and reduce the market to the detriment of not only the sector, but the broader economy.

How will this affect the community, business, government and the agencies?

While individual expectations may be different, the community, businesses, government and emergency management organisations are united by a commitment to prevent loss of life, injury and property damage as a result of emergency events. This common goal can only be achieved through a collaborative approach to improve emergency management operational communications.

	EXPECTATIONS
Community	Interact with emergency management organisations to ensure they are well informed and information is delivered in real-time through a variety of channels
Businesses	Work with emergency management organisations to ensure business continuity and legal obligations are met before, during and after emergencies
Government	Achieve cost efficiencies while providing the community effective emergency management
Joint Emergency Management Organisations	All-hazards, all-agencies approach to emergency management
Individual Emergency Management Organisations	Receive better communication equipment and facilities to keep personnel and the community safe

Integrating agency networks enables better coordination and improved service delivery outcomes for the community. Common governance and procurement arrangements can improve service efficiency and value for money for taxpayers. Better support for our emergency services staff and volunteers will help prevent the loss of life, injury and property damage.

What is the future of operational communications?

In the future emergency responders will need to be more interconnected with access to richer information in the field, supporting enhanced interoperability and better coordination.

EMERGENCY AGENCY

FIRE
FLOOD
RESCUE
STORM

- Field access to airborne video stream
- Video conferencing between fire crew and chemical experts
- Identity and location data
- Multiband end user devices
- Environmental sensors
- Communications within agencies and between agencies
- Field access to core applications
- Response plan display on devices in the field
- Field access to community plans and fire plans
- Biometric monitoring and vehicle telemetry

HEALTH

- Field access to hospital beds viewer
- Ambulance inventory control
- Video conferencing between paramedics and hospitals
- Telemedicine
- Communications within agencies and between agencies
- Multiband end user devices
- Identity and location data
- Vehicle telemetry
- Biometric monitoring

MANAGEMENT OPERATIONS

POLICING

- Vehicle mounted cameras to capture/ stream footage
- Communications within agencies and between agencies
- Biometric monitoring
- Vehicle telemetry
- Geospatial image and response plan display on devices in the field
- Identity and location data
- Field access to core applications
- Multiband end user devices
- Handheld cameras to capture/stream footage

STATE/ INCIDENT CONTROL CENTRE

- Video sensors to capture footage from fixed locations
- Communications within agencies and between agencies
- Video conferencing between field and command
- Geospatial image display
- Identity and location data
- Centralised information repository with real time data

What is the Emergency Management Operational Communications Program?

The Emergency Management Operational Communications Program articulates the State's 2025 vision for the sector's operational communications and a high-level plan to progressively move towards that vision.

This vision is to provide broadband data services and a resilient voice and narrowband network for all agencies statewide, to enhance interoperability and provide better support to operational personnel in the field. The ongoing collaborative efforts of Victorian police and emergency services will be critical to successful implementation.

Currently, there are multiple voice and narrowband data networks that are accessed across the state with very limited broadband data capability available to agencies. The Program proposes these networks be consolidated to provide a single integrated voice and narrowband network and high quality broadband data services for all agencies statewide.

The Emergency Management Operational Communications Program consists of four key actions.

1	**Leverage new state contracts to move to a single, integrated voice and narrowband data network**	Delivering interoperability and reducing duplication and inefficiencies in commercial arrangements
2	**Establish a statewide, sector-wide broadband capability**	Leveraging commercial network infrastructure to minimise the cost to the community, in line with best practice
3	**Adopt a phased implementation plan**	Staging discrete projects to minimise risk, realise progressive benefits and ensure affordability
4	**Deliver the Operational Communications Program through centralised governance**	Enabling greater collaboration across the sector, creating potential cost efficiencies

These four key actions will be achieved by:

A. Completing a mission-critical voice and narrowband data network capability (P25 network) with fixed infrastructure coverage across the state. All agencies will be progressively migrated onto this network, and their existing networks shut down (refer C. below).

B. Supplementing existing narrowband data capability by establishing a mobile broadband capability (3G/LTE network) that leverages commercial infrastructure, with maximum coverage across the state as can be afforded.

C. Consolidating multiple, fragmented networks to single, sector-wide services for voice and narrowband, ensuring that the single network provides for agency-specific requirements.

