



Review of the National Triple Zero (000) Operator

August 2015

Disclaimer

The material in this report is of a general nature and should not be regarded as legal advice or relied on for assistance in any particular circumstance or emergency situation. In any important matter, you should seek appropriate independent professional advice in relation to your own circumstances.

The Commonwealth accepts no responsibility or liability for any damage, loss or expense incurred as a result of the reliance on information contained in this report.

This report does not indicate the Commonwealth's commitment to a particular course of action. Additionally, any third party views or recommendations included in this report do not reflect the views of the Commonwealth, or indicate its commitment to a particular course of action.

Copyright

© Commonwealth of Australia 2015



The material in this report is licensed under a Creative Commons Attribution—3.0 Australia license, with the exception of:

- the Commonwealth Coat of Arms;
- this Department's logo;
- any third party material;
- any material protected by a trademark; and
- any images and/or photographs.

More information on this CC BY license is set out at the creative commons website:

www.creativecommons.org/licenses/by/3.0/au/. Enquiries about this license and any use of this report can be sent to: Consumer Access Branch, Department of Communications, GPO Box 2154, Canberra, ACT, 2601.

Attribution

Use of all or part of this report must include the following attribution:

© Commonwealth of Australia 2015

Using the Commonwealth Coat of Arms

The terms of use for the Coat of Arms are available from the *It's an Honour* website (see www.itsanhonour.gov.au and click 'Commonwealth Coat of Arms').

Contents

Disclaimer	2
Copyright	2
Executive Summary	5
Technology.....	6
Governance and Coordination arrangements	7
Funding	8
Delivery model.....	9
Regulation.....	10
Tender for the Emergency Call Person	11
Recommendations	13
Introduction	15
Background and history	15
Current Emergency Call Service.....	15
Terms of Reference.....	16
Chapter One: Technology	18
1.1 Background.....	18
1.2 Other jurisdictions.....	22
1.2.1 United States	22
1.2.2 Canada and New Zealand	23
1.2.3 Europe	23
1.3 Recent developments in Australia.....	24
1.4 Stakeholder views (submissions and consultations)	26
1.5 Discussion	29
Location based technologies	29
Access to geocoded address data	33
SMS.....	34
Changing technological environment.....	35
1.6 Findings.....	36
1.7 Recommendations.....	37
2. Chapter Two: Governance and Coordination	39
2.1 Background.....	39
Council of Australian Governments (COAG).....	40
Existing Working Groups	40
2.2 Other jurisdictions.....	42
2.2.1 Canada.....	42
2.2.2 New Zealand.....	43
2.2.3 United Kingdom.....	44
2.2.4 United States	44
2.3 Stakeholder views (submissions and consultations)	45
2.4 Discussion	47
2.5 Findings	50
2.6 Recommendations	50
3. Chapter Three: Funding	51
3.1 Background.....	51
3.1.1 Industry costs	52

3.1.2	State and Territory government costs	53
3.2	Other jurisdictions	53
3.2.1	United States	53
3.2.2	Canada	53
3.2.3	New Zealand	54
3.3	Stakeholder views (submissions and consultations)	54
3.4	Discussion	56
	Reduction of costs associated with non-genuine calls / end-user charges for non-genuine calls	57
	Penalties dealing with non-genuine calls under the Criminal Code Act 1995	59
	Responding to non-genuine calls through awareness raising and other measures	59
3.5	Findings	60
3.6	Recommendations	60
4.	Chapter Four: Delivery model	61
4.1	Background	61
4.2	Other jurisdictions	62
4.2.1	United Kingdom	62
4.2.2	United States	62
4.2.3	New Zealand	62
4.3	Stakeholder views (submissions and consultations)	63
4.4	Discussion	66
4.5	Findings	68
4.6	Recommendations	68
5.	Chapter Five: Regulation	69
5.1	Background	69
5.2	Stakeholder views (submissions and consultations)	70
5.3	Discussion	71
5.4	Findings	73
5.5	Recommendations	73
6.	Chapter Six: Tender for the Emergency Call Person	74
6.1	Background	74
6.2	Stakeholder views (submissions and consultations)	74
6.3	Discussion	75
	Contestability	76
	Transition to an IP-based network	76
	National governance and coordination reforms	77
	The future competitive process	78
6.4	Findings	78
6.5	Recommendations	78
	Abbreviations and acronyms	79
	Appendix A – Submissions received	83

Executive Summary

For over 50 years, the Triple Zero (000) emergency call service has remained a reliable and highly trusted service within the Australian community. In 2014, a review of the national Triple Zero operator was announced to explore how the service can improve and continue to offer a world class and technologically adaptable service.

In conjunction with the Minister's announcement of the review in July 2014, the Department released a discussion paper¹ as part of the review's public consultation process. The discussion paper sought the views of key stakeholders against eight specific questions and the terms of reference more generally. Submissions to the discussion paper closed on 22 August 2014, with non-confidential submissions published on the Department's website. The Department received a positive response to the review from a wide variety of key stakeholders, with 48 submissions received (Appendix A).

Following analysis of the submissions received, the Department conducted further targeted consultation with key stakeholders, including the Emergency Call Person (Telstra), the wider telecommunications industry, State and Territory emergency service organisations, and designated policy contacts within relevant State and Territory governments. The purpose of these targeted consultations was to gain further clarity around individual submissions and further explore issues raised and allow for continued discussion and input to occur. In parallel, the Department also commissioned consumer research which was conducted by *Australia Online Research Pty Ltd* (AOL Pty Ltd) in collaboration with Fusion Research to help inform the review. This research involved a mix of qualitative and quantitative research activities to explore community views in relation to the Triple Zero service and consisted of three components, namely:

- A qualitative phase consisting of ethnographic in-depth interviews and group discussions (five interviews and five focus groups);
- A quantitative survey with a representative sample of the general public (1,250 surveys completed); and
- An online survey hosted on the department's website (2,770 surveys completed).

Key findings from the consumer research revealed:

- satisfaction with Triple Zero is high, with 91 per cent of respondents who contacted Triple Zero in the last two years being satisfied;
- 94 per cent of respondents agree that the Triple Zero service should be contactable anytime, anywhere, easily and quickly;
- 91 per cent of respondents agree that Triple Zero should be contactable free of charge;
- 72 per cent of respondents prefer voice calls as the primary method for contacting Triple Zero;
- 93 per cent of respondents agree specific coordinates of their location should be automatically provided to Triple Zero;
- automated alert devices (79 per cent) and smartphone applications (70 per cent) have the highest appeal as alternative methods to contact Triple Zero in the future; and
- over 50 per cent of respondents support other possible means of contact such as via SMS or video calls.

The report comprises of six chapters which discuss the key themes examined during the review, namely technology, governance and coordination arrangements, funding, delivery model, regulation and the possible tender for the Emergency Call Person.

¹ See <https://www.communications.gov.au/have-your-say/triple-zero-000-review>.

The report provides a detailed examination and discussion of the relevant issues within each chapter, including an overview of the current state of play of the emergency call service in Australia, developments in overseas jurisdictions, the views of stakeholders and analysis outlining a way forward.

Technology

The primary function of the Emergency Call Person is to receive and transfer emergency calls to the appropriate emergency service organisation. However, this function requires a number of components working efficiently together to enable rapid and reliable communications between people in emergency situations with response teams. In this context, technology is a significant enabler and powerful tool which can provide benefits to both emergency callers, and emergency responders.

For the great majority of Australians, the only way of contacting Triple Zero today is via voice, using a landline, payphone or a mobile phone². However, there are a range of alternative communication technologies potentially available to provide emergency communications. There is strong interest amongst the community for the Triple Zero service to become more sophisticated and cater for different and emerging technologies. In particular, some two thirds of calls to the national Triple Zero operator are now made from mobiles. Market research undertaken as part of the review indicates 93 per cent of individuals would like to share location coordinates with Triple Zero (now a common functionality of smartphones). Of potential alternate future Triple Zero contact options, automated alert devices (especially amongst retired participants), Short Message Service (SMS) (especially with younger participants), smartphone applications and video calls were the most supported options.

Consideration of possible technology change in the context of the Triple Zero service can be characterised around two key issues:

- improving the ability to accurately and quickly locate members of the community needing emergency assistance; and
- the feasibility and desirability of introducing non-voice contact methods (such as SMS or video calls).

A significant technical development explored as part of the review is increased use of location-based data as part of the Triple Zero framework. Key developments in recent years have included the development and implementation of 'Push MoLI' (network technology to automatically provide the estimated location of mobile callers in relation to the tower used to place a call to Triple Zero) as well as the Emergency+ smartphone application (which provides on screen address and coordinate based location information which can be verbally conveyed to the national operator).

Multiple submissions to the review highlighted accurate location-based information is critical for emergency response, by both reducing the time and operational resources required to find people needing assistance in life threatening situations. The use of mobiles for emergency calls means that traditional fixed line address identification is less relevant in identifying the location of the caller, but equally the increasing use of smartphones opens up other opportunities around the integrated satellite geospatial positioning hardware and software now available in most smartphone handsets.

The review therefore recommends an immediate priority should be introducing improved methods for obtaining and forwarding location coordinates from mobile callers automatically to the national operator and emergency service organisations. This is a technology that the community strongly expect to be available and which has clear potential to deliver improved outcomes by reducing response times

² An SMS relay service is already available as part of the National Relay Service (which is targeted to consumers who are deaf or have a hearing impairment). Despite it not formally being a designated emergency call service, SMS relay accounts for about half of all calls for emergency assistance to the National Relay Service.

and assisting in the cases where callers to Triple Zero cannot readily identify or may not be able to communicate their exact location.

A first step should be to explore expanding the existing Emergency+ smartphone application to automatically 'push' location coordinates to the national operator and then onto emergency service organisations.

A range of other possible options for longer term consideration mentioned in the review include handset or network technologies to push precise locations to emergency call operators direct, or to send specific instructions to users on how to convey their location to an operator. A combination of options may be required to maximise effectiveness, availability and reliability of locational information.

There is still a clear overall preference from consumers to maintain voice call functionality within Triple Zero as the primary means of requesting assistance. Market research suggests a voice call remains the preferred option in most scenarios even if alternative contact methods were introduced. However, in relation to alternative contact methods, internationally, many jurisdictions have commenced exploring, and in some cases introducing, new technologies such as SMS, into their respective national emergency call service frameworks. However, to date no international jurisdiction examined as part of this review appears to have fully, or successfully, integrated a widely available, robust and prioritised emergency SMS capability on a national scale into their national emergency call service frameworks (in most cases internationally SMS has been made available on a registration basis for the deaf/hearing impaired).

There is merit in continuing to explore non-verbal methods of contacting Triple Zero, such as SMS, given the widespread use and convenience of these technologies. There are also circumstances where using text-based communications can have advantages over voice. While key technical impediments may be able to be resolved over time, before implementing any new contact methods such as SMS, a consensus from all the States and Territories for the approach will be needed including management of any risks and implementation timeframes. Any new contact methods introduced would involve all emergency service organisations having to commit funding and resources for consequential system and operational changes to ensure a nationally consistent service and availability.

Governance and Coordination arrangements

In practical terms, the Triple Zero service is delivered collectively by the Australian Government, State/Territory Governments and the telecommunications industry. The Australian Government has responsibility for policy and regulation of Triple Zero, with arrangements in place setting out specific requirements applying to Emergency Call Persons, as well as carriers and carriage service providers to support the Triple Zero service.

The States and Territories have primary responsibility once an emergency call is transferred by the Emergency Call Person to emergency service organisations (police, fire or ambulance service) in the relevant State or Territory, or to Victoria's Emergency Services Telecommunications Authority (ESTA).³

The telecommunications industry (carriers/carriage service providers) have responsibilities in terms of delivering emergency calls reliably and with high priority over their networks to the Emergency Call Person and are also responsible for meeting any ongoing infrastructure and regulatory compliance costs associated with this.

Over time, a small number of working groups (formal and informal) have been established that bring together key stakeholders to collaborate on a range of issues related to, or impacting on, Triple Zero. These working groups have involvement from the telecommunications industry, the Emergency Call

³ ESTA provides Victoria's 24 hour emergency call-taking and dispatch services for police, fire, ambulance and SES.

Person, the Commonwealth Government (policy and regulatory) and individual emergency service organisations. There is less consistency in how consumer interests or other interests (e.g. innovators or vendors) are currently represented.

The current oversight and coordination arrangements have achieved some change, but need to be improved to allow the full potential of technology advances to be realised.

There is a clear consensus from all key stakeholders that more effective governance and coordination arrangements are important and necessary for ensuring the resources and activities of industry and government (both Commonwealth and State/Territory) are coordinated and aligned as much as possible to support ongoing end to end delivery and future enhancements to Triple Zero. In particular, there was a strong preference from all key stakeholders to have a clear national structure to support the end-to-end delivery of the Triple Zero service.

The review proposes a single 'Triple Zero Coordination Committee' be established (leveraging existing coordination arrangements) to examine and coordinate end-to-end Triple Zero operational issues. If issues of national significance (such as cross jurisdictional funding and implementation) are identified, the Coordination Committee would provide input to the Minister for Communications via the Department. Ideally this would enable consensus positions to be arrived at, but would not replace the policy, funding or regulatory responsibilities of entities in the emergency response process. Policy decisions around the Triple Zero function itself would continue to be the responsibility of the Minister for Communications. For strategic issues requiring a coordinated national approach by governments, the Minister should have the ability to take forward issues via the Council of Australian Governments (COAG) emergency management framework as required.

Any changes to current Australian Government contractual arrangements covering the Emergency Call Person would be managed through existing contractual and associated funding mechanisms.

There are also currently no core policy principles for the future direction of the Triple Zero Service that have been agreed and endorsed by all relevant stakeholders. The review recommends establishment of an agreed set of over-arching policy principles to guide future strategic directions and investment in new technologies or systems. If consensus can be achieved, this would assist in maintaining stakeholder and consumer confidence and be an input into decision making.

Funding

The current end-to-end delivery model for Triple Zero is collectively dependent on funding from the Australian Government, State and Territory governments and industry.

The costs of the Emergency Call Person are met in part by Australian Government funding and an industry levy known as the Telecommunications Industry Levy (TIL) which is paid by telecommunications carriers with eligible revenue of \$25 million or more. The function is currently provided under a contract between the Australian Government and Telstra.

In addition to larger carriers contributing to the levy, both carriers and carriage service providers are required to provide free access to the Emergency Call Service from all standard telephone and mobile services in Australia. Carriers/carriage service providers are also responsible for funding any ongoing infrastructure and regulatory compliance costs due to requirements to prioritise Triple Zero calls and to interconnect with Triple Zero.

State and Territory governments are responsible for the funding and management of individual emergency service organisations. This includes ensuring their operational systems, in particular their dispatch systems, are coordinated and able to receive relevant voice calls and relevant information from

the Emergency Call Person. Generally the States and Territories meet these costs through direct budget funding, some form of levy arrangements, or a combination of the two.

Overall these funding arrangements appear to be working well and delivering a reliable and high performing voiced based emergency call service. However, there may be significant costs to change or introduce systems and infrastructure to incorporate new forms of technology or ways of contacting Triple Zero and this may place financial pressure on stakeholders. While no specific changes to the overall funding model are proposed at present, governments will need to be prepared to address the financial and contractual impacts should decisions be made to adopt other recommendations in this review (e.g. location-based capability).

Some submissions argued that steps should be taken to improve the sustainability of the service, including making the cost of handling a non-genuine call to emergency service organisations recoverable from a malicious or non-genuine caller. However, there are already regulatory deterrents and industry processes in place (and the level of malicious or hoax calls received by the national operator is relatively small). Notwithstanding, this is an area that warrants ongoing monitoring and management by all stakeholders. A collaborative approach should be taken to increase awareness of alternative phone numbers or other means of obtaining assistance in non-life threatening situations. Similarly, the Australian community should be encouraged to make appropriate use of the Triple Zero service through improved awareness raising activities.

Delivery model

Triple Zero's current delivery model was implemented at a time when Australia's telecommunications landscape was characterised by voice-based communications delivered over a single fixed network – the Public Switched Telephone Network (PSTN). Telstra manages national Triple Zero call centre capacity via two dedicated and geographically separated call centres, and ensures they are appropriately staffed 24 hours a day, 7 days a week in order to meet its contracted performance requirements and regulated requirements as the current Emergency Call Person.

There was significant support amongst stakeholders for the continuation of a national operator under Triple Zero's delivery model, with the majority of stakeholders across all relevant groupings (industry, consumers, and advocate groups) supporting a continuation of a centralised model and retaining a national operator. Stakeholders also explored alternative approaches including:

- a reformed model that allows emergency callers to bypass the national operator and directly contact relevant State and Territory emergency service organisations; and
- a 'shared' delivery model whereby the functions of the Emergency Call Person could be delivered by a consortium of industry entities.

Australia's emergency response arrangements are substantially based around relying on a centralised manager of emergency calls. While decentralised models which involve people directly contacting emergency services are feasible (for example the model adopted in the United States) they would require substantial re-engineering of current arrangements to ensure that the current service standards provided by Triple Zero, and generally expected by the public, are achieved.

The review is not persuaded that there is a strong case to move to such a model at this time, and it is proposed the Triple Zero's existing delivery model (characterised by a national operator) should continue. This would require continuation of a centralised funding model such as the current industry levy arrangements.

Some stakeholders also raised the idea of having the national operator potentially delivered through a collaborative industry approach. This type of model could achieve a range of positive outcomes, including: establishing greater transparency and industry consensus for various administrative arrangements (i.e. interconnection fees and associated processes, setting industry standards, aligning upgrades with broader industry developments); providing greater opportunity to leverage resources and operating costs (i.e. staffing, expertise, system upgrades); and assisting in the timely adoption and implementation of new technologies (i.e. coordinated transition to IP-based architecture). Alternative national operator models could be considered in any future tender of the Triple Zero service.

Regulation

The Triple Zero service is currently subject to both contractual and regulatory obligations. The regulatory arrangements for emergency call services in Australia are currently covered by the *Telecommunications Act 1997*, the *Telecommunications (Consumer Protection and Service Standards) Act 1999* as well as a number of other instruments such as the *Numbering Plan 2015*, and industry standards, codes and guidelines.

Under current arrangements the Department has responsibility for Triple Zero policy and managing the current Emergency Call Person contract with Telstra. The Australian Communications and Media Authority (ACMA) has primary responsibility under legislation for determining requirements and setting regulatory standards such as the *Telecommunications (Emergency Call Service) Determination 2009*, applying to both the Emergency Call Service and the Emergency Call Person, as well as enforcing those requirements.

These arrangements reflect that the Emergency Call Person function until recently was an unfunded obligation on Telstra. Now the Emergency Call Person is funded through a mix of Government funding and an industry levy, and with a proportion of Emergency Call Person functions managed via a contract.

The review recommends the existing framework be modified to give the Minister for Communications the ability to direct the ACMA to make or amend legislative instruments dealing with key principles and requirements that apply specifically to the Emergency Call Person, or more generally to the communications industry. The current regulatory arrangements are suitable for the current voice based environment for Triple Zero, but the proposed change recognises that given the national interest nature of Triple Zero, Government may need to respond effectively and quickly to necessary change (i.e. to changing public expectations and/or technology).

The current regulatory arrangements may also need to be amended to accommodate substantial changes to the Triple Zero service such as new contact methods. Where feasible and in keeping with the Government's deregulation agenda, non-regulatory options should also be considered, particularly as technology or consumer preferences change over time.