D. Reviewing options for transitioning to a single broadband solution, providing mission critical voice and data services over time as technologies mature.

The Program recognises that, although voice communications will always be required when managing emergency events, its current prominence within the sector will be overtaken by the growing use of data. This shift from voice communications to data will be evident not only within the emergency services sector, but also between the sector and the community. It is imperative that the State's infrastructure is developed and prepared for this inevitable shift in usage.

Funding

There are two key underlying funding principles of the Emergency Management Operational Communications Program:

- **Manage investment largely within the existing expenditure envelope**
- **Save before spending by rationalising current legacy investments.**

The Operational Communications Program aims to deliver significantly greater capability for the sector largely within existing funding envelopes, by eliminating the operational communications inefficiencies that currently exist throughout the sector.

Governance

Underpinning the transition will be centralised governance arrangements to be delivered through EMV. It is vital that a consistent and coordinated approach to the funding and delivery of the Operational Communications Program is maintained throughout implementation, as significant change is proposed for the sector.

How will the Program be delivered?

The Emergency Management Operational Communications Program is the emergency management sector's plan to work together to consolidate multiple metropolitan and rural networks and create a statewide seamless broadband data capability (including voice).

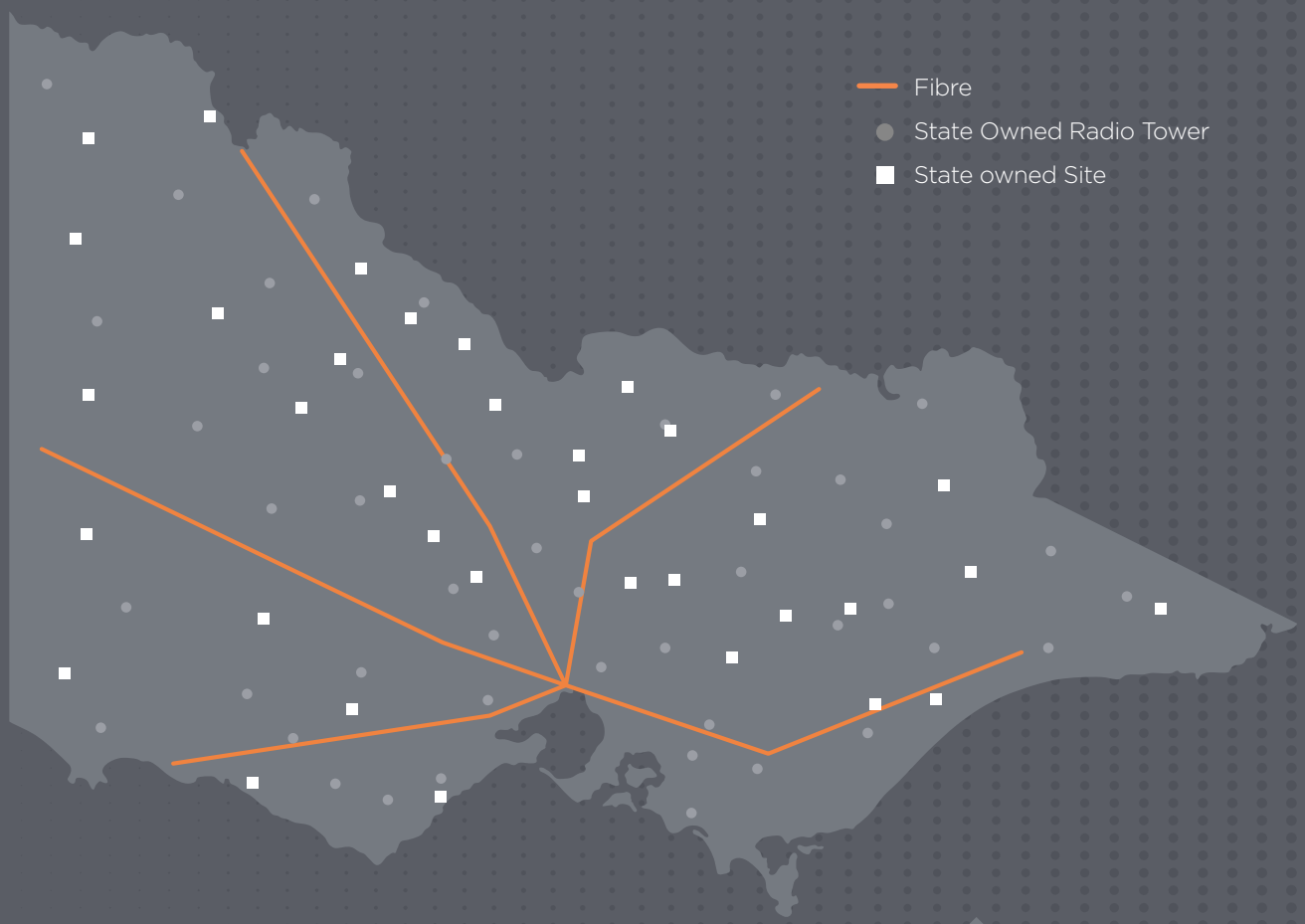
Delivery of the Program will be afforded by spreading implementation over a three-horizon timeline, with each horizon consisting of multiple projects. Most projects will be subject to submission of the necessary individual investment business case.