A number of submissions raised concerns around emergency calls made using VoIP services, particularly in relation to 'nomadic' VoIP services that can be purchased and easily relocated by telecommunications end users, and the relevance of address details which are drawn from the Integrated Public Number Database (IPND). Carriage service providers are already subject to requirements to provide accurate information to the IPND, and make reasonable efforts to ensure that such data remains up to date. Obtaining current address/location of VoIP callers cannot necessarily be addressed through more regulation imposed on the telecommunications industry, but may be better managed through consumers having the ability to more readily review and update their address information.

Tender for the Emergency Call Person

The current contract between the Commonwealth and Telstra, which has been in effect since July 2012, was originally negotiated as part of broader negotiations of Definitive Agreements between Telstra and nbn™, and agreements between Telstra and the Commonwealth to support the rollout of the national broadband network. At that time, it was agreed that Telstra would continue as the Emergency Call Person for up to 20 years, subject to a future competitive tender process which is required to occur no later than 23 June 2016. In the event that no tender bids are submitted, or none of the tender bids are considered to be acceptable, the existing agreement states that Telstra would remain the Emergency Call Person until 2032.

Although the conduct of the tender for the Emergency Call Person was not included in the specific terms of reference for the review, the Minister requested the Department have regard to the future tender as part of the review. Throughout the consultation, the tender process was regularly highlighted as a crucial issue indirectly or directly linked to other key themes examined by the review (governance and coordination arrangements, technology, funding, delivery model and regulation).

The combination of Australia's broader current transition from a circuit switched voice network to an IP-based telecommunications environment during the next five to ten years, and the likely continued growth of mobile services, presents a significant opportunity to rethink the end to end delivery of the Triple Zero service.

For example, the tender process could be used to seek proposals for introduction of new technologies, and provide opportunities for innovative and different models of operating the service – perhaps collaboratively. More fundamentally, a tender would also provide an opportunity to achieve efficiencies in delivery, redesign as needed the scope and key performance indicators of the service, and test the cost of the service.

Against this, there are a number of risks associated with conducting a tender at this time. In the review, stakeholders noted Telstra's long term role as the current Emergency Call Person with its formal and informal operational functions, procedures and systems firmly entrenched into the current Triple Zero arrangements, would make it difficult for alternative entities to meaningfully compete in a tender, particularly in relation to voice services. There are also concerns that a lack of transparency of the current cost structure of the Triple Zero service – and general industry understanding of the detailed technical elements of the service would also disadvantage competitors.

For a tender to be successful in delivering a viable alternative to the current service model, the Government would need to have a clear view of the technological objectives, structure, functions, service standards and funding arrangements for the Triple Zero service, as well as some sense of the transition framework and process.

It is also not clear that it would be possible for a competitor to cost effectively replicate the existing systems and networks used by Telstra, while a transition to a new model of Triple Zero would need agreement from all stakeholders, including on timeframes and funding for consequential changes to state/territory systems. While the conduct of the tender is a matter for the Australian Government, at least some element of 'buy-in' from other stakeholders including States, Territories and industry to the framework for the new Triple Zero service would assist in its subsequent successful roll out, and in managing the transitional risks.

The proposed integration of location-based coordinate functionality has been identified as a key and immediate priority by the review and this capability should be implemented, or at a minimum, key requirements determined in advance of any tender.

On balance, the review recommends the Commonwealth should seek to postpone the 2016 tender for the Emergency Call Person for up to two years while any coordinate based information capability is agreed and implemented, proposed Triple Zero governance and coordination arrangements are resolved, and there is greater clarity on the desired future directions of Triple Zero. Holding the 2016 tender process for the Emergency Call Person without such clarity may place at risk the current successful delivery model and could also result in a protracted period of negotiation with the successful bidder, the current operator and other jurisdictions to agree a new model and successfully transition to it.

Recommendations

The recommendations set out in the report are as follows:

Recommendation 1.1

The inclusion of capability to reliably receive and automatically forward more accurate location-based data (coordinates) from mobile emergency callers to Emergency Service Organisations should be a priority in the development of the Triple Zero service.

- > The Australian Government should work with stakeholders to develop necessary standards and take a leadership role in progressing enhancements to the Emergency+ app and other necessary system changes to provide additional functionality so that detailed location coordinates can be automatically disclosed to Triple Zero during an emergency call.
- > In parallel, the Emergency Call Person and State and Territory governments should also commence planning and implementing changes as a priority to support coordinated based positioning data being received and effectively disseminated by Emergency Service Organisations.

Recommendation 1.2

A set of technology principles and criteria to guide a nationally agreed, and consistent, integration of future technologies across the emergency service framework should be developed.

This may include, but are not limited to, the following:

- > Cost/benefits
- > Risks
- > Functionality
- > User awareness and take up / likely longevity of technology
- > Network and stakeholder readiness / capability
- > International standards / specifications.

Recommendation 1.3

Stakeholders involved with Triple Zero should undertake consultation to test consumer willingness to accept different service or performance characteristics in order to enhance and increase the use of new technologies within Triple Zero.

It will be important to make clear to consumers the performance limitations of new or alternative technologies in terms of providing an emergency contact service, noting that they are likely to supplement rather than replace voice services.

Recommendation 2.1

A Triple Zero Coordination Committee be established to replace the Emergency Call Service Advisory Committee, with the Department to work with the ACMA to review the existing membership, chair and working arrangements, and terms of reference. This Committee would have a high level focus on policy and coordination, but could establish technical and other working groups as needed.

- > The Coordination Committee should include senior representatives from the Commonwealth and State and Territory governments, and appropriate representation from the telecommunications industry, consumer groups and other stakeholders to inform decisions.
- > The Coordination Committee would coordinate, but not replace the individual regulatory, funding/investment or other decision-making processes of its members.

Recommendation 2.2

The Triple Zero Coordination Committee should develop a set of non-binding core policy principles for potential national endorsement to inform and guide future strategic considerations for the Triple Zero service.

Recommendation 2.3

The Triple Zero Coordination Committee should be responsible for coordinating a national awareness-raising strategy to guide future and joint awareness-raising and promotional activities.

Recommendation 3.1

While the current funding framework has sustained the existing voice only Triple Zero service and some recent service improvements, there may be significant end to end future funding demands to accommodate service changes. The Triple Zero Coordination Committee should facilitate engagement between jurisdictions and other stakeholders to build and prosecute the business case for any major changes, including consideration of efficiencies to offset the expected costs.

Recommendation 4.1

The Triple Zero service should maintain a national operator delivery model for the time being, as this remains an effective and proven model.

Recommendation 5.1

To ensure flexibility in regulatory arrangements, during a period of potential change to the Triple Zero service, consideration should be given to the Minister for Communications having a reserve capacity to direct the ACMA to make or amend legislative instruments dealing with key principles and requirements that apply specifically to the Emergency Call Person or the emergency call requirements applying more generally to the communications industry.

Recommendation 5.2

To the extent regulation is necessary for the effective functioning of the national operator and the broader emergency call service, the Commonwealth should as far as possible ensure that the federal legislative framework is technology neutral, flexible, responsive, and future proofed. However, non-regulatory options should be considered wherever appropriate.

Recommendation 6.1

The Commonwealth should seek to postpone the 2016 tender for the Emergency Call Person for up to two years so that long term policy and technology objectives, including location-based information capability and timing for transition of Triple Zero to an IP based environment, can first be resolved.

Introduction

Background and history

Following the large scale rollout of Australia's copper telecommunications network during the mid-twentieth century, Australians quickly became reliant on basic telephony services to communicate with each other. The fixed-line telephony network also enabled Australians to communicate with the relevant authorities during an emergency event. However, prior to the commencement of the national Triple Zero service in 1961, Australians wishing to make an emergency call needed to know the direct telephone number of the nearest ambulance service, fire or police station.

In those early days of fixed-line telephony, if a caller's telephone was on a manual exchange, the Postmaster General (PMG) operator would be able to connect them to the emergency service, but if the caller's service was on an automatic exchange, the caller would have to first find the correct number of the nearest ambulance, fire or police station before dialing.

However, in 1961 the PMG introduced the concept of a single national number (000) to establish what is now known as the Emergency Call Service (or ECS) and provide access to emergency services. Today, the Triple Zero service is a highly trusted and valued service within the Australian community, and has been so for more than 50 years.

There are various explanations for the choice of Triple Zero (000) as the national Emergency Call Service number in 1961, including number plan issues (at that time zero (0) prefixes were typically assigned to provide access to operator services such as fault reporting), technical issues (pulse dialing of 111 could be falsely generated on early exchanges by 'jiggling' the handset), and user issues such as the number being nearest the finger stall on a rotary dial telephone for ease of location at night or in smoke⁴.

This review aims to ensure that arrangements for the national Triple Zero operator continue to support a world class Emergency Call Service into the future.

There was no legislative or regulatory requirement on the PMG or Telecom Australia (now Telstra) before 1991 to provide the switching of emergency calls to the relevant State or Territory emergency service organisations. However, since 1991, the role and functions of the national Triple Zero operator have been enshrined in primary legislation and are undertaken by Telstra. The *Telecommunications Act 1997* defines the Emergency Call Service as a 'service for receiving and handling calls to an emergency service number and transferring such calls to an emergency service organisation (ESO) (police, fire or ambulance) in life threatening or time-critical situations'⁵.

Current Emergency Call Service

Australia's Triple Zero service appears as a single service from a caller's perspective. However, Triple Zero has two key components:

- Firstly, the national Triple Zero operator answers each call to 000 and transfers it to the appropriate emergency service organisation (numbers vary for police, fire or ambulance in each State and Territory);
- Secondly, the emergency service organisation then dispatches the appropriate emergency response.

⁴ See www.acma.gov.au/Citizen/Stay-protected/My-mobile-world/Emergency-calls-from-mobiles/history-of-the-emergency-call-service.

⁵ Section 7, *Telecommunications Act 1997*.