The phases are structured to ensure the majority of benefits are delivered as early as possible.

HORIZON 1	HORIZON 2	HORIZON 3
Consolidate to single voice and narrowband data network arrangements **Establish** initial state-wide 3G/LTE broadband network leveraging public assets	**Enhance** LTE across State – investing to increase capacity and coverage **Maintain** separate voice network	**Evaluate** options for transition to single network solution
• Address short and medium term business requirements through P25 infrastructure, including migration of all mission critical applications • Support greater use of applications on 3G/LTE infrastructure	• Deliver Public Safety broadband capability across State • Evaluate paging transition options • Allow other jurisdictions to prove VoLTE capabilities	• Assess merits of phasing out P25 and moving to VoLTE for additional cost savings to the community

- Implement **Governance Reform**
- Implement **Change Management** and **Benefits Realisation** strategies
- Develop and implement **interoperable technology standards** and **common operating protocols**
- Implement **community education programs** to shift and shape the community's expectations of emergency management services capacity

The Operational Communications Program will be made more affordable by leveraging the existing State-owned infrastructure, including reuse of land, towers, buildings, power, backhaul and roads.



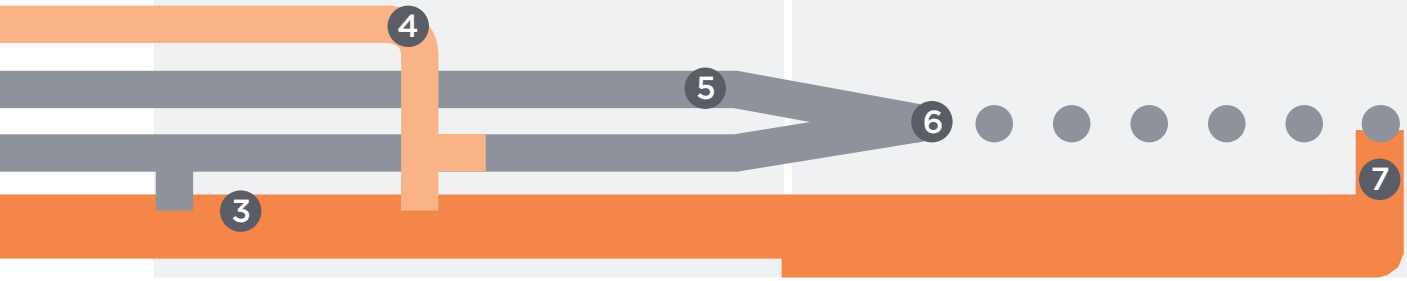
Note: This map is illustrative only, and does not represent actual State infrastructure

Operational Communications
Program Roadmap to 2025

TODAY	HORIZON 1
Objectives	Establish initial broadband network leveraging public and private assets. Commence consolidation to single voice and narrowband data network arrangements.
Network Capabilities 13 voice and narrowband 2 paging 1 data + specialist networks	Migrate to: 1 voice and narrowband 1 paging 1 broadband data+ specialist networks
Transition Activities	1. Migrate various (agency and state) voice and narrowband networks to a single integrated network operating state-wide. 2. Narrow band data will be enhanced with commercial broadband data.
Governance	Leverage centralised governance, procurement and investment planning services through Emergency Management Victoria.

The Operational Communications Program will be delivered across three transition horizons. This phasing will help manage risk and delivery in a way that is achievable for the sector, government and community.