There are also two secondary emergency service numbers⁶ in operation within Australia that only work with particular technologies:

- 112 – the international standard emergency number, which can be called from a Global System for Mobile Communications (GSM) type mobile; and
- 106 – a text-based emergency number for people who are deaf, or have a hearing or speech impairment, which can be called from a teletypewriter (TTY).

As the current Emergency Call Person (or ECP) for 000 and 112, Telstra continues to play a vital role in delivering the Triple Zero service by answering calls to Triple Zero from anywhere in Australia and transferring them to the relevant State and Territory emergency service organisation. A contribution towards Telstra's net operating costs as the Emergency Call Person is funded through a mix of Commonwealth Government funding and an industry levy on eligible telecommunications carriers (see Chapter Three). Telstra also receives commercial revenue from interconnection charges from carriers and carriage service providers when calls are connected to Triple Zero.

The 106 number, and a suite of other communication options that cater for the deaf and hearing impaired, are provided through the National Relay Service (or NRS). The National Relay Service is funded on a similar basis to the Emergency Call Person for Triple Zero (i.e. a mix of Australian Government funding and industry levy). The Australian Communications Exchange (ACE) is Australia's current National Relay Service provider and is responsible for delivering the 106 text service under a contract with the Commonwealth until 30 June 2018. In providing the 106 service, ACE relays messages straight to the Emergency Call Person and does not directly interact with emergency service organisations.

As the Emergency Call Person, Telstra is obligated to meet a number of key performance targets, which are overseen by the ACMA including answering:

- 85 per cent of calls to Triple Zero within 5 seconds; and
- 95 per cent of calls to Triple Zero within 10 seconds.

These key performance targets for Triple Zero have been consistently met by Telstra over the last decade⁷.

Terms of Reference

Over the last 15 years, there have been a number of significant developments across Australia's telecommunications landscape. To ensure Triple Zero could take full advantage of new and emerging technologies and provide improved services into the future, on 8 July 2014 the Minister for Communications announced that the Department of Communications (the Department) would undertake a review of the national Triple Zero operator.

The review is an important step in exploring how the Triple Zero service can take advantage of telecommunications advances and respond to changing community expectations. The current arrangements for the national Triple Zero operator were established when voice calls from landlines dominated the telecommunications landscape. This landscape has now changed with around two-thirds of emergency calls to the Triple Zero operator now coming from mobile phones. As communications technology continues to advance, the Australian Government considers new opportunities to improve the existing Triple Zero service and assist Australians during an emergency should be examined.

⁶ Emergency numbers are included in the *Telecommunications Numbering Plan 2015*.

⁷ TUSMA, *Annual Report 2013-14*, Page 20 and Telstra submission, Page 3.

The review takes a long-term view of the future direction of the service, while considering changes that need to be made to national operator arrangements over the next five to 10 years. The Department was tasked with reviewing and making recommendations on the future of the national Triple Zero (000) operator with particular reference to the following:

- a. The role and objectives of the national operator.
- b. The national operator's existing business processes and architecture.
- c. The existing funding and delivery model for the emergency call service.
- d. The financial and regulatory responsibilities of emergency service organisations, the telecommunications industry and other stakeholders.
- e. The changing telecommunications environment, including alternative ways to request emergency assistance and improvements to mobile phone location information.
- f. The needs and expectations of the community in relation to the national operator.
- g. The operational requirements of emergency service organisations in relation to the national operator.
- h. Funding and delivery models to drive the efficiency, effectiveness and adaptability of the emergency call service, with reference to overseas examples.
- i. Limitations of the existing national operator model and ways in which they can be addressed.
- j. How free and open access to an authoritative geocoding capability would enhance the delivery of Triple Zero (000) services.

Although the review and subsequent recommendations are generally confined to the operations of the national Triple Zero operator itself, in conducting this review the Department has given due consideration to broader issues, including examination of arrangements across the broader Triple Zero framework within which the national operator operates.

In conducting the review, the Minister requested that the Department also have regard to:

- a. The tender of the national Triple Zero (000) operator by the Telecommunications Universal Service Management Agency (TUSMA).
- b. The review of the *Telecommunications Universal Service Management Agency Act 2012* (TUSMA Act) and related legislation, required by 1 January 2018 under section 123 of the TUSMA Act⁸.
- c. Work being led by the New South Wales Police Force to develop an Emergency Communications Services (Triple Zero) Policy, Framework and Standards to Address Current and Future Community Expectations: Next Generation Triple Zero (NG000) Strategy Proposal.

⁸ During the course of this review, legislation was introduced and passed which transferred the functions of TUSMA to the Department from 1 July 2015.

Chapter One: Technology

This chapter explores the current and potential use of technology within the Triple Zero service environment. It provides an overview of the current technological environment in which Triple Zero operates, consumer usage preferences, international trends and developments, and discusses the merits and risks of integrating various individual technologies into Triple Zero.

1.1 Background

1. Australia's technological landscape and the way people communicate has changed significantly since the establishment of the Triple Zero service with many new technologies, devices, and communications platforms beyond fixed-line telephony now available. A core objective in reviewing the national Triple Zero operator is to ensure the arrangements for the national operator continue to support a high quality Emergency Call Service both now and into the future.
2. Currently, emergency callers are required to consciously initiate a request for assistance by dialling the Triple Zero number and speaking to an operator, but advancements in technology are increasingly allowing for automated distress signals and/or functionality to occur without direct physical action from an individual. This may include automated functionality via wearable health monitoring devices,⁹ in-car emergency call activation technologies¹⁰, and innovative smartphone apps.¹¹
3. More commonly known technologies such as Short Message Service (SMS) and location-based technologies have been championed as ideal 'next generation technologies' for widespread deployment across national emergency call regimes. However, to date no international jurisdiction has fully, or successfully, integrated a widely available, robust and prioritised emergency SMS capability on a national scale into their national emergency call service frameworks (in most cases internationally, SMS has been made available on a registration basis for the deaf/hearing impaired). This is despite numerous initiatives, trials, and services being implemented in other jurisdictions to varying levels of operational maturity (see paragraphs 10-16). Similarly, there is no international jurisdiction identified by this review which has developed and implemented national capability to consistently obtain and send accurate coordinate based location information when a mobile caller dials seeking emergency assistance.
4. Although new and innovative communication technologies continually and rapidly emerge, the success and relevance of such advancements in technology are often contextual. Using individual technologies for purposes other than for which they were created can sometimes provide unanticipated benefits, but they are not always suitable or robust enough for use within the Triple Zero context (for example, social media platforms do not offer message prioritisation or guarantee messages are received, nor do they allow the identity or location of users to be easily validated). All new technologies for possible use within the Triple Zero context should therefore be carefully examined to determine their relevance, robustness and longevity.

⁹ See www.engadget.com/2015/01/06/healthpatch-md-vital-connect/.

¹⁰ See www.euroncap.com/rewards/ford_sync_emergency_assistance.aspx.

¹¹ See www.mandownapp.com/.

5. The most significant change impacting the way the Triple Zero service operates is the ever increasing reliance of Australians on mobile communications. The ACMA's *Communications report 2013-14*¹² has confirmed a significant and growing shift to mobile, as well as growth of IP-based voice services. Key findings include:
- mobile services in operation in Australia has reached 31.01 million with 12.07 million Australians having a smartphone by May 2014 (an increase of 7.9 per cent over the previous 12 months)¹³;
 - the number of mobile phone users without a home fixed-line telephone service reached 4.9 million people, a significant increase of over 33 per cent since June 2013¹⁴;
 - by May 2014, 74 per cent of Australian adults were estimated to be using a smartphone compared to 64 per cent 12 months earlier (May 2013)¹⁵;
 - fixed-line telephone services in operation declined by two per cent to 9.19 million in line with the trends reported over the previous three financial years¹⁶;
 - growth in the use of 'over the top' (OTT) communications continues to challenge traditional voice service revenues with users of VoIP services increasing over the last 12 months by another six per cent to 4.87 million. This growth in VoIP usage is largely related to the now readily available number of OTT services in the market (such as those offered by Skype and other apps now readily available on tablets and smartphones).¹⁷
 - approximately two thirds of all calls to the Triple Zero operator are now made from mobile devices¹⁸.
6. Determining how the Triple Zero service can, or should, respond to changing community expectations is critical. Departmental research¹⁹ indicates there is a strong interest amongst the community for the Triple Zero service to become more sophisticated and cater for new and emerging technologies. The aim of this research was to establish existing usage and attitudes towards the Triple Zero service, including expectations around potential future capabilities. Graph 1 outlines key findings from the research that relate to the changing technological landscape. Notably, 93 per cent of individuals would like to share location coordinates²⁰ with Triple Zero (now a common functionality of smartphones). Of potential alternate future Triple Zero contact options canvassed with participants, automated alert devices (especially amongst retired participants), SMS (especially with younger participants), smartphone applications and video calls were the most popular (see Graph 1).

¹² See www.acma.gov.au/theACMA/Library/Corporate-library/Corporate-publications/communications-report.

¹³ See www.acma.gov.au/theACMA/Library/Corporate-library/Corporate-publications/communications-report Page 7.

¹⁴ See www.acma.gov.au/theACMA/Library/Corporate-library/Corporate-publications/communications-report Page 7.

¹⁵ See www.acma.gov.au/theACMA/Library/Corporate-library/Corporate-publications/communications-report Page 20.

¹⁶ See www.acma.gov.au/theACMA/Library/Corporate-library/Corporate-publications/communications-report Page 14.

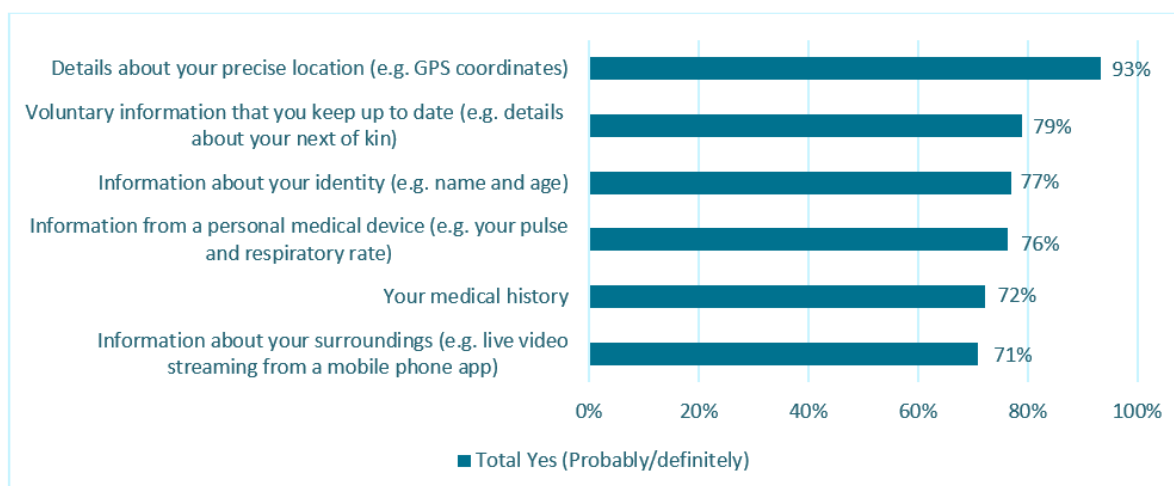
¹⁷ See www.acma.gov.au/theACMA/Library/Corporate-library/Corporate-publications/communications-report Page 15.

¹⁸ ACMA, *Communications report 2013-14*.

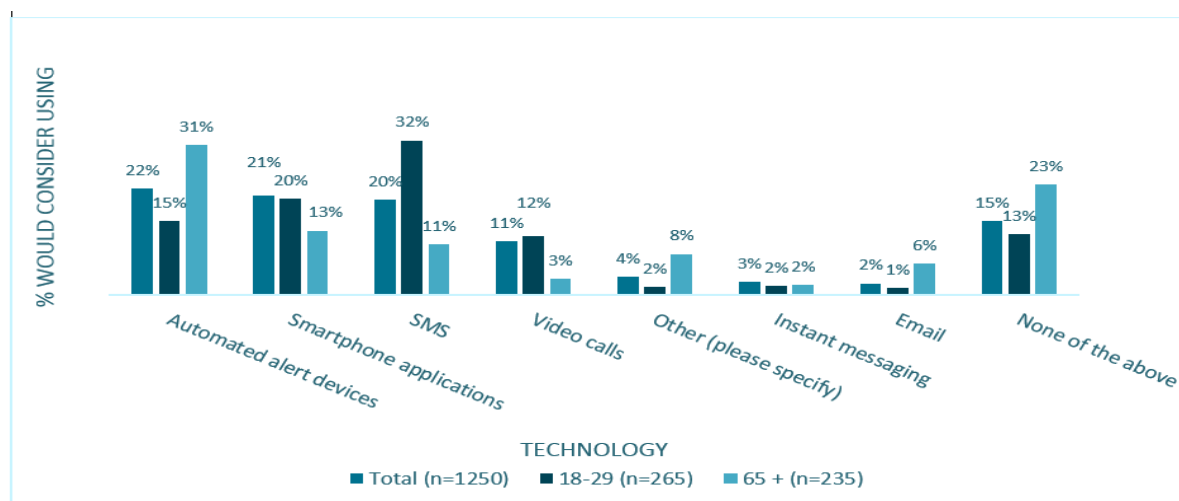
¹⁹ Triple Zero Review Research by Australia Online Research Pty Ltd, September 2014.

²⁰ See <http://www.icsm.gov.au/mapping/coordinates.html> and <http://www.ga.gov.au/scientific-topics/positioning-navigation/geodesy/geodetic-datums/gda>.

Graph 1: What information should be automatically provided to Triple Zero?



Graph 2: Alternative Triple Zero contact options



7. Despite the expectation that alternative contact methods be available, the research confirmed that consumers retained a clear preference to maintain voice call functionality within Triple Zero (see Table 1 below). This is unsurprising, given that direct communications with an operator is likely to be the optimal approach in most situations. In contrast, use of new or alternative technologies is likely to be heavily influenced by the context of events and is therefore likely to be used by a subset of consumers in specific situations.

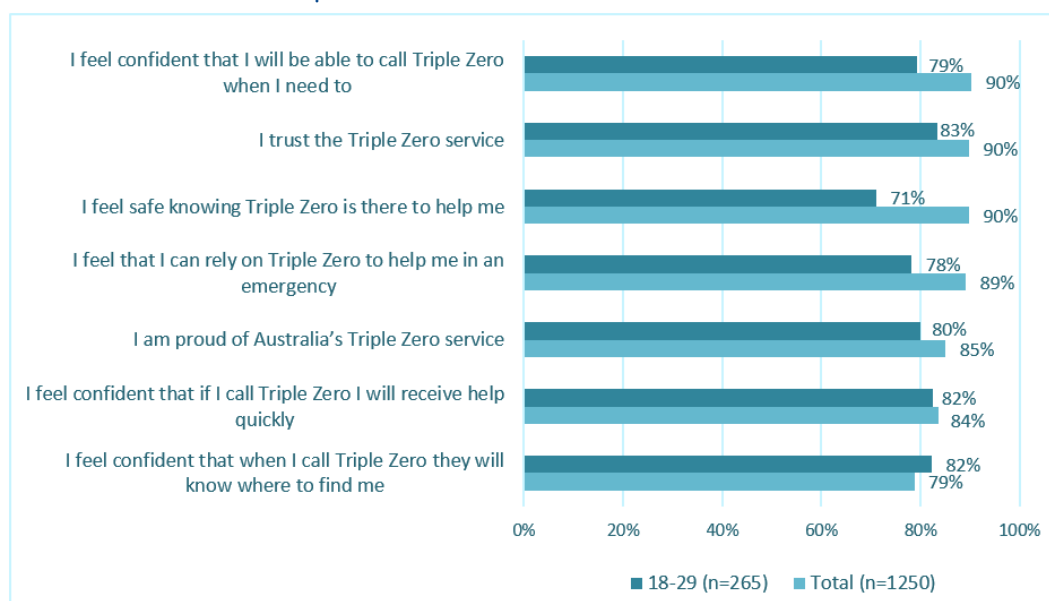
Table 1: Preferred contact methods to contact Triple Zero in specific situations

% preferring contact methods in specific situation	Voice call	SMS	Smartphone app	Automated alert devices	Video calls	Other*
You are at home and an older relative experiences chest pains	80%	1%	3%	8%	4%	4%
You are at home and notice smoke pouring from the window of a neighbour's house	83%	2%	3%	3%	3%	6%
You are at home and hear an intruder in the next room	37%	27%	12%	14%	3%	7%
You are at home on your own and you suddenly find it difficult to breathe	43%	14%	11%	22%	5%	5%
You witness a robbery at your local shops	65%	11%	9%	5%	4%	6%
You witness an assault at a local pub	60%	14%	9%	3%	5%	9%
You witness a two car collision while walking home	72%	7%	7%	3%	5%	6%
You are driving on a busy highway and see a car drive off the road and crash into a tree	73%	4%	8%	7%	4%	4%
You are being followed while walking home at night and you fear for your safety	48%	13%	11%	14%	7%	7%
You are at work and a colleague is seriously injured	81%	2%	4%	3%	6%	4%
You fall and injure yourself while bushwalking	57%	8%	10%	15%	5%	5%
You fall off a ladder at home and injure your leg	64%	5%	6%	16%	3%	6%

*combines categories such as MMS, instant messaging, email, social media, website form, other.

- The Department's research indicates that despite different consumer preferences relating to the use of technologies, there is a high degree of satisfaction with the current Triple Zero service, including within the younger demographic (18-29 years) that may be more likely to be early adopters and more technologically savvy (see Graph 3 below).

Graph 3: Attitudes towards the Triple Zero service



9. As indicated in Graph 3 above, most consumers are confident that they will be able to be located if they call Triple Zero. However, while Triple Zero's historical reliance on residential address data sourced from the Integrated Public Number Database (IPND) is still relevant in many cases (i.e. calls from landlines or payphones), more dynamic methods of accurately and quickly identifying the location of callers using mobile phones are desirable to ensure the ongoing effectiveness of Triple Zero.

1.2 Other jurisdictions

10. Internationally, many jurisdictions have commenced exploring, and in some cases introducing, new technologies including making improvements to mobile location-based capability and introducing alternative contact technologies, such SMS, into their respective national emergency call service frameworks.

1.2.1 United States

11. In the US, the Federal Communications Commission (FCC) has commenced introducing text-to-911 (SMS) capability, although this is currently only available in limited areas.²¹ In early 2014, the FCC also introduced a proposal to introduce new rules allowing emergency responders to access and utilise location-based information in order to better locate outdoor 9-1-1 callers²² by requiring wireless mobile phone providers to transmit location information to 9-1-1 Public Safety Answering Points within designated parameters of accuracy subject to some exceptions (within 50 to 300 meters depending upon the type of location technology used). The FCC is now also progressing requirements to address some of the unique challenges of locating 9-1-1 callers from indoors.²³ Some Australian stakeholders have also noted the future importance of utilising location identification technologies that can potentially provide elevation positioning information from within a building²⁴. This area is challenging however as smartphone positioning typically relies on a device being able to obtain a line of sight to overhead satellites.

²¹ See www.fcc.gov/guides/text-911-quick-facts-faqs.

²² See www.fcc.gov/guides/wireless-911-services.

²³ See www.fcc.gov/document/fcc-adopts-rules-help-responders-better-locate-wireless-911-callers.

²⁴ C Anderson, submission, Page 3; University of Melbourne, Victorian Spatial Council and APCO Australasia submission, Pages 12-13.