HORIZON 2	HORIZON 3
Enhance broadband data access across State – investing to increase capacity and coverage. Maintain separate voice network.	Evaluate options for transition to single network solution. Optimise networks.
Migrate to: 1 voice and narrowband 1 public safety grade broadband data + specialist networks	Migrate to: 1 voice and narrowband 1 public safety grade broadband data and voice + specialist networks
3. The broadband data footprint will be scaled state-wide and enhanced to meet public safety grade standards. 4. Transition paging services onto the broadband data service OR the voice and narrow band network, pending options assessment. 5. Transition all mission critical narrowband data and voice to a dedicated state-wide network.	6. Transition business critical data and voice to public safety grade broadband services. 7. Into the future, there will be a public safety grade broadband service for business critical voice and data capabilities, supplemented by a mission critical voice and narrowband network to meet redundancy and fall back needs.



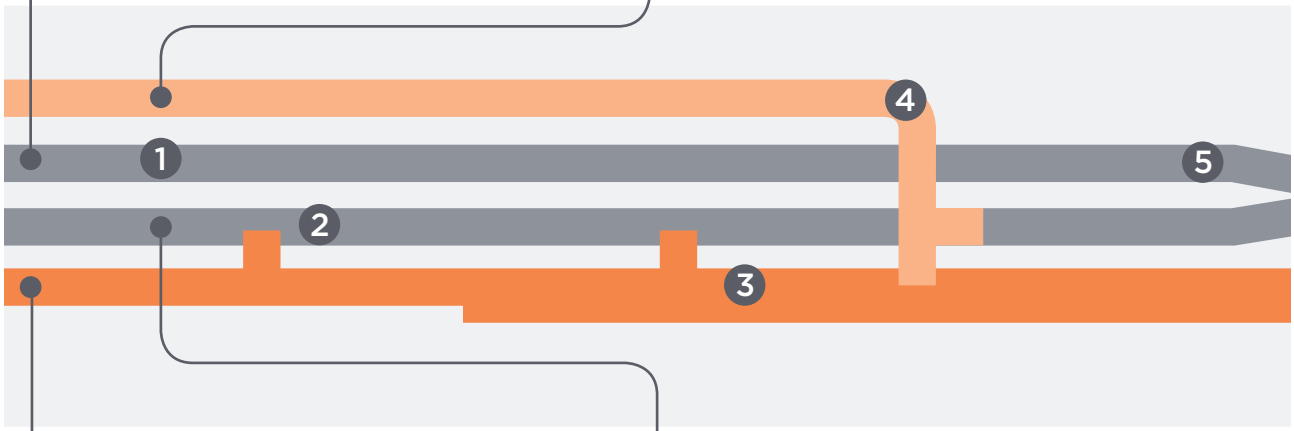
Immediate actions: Horizon 1

Narrowband (Voice)

- Various analogue networks are being progressively consolidated onto the State's digital RMR network.
- The MMR service agreement will be aligned with regional and paging agreements, before the delivery of a non-partitioned statewide voice and narrowband data network through a market process. The business case developed before this market process will consider a range of service delivery models, including provision of network management, provision of infrastructure and links, and project management.
- A user device managed service, separate from network services, will be established to provide a common procurement platform and increased choice of equipment to the emergency management sector.

Paging

- EAS paging capability will continue to be provided over Horizon 1.
- The State has taken back ownership of the EAS assets and entered into a more flexible service and support arrangement to provide options for future business cases.



Broadband (Data)

- The service delivery model of broadband data will build on the increased utilisation of third party broadband networks by the MDN service, and the outcomes of the Commonwealth's Public Safety Mobile Broadband study, which aims to meet the long term needs of Australia's public safety agencies.
- Emergency management priorities will be considered in Federal and State level programs to address mobile phone coverage issues. After establishing an emergency management broadband capability, any remediated blackspots through these programs are likely to contribute to higher levels of service.

Narrowband (Data)

- The MDN service will progressively move away from proprietary user devices, and options will be provided to move away from use of a dedicated network. A choice of commercial grade, ruggedised tablets and smartphones will be introduced, and existing commercial networks will be leveraged.
- This transition will recognise that some of the MDN functionality depends on high service availability, which needs to continue. The viability of moving this traffic to the statewide voice and narrowband network will be considered as part of future business cases.