1.2.2 Canada and New Zealand

12. Like the US, Canada's emergency response regime is reliant on geographically dispersed call centres, or Public Safety Answering Points, that receive incoming emergency calls from designated regions. Canada has recently implemented a range of national reforms²⁵ to increase the technical capability of its 9-1-1 emergency call service. In 2014, all Canadian carriers commenced implementing the capability to allow Public Safety Answering Points to pull location-based data (static and in-motion) to help responders more accurately pinpoint a caller's location. However, establishing the accurate location of emergency caller remains a key challenge. The 'pull' approach used in Canada means location information is not automatically presented as part of the call and requires separate action by the call taker. In Canada, a mix of technology solutions, including mobile phone tower triangulation techniques, are being utilised with current accuracy levels reported to be generally within 50 to 300 meters of the mobile phone²⁶.
13. New Zealand (111 TXT²⁷) and Canada (T911²⁸) have introduced SMS capabilities for hearing and speech impaired citizens who must also pre-register their details. Australia has also implemented an SMS relay service via the National Relay Service, which can be used in an emergency, but it remains a service primarily catering for the deaf or hearing/speech impaired and is not considered a primary emergency call service as it has no current capacity to prioritise the emergency SMS.

1.2.3 Europe

14. In the UK, new services are similarly being developed to better pinpoint emergency callers using smartphones capable of automatically sending coordinate information when a voice call is made to 9-9-9²⁹ (see paragraph 45). The ability to obtain coordinate information and send this through to call takers is however based on a proprietary approach and so the availability is limited (subject both to the mobile network and handset used).
15. The existing 9-9-9 emergency call service in the UK has also recently incorporated 'emergency SMS' capabilities into their operations as an additional contact method for individuals who register for the emergency SMS service.³⁰ The European Commission reported in February 2015 that 18 member countries had now implemented SMS capabilities within domestic emergency call service frameworks (but in a number of cases with access being limited to members of the hearing impaired/deaf community)³¹.
16. There is a clear global trend towards emergency call services addressing increased consumer mobility and the challenges of accurately locating mobile callers and taking initial steps to introduce alternative contact methods like SMS to respond to general consumer preferences or on a more targeted basis to cater for specific sectors of the community (e.g. the deaf or those with hearing loss). However, the introduction and use of SMS as a dedicated and additional communication option to the general public (i.e. non-hearing impaired) in the case of an emergency has not yet been implemented internationally on any meaningful scale. It also appears that SMS is being introduced overseas as a means to request emergency assistance without any specific network prioritisation. This may imply other jurisdictions are either accepting the risk of

²⁵ See www.crtc.gc.ca/eng/BACKGRND/plan2014.htm.

²⁶ See www.crtc.gc.ca/eng/info_sht/t1035.htm.

²⁷ See www.police.govt.nz/111-txt.

²⁸ See www.bell.ca/Accessibility_services/T911.

²⁹ See www.btplc.com/News/Articles/ShowArticle.cfm?ArticleID=F8FD34BB-7E05-499D-8778-08A3F39F6015.

³⁰ See www.emergencysms.org.uk/how_to_send_text.php.

³¹ See <http://ec.europa.eu/digital-agenda/en/news/implementation-european-emergency-number-112-results-eight-data-gathering-round>.

an emergency SMS not being delivered or are seeking to address this risk via other means (i.e. through awareness activities or by limiting access to emergency SMS to sectors of the community that might otherwise have no ready means to seek assistance).

1.3 Recent developments in Australia

17. Within Australia, the Australian Government, the ACMA, the Emergency Call Person, mobile carriers, and State and Territory emergency service organisations have also introduced important initiatives in recent years to ensure the Triple Zero service has evolved. This is perhaps best illustrated by the initial deployment of the Push MoLI system³² enabling the provision of mobile network derived location information to be sent to the national Triple Zero operator – and then onto emergency service organisations to assist them in locating emergency callers using mobile phones. In Australia, integrating the use of location-based data into the Triple Zero framework has been a key focus of recent efforts to improve the efficiency of emergency response efforts.

Case Study – Push MoLI

In 2011, the ACMA amended the *Telecommunications (Emergency Call Service) Determination 2009* to require mobile carriers to provide emergency service organisations with locational information about an emergency call.³³ These rules required mobile carriers to provide the most precise location information available when requested to do so by an emergency service organisation (this was known as pull-MoLI).

Up until the commencement of the new rules on 20 April 2011, only broad geographic information, referred to as Standardised Mobile Service Areas, was sent with mobile emergency calls. These areas could range in size from 2,000 to 500,000 square kilometres.

New capabilities were introduced in November 2014 by all Australian mobile phone carriers (Telstra, Optus and Vodafone), which means emergency service organisations can automatically receive details of the estimated area where a mobile caller is likely to be located, based on the mobile cell tower site used to place the emergency call. This new capability is known as Push-MoLI. This enhanced location information has the potential to save time in locating and reaching people in life threatening emergency situations.

An industry guideline has been developed which sets out the process for carriers to enable mobile location information to be 'pushed' through to emergency services.

The Push MoLI project has involved upgrades to complex IT systems, as well as the completion of a lifecycle upgrade to Telstra's Triple Zero call handling and management system (ECLIPS). The Emergency Call Person is currently working closely with emergency service organisations in each State and Territory to facilitate the rollout of capability and necessary system upgrades. All emergency service organisations are expected to be using Push MoLI by the end of 2015. Emergency service organisations which have completed the required system upgrades report the information has assisted to locate callers in multiple instances.

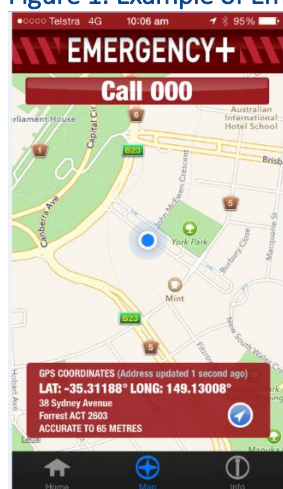
It still remains important for callers to describe their location when making an emergency call as the carrier's best fix on location will be dependent on the proximity of the caller to mobile cell towers in an area and surrounding terrain (e.g. buildings, hills, trees). In an area where the cell tower coverage is dense, e.g. metropolitan areas, the location information is likely to be more accurate than in an area with less mobile cell tower coverage.

³² See www.commsalliance.com.au/about-us/newsroom/2014-22.

³³ Section 52A of the *Telecommunications (Emergency Call Service) Determination 2009*.

18. Push MoLI is a clear step forward, but also has technical limitations and relies on the best possible location data available based on the estimated coverage provided from the mobile tower used to place the emergency call. In some regional areas, a mobile tower may provide coverage in a 70-100km geographical radius (i.e. meaning a caller could be in an area spanning several hundred square kilometres). However, the implementation of Push MoLI is a significant step towards improved location-based data being used within an emergency context and demonstrates what can be achieved when stakeholders across the emergency response framework collectively invest, coordinate and collaborate. It can be expected further technical developments for the Triple Zero service will continue to require similar and ongoing strategic and collaborative endeavours to avoid any risk of fragmentation and inconsistency in technology adoption.
19. NECWG-A/NZ made a number of key findings in the context of technology within its NG000 Strategy including the need for Triple Zero to be more innovative and collaborative, and a recognition that improved interoperability between systems is required as technology take-up continues to drive community expectations that emergency service organisations adopt omni-channel capability.³⁴ A key finding of the NG000 Strategy was that the absence of an over-arching multi-jurisdictional governance body is inhibiting consistency in State and Territory-based operational actions and technical directions.³⁵
20. The development of the Emergency+ app was funded by the Australian Government Attorney-General's Department through the NEMP program and has given consumers a single, recognised app for requesting assistance in an emergency. It also provides details of alternative State Emergency Service (SES) and non-emergency related police assistance numbers. It has also introduced some basic coordinate based positioning functionality into the Triple Zero environment. However, address and latitude/longitude coordinates are not automatically pushed to the national operator or to emergency service organisations, but are displayed on the mobile phone display, allowing those details to be read out to the operator (see screenshot on right). Regardless, the smartphone app has been publicly recognised by emergency service organisations as a valuable tool in assisting emergency service organisations rapidly locate and provide assistance to people in life threatening situations³⁶. However, in future, it would be desirable to have greater capacity within the Triple Zero environment to automatically relay address and/or location coordinate data without the need for significant consumer action.

Figure 1: Example of Emergency + App



³⁴ NECWG-A/NZ Next Generation Triple Zero (NG000) Strategy Proposal – June 2014, Page 31.

³⁵ NECWG-A/NZ Next Generation Triple Zero (NG000) Strategy Proposal – June 2014, Page 28.

³⁶ See www.youtube.com/watch?v=hSj3EnWiBck.

21. In addition to the Emergency+ smartphone app, it should be noted there are other smartphone apps developed for use within the State and Territory emergency service environments, which are designed to help manage real-time critical information related to emergency response incidents.³⁷ Further, the research and development sector has also recognised the value of apps in assisting individuals and emergency service responders³⁸. There are numerous advantages apps can offer given the accessibility benefits and low cost to consumers combined with their ability to be relatively easily enhanced over time with increased functionality as required.