Additional Information

The table provided below describes various networks in scope of the Emergency Management Operational Communications Program.

Network	Description	Network Use	Network/ terminal Owned by	Network/ terminal Operated by
Metropolitan Data Network (MDN)	Dedicated narrowband data network that supports mobile data terminals, operating in metropolitan areas with roaming to commercial carrier network(s).	Victoria Police, Ambulance Victoria	Motorola	Motorola
Emergency Alerting System (EAS)	Dedicated narrowband data network that supports pagers, operating statewide.	Ambulance Victoria, CFA, VICSES	State	Visionstream
Ambulance Victoria Metropolitan Paging	Leveraged commercial carrier network that supports Ambulance Victoria pagers in the metropolitan region.	Ambulance Victoria	Vodafone/ Ambulance Victoria	Vodafone/ Ambulance Victoria
Metropolitan Mobile Radio (MMR)	Dedicated voice and narrowband data network that predominantly supports radios, operating in metropolitan areas.	Victoria Police, Ambulance Victoria, MFB	Motorola	Motorola
Victoria Police Conventional Service (StateNet Mobile Radio — SMR)	Part of a group of analogue voice networks that predominantly support radios operating in rural areas, managed under a contract held between Telstra and Victoria Police.	Victoria Police	Telstra/ Victoria Police	Telstra/ Victoria Police
DELWP Incident Channel (SMR)	Part of a group of analogue voice networks that predominantly support radios operating in rural areas, managed under a contract held between Telstra and DELWP.	DELWP	Telstra/ DELWP	Telstra/ DELWP
Trunked Network (SMR)	Part of a group of analogue voice networks that predominantly support radios operating statewide, managed under a contract held between the State and Telstra. Used by the emergency management sector and a number of other private and public sector organisations.	Various emergency service organisations	Telstra/ Customer	Telstra/ Customer
RAVNET (SMR)	Part of a group of analogue voice networks that predominantly support radios operating in rural areas, managed under a contract held between Telstra and Ambulance Victoria.	Ambulance Victoria	Telstra/ Ambulance Victoria	Telstra/ Ambulance Victoria
CFA Outer Metro Service (SMR)	Part of a group of analogue voice networks that predominantly support radios operating in outer metropolitan areas, managed under a contract held between Telstra and CFA.	CFA	Telstra/ CFA	Telstra/CFA
Ambulance Victoria Town Repeaters	Dedicated voice network that predominantly supports radios, operating in regional centres.	Ambulance Victoria	Ambulance Victoria	Ambulance Victoria
VICSES UHF Network	Dedicated voice network that predominantly supports radios, operating statewide.	VICSES	VICSES	VICSES
DELWP Fire Contingency Network	Dedicated voice network that predominantly supports radios, operating in rural areas.	DELWP	DELWP	DELWP
CFA Regional Incident Management Channel	Dedicated voice network that predominantly supports radios, operating in rural areas.	CFA	CFA	CFA
LSV UHF Repeaters	Dedicated voice and narrowband data network that predominantly supports radios, operating in coastal areas statewide.	LSV	LSV	LSV
Regional Mobile Radio (Regional Radio Dispatch Service)	Dedicated digital voice and narrowband data network that predominantly supports radios, operating in rural areas.	CFA	Telstra/CFA	Telstra/CFA
Commercial mobile networks (Optus, Telstra, Vodafone)	Commercial cellular networks utilised by organisations, businesses and public consumers that provide data and voice services to the emergency services sector, operating state wide.	Community, including emergency service organisations	Supplier/ Customer	Supplier/ Customer

Additional Information

Each operational communications system is made up of a number of physical and service components necessary for operation, summarised below. Each Victorian system is provided under a different service model - some system's components are provided entirely by a single supplier, some systems are provided entirely by an individual agency and some are a combination. The nature of emergency management operations means that each component requires a high level of resilience, in terms of durability, reliability and back-up provisioning.