1.4 Stakeholder views (submissions and consultations)

22. Submissions expressed a diverse range of views and opinions regarding the current and future use of technology within Triple Zero. However, a range of common themes also emerged on technology related issues:
- From a network engineering perspective, the capacity and capability of infrastructure to satisfactorily handle the volume and sophistication of new technologies should not be overlooked and/or underestimated.³⁹ This includes the potential introduction of new risks and other possible impediments (viruses, denial of service attacks etc).
 - Promotional and marketing activities will be vital to support any major technological changes to Triple Zero to ensure the effectiveness and value of these improvements are maximised and well understood by individuals particularly as technology take-up and device usage is diversified across all demographic groupings⁴⁰.
 - Utilising new technologies does not always produce expected efficiencies. Simplified processes and procedures that are readily understood by the community should not be undervalued⁴¹.
 - Creative, innovative and successful uses of technology remain intrinsically linked to the integrity and accuracy of underpinning data (i.e. IPND)⁴².
 - Certain technologies (i.e. live streaming or video calls) may prove valuable in providing emergency service organisations with increased situational awareness and/or evidence in particular emergency cases. Such technologies however would place significantly greater demands on the national operator and emergency service organisations and their systems – including that operators would need to be trained to analyse and respond appropriately to any footage or imagery, as well as significant increased system and network demands in the ability to process, store and transmit footage, with associated funding pressures.
 - Voice-based capability should remain a central focus of Triple Zero.⁴³
23. Multiple submissions highlighted location-based information as being critical for emergency response, particularly in relation to capturing dynamic coordinate positioning data from callers to Triple Zero. Telstra noted integrating Geospatial Positioning System (GPS) data capability would be the next logical step following the establishment of Push MoLI.⁴⁴ Further, Telstra suggest GPS information should work in combination with other existing technologies and resources (i.e. IPND and the Standardised Mobile Service Area (SMSA)) to improve the ability of emergency service organisations to accurately locate callers.⁴⁵ Telstra also highlighted that the increased integration

³⁷ See http://mobileawards.com.au/ausapps14/entry_details.asp?ID=13162&Category_ID=6064.

³⁸ See http://people.csiro.au/~media/People%20Finder/Z/A/Andrew-Zhang/AutoSOS_white%20paper_final.ashx.

³⁹ Telstra submission, Page 18.

⁴⁰ WA Government submission, Page 1.

⁴¹ CPSA submission, Page 3.

⁴² Victorian Government submission, Page 5.

⁴³ Tasmanian Government submission, Page 8.

⁴⁴ Telstra submission, Page 9.

⁴⁵ Telstra submission, Page 10.

of location-based data and information into Triple Zero would have additional benefits including the ability to better manage and locate hoax callers.⁴⁶

24. In regards to the adoption of new communication technologies, Telstra also submitted that voice communications should remain the primary method of requesting emergency assistance due to the immediacy and timeliness of a response expected by callers in an emergency⁴⁷. Telstra considers other options including video calling and messaging (SMS and Instant Message (IM)) should be secondary methods only due to implications adopting these methods will have on existing resources (i.e. retraining staff), and the technical challenges they present around data accuracy, message prioritisation (within the network), consumer awareness, and the required network alignment and associated system upgrades⁴⁸.
25. As technology continues to advance and introduce new and innovative functionality, many stakeholders have argued the extension of Triple Zero beyond the current voice only arrangement is perhaps inevitable. Optus noted in its submission that stakeholder expectations of what mobile devices can deliver in emergency situations will only continue to grow over time, but from an operational perspective, it will be important to align any future technical solutions with international practices (particularly the European and North American markets) to ensure the availability of equipment and consistency in technical specifications.⁴⁹ Optus also indicated that any future policy and regulatory framework should support innovation of new communication services and not stifle existing or future commercial activity and/or opportunity.
26. The CA/AMTA submission highlighted the importance of deploying next generation technologies into Triple Zero but suggested this be considered separately to the voice service component of Triple Zero ahead of the future tender for the national operator.⁵⁰ CA/AMTA consider a clear set of policy objectives for next generation technologies is lacking within the current Triple Zero environment and have suggested future technological directions should be driven from an overarching policy framework.
27. Vodafone's submission argues that the existing reliance on static IPND data to capture the name and address of an individual at a particular point in time will become increasingly irrelevant as personal communication devices allow for improved mobility. Vodafone note that a failure for Triple Zero to keep pace with these trends has the effect of potentially contributing to the danger of a person, their property, or the community.⁵¹
28. ACCAN's submission supports the introduction of SMS and the increased utilisation of location-based data through smartphone apps. ACCAN note the capacity of such technologies to assist the community's most vulnerable is an important issue. However, ACCAN does not consider these new technologies should act as primary contact methods for consumers and believe they would be best used in supplementing the current voice-only service and helping to ameliorate existing gaps.⁵² In its submission, ACCAN specifically noted the advice from the National Relay Service website, which states that in emergencies SMS relay should be a 'last resort' call⁵³ as there is no priority for SMS messages to the National Relay Service on the mobile network.

⁴⁶ Telstra submission, Page 19.

⁴⁷ Telstra submission, Page 17.

⁴⁸ Telstra submission, Pages 17-18.

⁴⁹ Optus submission, Page 2.

⁵⁰ CA and AMTA submission, Page 5.

⁵¹ Vodafone submission, Pages 1-2.

⁵² ACCAN submission, Pages 4-7.

⁵³ See <http://relayservice.gov.au/making-a-call/sms-relay/>.

29. Many other stakeholders supported the increased development and adoption of apps, and other technology/data sources, into the Triple Zero framework to achieve key service objectives, including:
- leveraging device functionality to accurately pinpoint the location of caller/handsets and capture and disclose improved information for emergency responders⁵⁴;
 - catering for the hearing impaired sector⁵⁵;
 - contributing to innovative network integration with other multimedia data channels⁵⁶ (i.e. in-car automated 'alert technologies' within the car manufacturing sector, sensor networks etc.).
30. Investment at the State and Territory level is also important to ensure the Triple Zero service as a whole can continue to benefit from the development and deployment of upgrades to information technology (IT) systems and existing communications arrangements used by emergency service organisations. While not a direct function or responsibility of the Emergency Call Person, the ability of the States and Territory to strategically upgrade and refresh existing IT mechanisms in the emergency services environment was highlighted as a key component in ensuring the end-to-end robustness of the Triple Zero service.
31. There are expected to be significant funding challenges associated with ensuring consistency in the implementation of next generation technologies across the Triple Zero framework. The ColoComm Group, LLC Report on the *Health of the US 9-1-1* identified that at least four different types of future costs may be required in connection with the move to a next generation system:
- capital expenditure involved in building a new system;
 - transitional costs—i.e., expenses involved in using the old system while the new system is phased in;
 - costs of network security and encryption requirements associated with a competitive, IP-based system; and
 - ongoing recurring costs of a next generation system, which will likely need to account for shorter lifespan of products than traditional network pieces.⁵⁷
32. Stakeholders also recognised possible technical enhancements would have broader implementation implications (i.e. video calls are 'data rich' and would require callers, the national operator, and emergency service organisations to have sufficient bandwidth and appropriate handsets/devices to handle such connections) and were also mindful of variable consumer preferences across different demographics. Stakeholders broadly considered any future adoption of new or innovative communicative technologies must be weighed against broader service and cost efficiency considerations that impact all stakeholders across the emergency response framework.

⁵⁴ WA Government submission, Page 2.

⁵⁵ ACE submission, Page 4.

⁵⁶ University of Melbourne, Victorian Spatial Council and APCO Australasia submission Pages 9-10.

⁵⁷ ColoComm Group, LLC: Dale Hatfield, Brad Bernthal and Phil Weiser, *Health of the US 9-1-1*, 2007, Page 72. See www.theindustry council.org/91A_Health_of_US_911%202_.pdf.

1.5 Discussion

33. There is significant scope for the potential application of new and innovative technologies to assist individuals, the broader Australian community, and emergency service organisations in managing responses to emergency situations. The capacity for technology to assist the Emergency Call Person needs to be considered against the core performance objectives demanded of the Emergency Call Person. These objectives translate into three core functions:
- receiving inbound emergency calls;
 - querying the location of a caller and the nature of the emergency; and
 - promptly dispatching calls to the appropriate emergency service organisation.
34. These core functions are underpinned by regulatory benchmarks (see Chapter Five). The technical robustness and resilience of the Triple Zero service is critical considering it must be available all day, every day and operate to a very high standard of responsiveness.
35. The first priority when considering the use of new technologies should be their capacity to assist the national operator in undertaking its core functions accurately and efficiently. While additional functionality can improve the interaction between the caller and the relevant emergency service, they should not undermine the core values and performance of the current Emergency Call Person – connecting the person making the call with the appropriate emergency service organisation as quickly as possible.
36. However, of the key functions performed by the Emergency Call Person, ‘querying the location of a caller’ is a core function that:
- to date has been heavily reliant on, and limited by, existing telecommunications-sourced data/information (e.g. location data sourced from the IPND or derived from the coverage of mobile towers); and
 - has the capacity to be significantly improved or enhanced through the adoption and/or deployment of new communication technologies.

Location based technologies

37. Any technological reforms to the Triple Zero service should give priority to further improving the ability to identify the location of mobile Triple Zero callers given the immediate benefits it will bring. Further, querying and/or accurately determining the location of a caller is a logical extension of existing endeavours (i.e. Push MoLI) to integrate location-based information into Triple Zero, and stakeholder responses to the review have indicated it would not be overly burdensome to incorporate into existing administrative processes. Location-based technologies can potentially deliver significant cost and operational efficiencies to the States and Territories as response resources can be more accurately deployed when necessary.
38. The introduction of Push MoLI has been a significant and welcome advancement. It has represented a significant investment by the mobile carriers, and the current national Triple Zero operator, and emergency service organisations in responding to community expectations by successfully coordinating and implementing a technological solution designed to improve the effectiveness of Triple Zero. However, Push MoLI has its limitations and discussions with industry stakeholders suggest improving the accuracy of Push MoLI would be a considerably costly exercise. In contrast, the introduction of coordinate-based location technology can rapidly enhance the effectiveness of emergency service organisation’s response efforts without always requiring significant investment (i.e. delivered via an app).