System Component		Description	Major inclusions
Network Management		Operation, administration, maintenance, and provisioning of networked systems.	Monitoring and reporting, data warehousing, Operational Support System/Business Support System (OSS/BSS), accommodation facilities - power, water, rent, etc.
Network Core		The central component of a telecommunications network that provides services to users with access to the network.	Network Switching, gateway, authentication, access control, accommodation facilities.
System Interfaces		Connections to associated communications systems. For example, links to Call Taking and Dispatch, State Control Centre, Aircraft systems.	Consoles, software, licences.
Backhaul		Links between the network core and the network infrastructure.	Fibre, microwave, satellite, other.
Spectrum		Government or commercial asset required to carry radio signals wirelessly.	Government licences.
Infrastructure	**Active**	Fixed and portable equipment that provides access to network services.	Base stations, repeaters, antennas, portable active infrastructure.
	Passive	Buildings and equipment required to support the active infrastructure	Towers, power equipment (including batteries and solar arrays), accommodation facilities, portable passive infrastructure.
Terminals		User devices, such as radios, pagers and phones, used to access the network.	Fixed, portable and mobile radio terminals, de-installation and re-installation services.

Common inclusions across components

- Project Management – State initiated modifications, upgrades and capital refresh
- Network Integration
- User services – change management programs, event management, training, manuals, help desk, support
- Operation and maintenance – fault rectification, repairs, scheduled maintenance, damaged, lost and stolen equipment
- Contract management

Glossary & Acronyms

Term	Description
3G	The third generation of mobile telephone communications.
Backhaul	The transmission links used to connect radio transmission sites to the Network Core.
Biometric Monitoring	Devices used to monitor temperature, heart-rate, and other biometric information to determine the well-being of personnel in the field.
Broadband	The high-speed transmission of data via either radio or terrestrial cable.
EAS - Emergency Alerting System	A one-way paging system used for dispatching career and volunteer personnel state-wide.
ICT – Information and Communications Technology	Generic term used to describe Information, Communications and Telecommunications.
LMR – Land Mobile Radio	A generic term used to describe dedicated systems used to support two-way (either one-to-one or one-to-many) communications over a radio network.
LTE – Long Term Evolution	An international standard for 4G mobile communications.
MDN - Mobile Data Network	A narrowband data network providing location services, dispatch information and access to databases to selected agencies throughout Melbourne and Geelong.
Mission Critical	A term used to describe communications usually associated with the preservation of life.
MMR - Metropolitan Mobile Radio	A trunked digital P25 network covering metropolitan Melbourne and Geelong, providing services to a range of Victorian emergency service agencies.
Narrowband	The low-speed transmission of data via either radio or terrestrial cable.
Network Core	The central component of a telecommunications network that provides services to users with access to the network.
Network Management	The systems used to monitor and operate a communications network.
BSS - Business Support Systems	System components that a communications service provider uses to run its business operations towards customers (e.g. billing). Used together with OSS support various end-to-end communication services, often referred to as OSS/BSS.
OSS - Operations Support Systems	Computer systems used by communications service providers to manage networks. Used together with BSS to support various end-to-end communication services, often referred to as OSS/BSS.
P25 - Project 25	A North American based specification for digital LMR systems.
Paging	A one-way system for sending text information to dispatch emergency service personnel to incidents.
Partitioned network	A method of configuring an LMR network whereby resources are dedicated to specific user groups.
Radio	A device or network supporting one-to-many or one-to-one mobile communications to support emergency service operations.
RMR - Regional Mobile Radio	A trunked digital P25 network covering regional and rural Victoria, providing services to Victorian emergency service agencies.
RRDS - Regional Radio Dispatch Service	A dispatch service for the Country Fire Authority, supported on the RMR network.
SMR - StateNet Mobile Radio	A family of analogue networks providing radio communications throughout regional and rural Victoria.
Spectrum	The frequencies of electromagnetic waves used for the transmission of radio signals
Terminal	A device (usually hand-held or vehicle mounted) used for sending and receiving radio transmissions (either voice or data).
UHF - Ultra High Frequency	Radiofrequencies between the 300 Megahertz (MHz) and 3 Gigahertz (GHz) spectrum bands. In radio terms, UHF communications are more suited for use in urban areas due to its relatively high in-building penetration characteristics.
VHF - Very High Frequency	Radiofrequencies between the 30 MHz and 300 MHz spectrum bands. In radio terms, VHF communications are more suited for use in regional and rural areas due to its relatively high propagation (long range distance) characteristics.
TETRA – Terrestrial Trunked Radio	A European based specification for Digital Land Mobile Radios.
VoLTE - Voice over Long Term Evolution	A standard for providing voice communications over an LTE network.