39. A greater utilisation of location technology is needed to ensure the Triple Zero service can keep pace with key consumer behaviour trends away from the fixed line telephony platform, which remains heavily reliant on IPND-sourced address data to locate callers. As coordinate based location functionality is universally available on all modern smartphone handsets, it is considered an ideal location-based technology for adoption within Triple Zero caller-to-operator framework. Satellite positioning technology itself is subject to further advancements and improvements⁵⁸ and in the future, the accuracy of this data may expand beyond latitude and longitude to include elevation data that is suitably accurate to assist emergency service organisations.
40. There are now multiple satellite navigation systems deployed (or being deployed) by the United States (GPS), Russia (GLONASS), European Union (Galileo), China (Beidou), Japan (QZSS) and India (IRNSS). These systems currently provide (or will in the coming years provide) reliable position, navigation and timing (PNT) information in real-time, which can be used for a wide range of applications. Global Navigation Satellite System (GNSS) receivers in mobile phones and private vehicles cater for low accuracy (metre-level) consumer applications. However, many industrial, scientific, professional and commercial applications, including mobile applications, depend on a high accuracy (centimetre-level) capability. Over the course of the next five years, centimetre accuracy is expected to become increasingly available as 'multi-GNSS' solutions are developed⁵⁹, utilising multiple satellite fleets simultaneously. By incorporating positioning capabilities into the Triple Zero system, emergency services will benefit from this enhancement of real-time high accuracy location data in the future by being able to very accurately pinpoint the location of the emergency caller using a mobile device.
41. Further, in a number of overseas jurisdictions, utilisation of location-based data has been technologically achievable, is consistent with public expectations, and reflects trends in technology take-up. For example, in the UK, three organisations (BT, EE and HTC) have jointly developed a system called Advanced Mobile Location (AML), which uses a number of technologies, including a pre-installed software tool on recent model HTC smartphones to obtain and automatically send handset coordinates when a user makes an emergency call.⁶⁰ AML does not rely directly on the operating system loaded on the phone, nor on the user installing a separate application. However, the downside of this approach is that further deployment is uncertain, as a number of international handset manufacturers would need to adopt this type of approach to ensure this functionality was more widely available, including in Australia.
42. New Zealand has also signalled its intent to pursue the integration of location based technologies within its national emergency call framework and is looking to develop its emergency response system so that location coordinates from mobile devices can be made available to emergency services organisations via a new smartphone application⁶¹. Industry and software developers have been invited to respond to a request for procurement, with successful entities to work collaboratively with the New Zealand Government to develop technical solutions for a new emergency response system with automated location based technical functionality. As this work progresses, the Department considers future bilateral consultations would be beneficial to ensure any operational and technological lessons learned can be shared.

⁵⁸ University of Melbourne, Victorian Spatial Council and APCO Australasia submission, Pages 12-13.

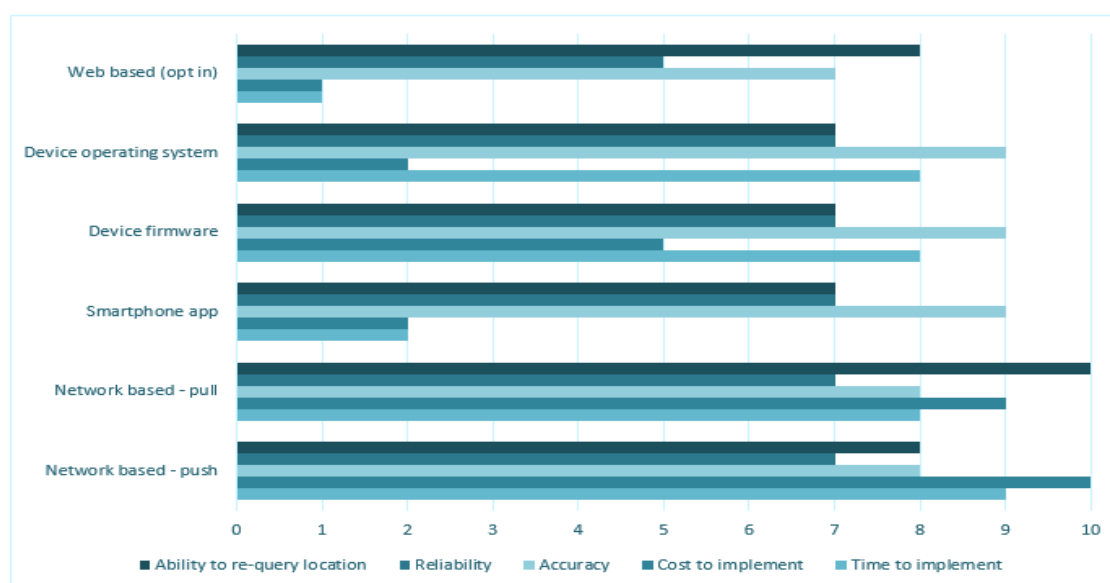
⁵⁹ See www.crcsi.com.au/search/SearchForm.

⁶⁰ See www.computerworlduk.com/news/mobile-wireless/3584623/new-emergency-service-location-system-pinpoints-mobile-callers-to-within-30m/.

⁶¹ See www.beehive.govt.nz/release/new-111-smartphone-app-be-developed.

43. Graph 4 below illustrates there are a range of implementation options available, as well as pros and cons, for integrating location coordinate functionality into Triple Zero, such as enabling mobile networks, handsets and/or operating systems and apps to automatically push location coordinates when an emergency call is made. These options vary in terms of the time and cost to implement and maintain the capability. An option that is already in operation in New Zealand is the MobileLocate system⁶², which has proven to be effective in locating emergency callers in some situations⁶³. This system enables location coordinates to be sent to emergency service organisations if a smartphone user seeking assistance consents to the disclosure of their location details by responding to instructions sent via SMS. MobileLocate is one such provider, although there are other providers that are offering similar systems. A number of emergency service organisations in Australia have undertaken reviews or trials of this type of technology.

Graph 4: Integrating location coordinates – implementation options



Explanatory text

Web-based (opt-in): A solution allowing Emergency Service Organisations to query handset location following user consent. Emergency Service Organisations could gain user consent using mix of SMS and smartphone browser technology.

Device operating system: Imbedded mobile phone operating system software that enables location coordinates to be pushed to the Emergency Call Person.

Device firmware: Imbedded mobile phone device firmware (pre-installed software) that pushes location coordinates to the Emergency Call Person (ie similar to AML/HTC model in the UK).

Smartphone app: Smartphone application with ability to push location coordinates to the Emergency Call Person, or to Emergency Service Organisations.

Network-based—pull: Network enhancement that allows Emergency Service Organisations to 'pull' location coordinates from a common carrier interface.

Network-based—push: Network enhancement that allows location coordinates to be 'pushed' to the Emergency Service Organisations by the Emergency Call Person.

⁶² See <http://mobilelocate.co.nz/>.

⁶³ See www.police.govt.nz/news/release/new-technology-praised-lost-tramper-being-found-king-country-forest.

44. A key aspect of successful further adoption of location technologies is expected to be the capacity to automatically push accurate (coordinate based) location information in emergency situations rather than rely on users to report their address or latitude and longitude information orally to an operator. Many stakeholders have argued that handset location coordinates need to be automatically captured with emergency calls from mobiles and 'pushed' to the national operator (and then onto emergency service organisations). The Department broadly agrees and considers the automated transfer of positioning data wherever possible presents significant advantages. Further, in regard to the 'push' capability, consideration should be given to having positioning data periodically updated during a call (e.g. while initial location information at the start of a call is valuable, the nature of an emergency may mean a caller does not remain at their original location because they are lost, have to move to avoid danger, or are in transit).
45. In terms of privacy, use of location and positioning technology may raise concerns from some consumers, but Australia's current privacy regime⁶⁴ has existing exemptions that allow for the disclosure of personal information in circumstances where the health or safety of an individual is at risk. Importantly, the national operator already uses and discloses information drawn from the IPND to identify the address of callers from fixed lines which is then provided to emergency service organisations, as well as general location information obtained via Push MoLI.
46. The Department understands that current technical standards for mobile networks do not natively support location or positioning technology, which means telecommunications carriers have very little ability to identify the position of a handset without investing in separate technology. However, this may change over time. The mobile industry is already starting to discuss standards for 5G mobile technology. These discussions are still at an early stage with any consensus on standards unlikely to be settled in the short to medium term. However, location and positioning is already being considered and discussed, noting there are both commercial and public interest applications (i.e. for emergency response). For example, the Next Generation Mobile Networks Alliance (an association of mobile operators, vendors, manufacturers and research institutes) has stated that *"Contextual information is important for delivering instant and personalised services. Location is one of the most important contextual attributes. In 5G, network based positioning in three-dimensional space should be supported, with accuracy from 10m to <1 m at 80% of occasions, and better than 1m for indoor deployments."*⁶⁵
47. Smartphone apps to capture and disseminate location-based data (and other vital information) during and immediately after an emergency event are now well known and readily available⁶⁶. The benefits of apps were widely recognised within numerous stakeholder submissions that highlighted various individual app development activities, research and/or other related commercial ventures⁶⁷. However, there are also some downsides that were noted. These include: the capacity for the user to use the app in an emergency situation (user may be incapacitated); location based services could be disabled on individual handsets; reliance on device battery life; reliance on network connectivity; and complications from outdated/competing smartphone operating systems and/or app version upgrades.

⁶⁴ The *Privacy Act 1988* ([Australian Privacy Principle 6](#)), and Part 13 of the *Telecommunications Act 1997* permits use and disclosure of personal information if there is a 'threat to a person's life or health'.

⁶⁵ Next Generation Mobile Networks Ltd, 5G White Paper, page 31. See www.ngmn.org/fileadmin/ngmn/content/images/news/ngmn_news/NGMN_5G_White_Paper_V1_0.pdf.

⁶⁶ See <http://prepared-housewives.com/emergency-apps-that-might-just-save-your-life/>.

⁶⁷ University of Melbourne, Victorian Spatial Council and APCO submission; Design One Graphic Pty Ltd submission; Optus submission; Vodafone submission. See also http://people.csiro.au/~media/People%20Finder/Z/A/Andrew-Zhang/AutoSOS_white%20paper_final.ashx.

48. The use of apps within Triple Zero has been widely endorsed given their accessibility across numerous technology devices and their capacity to be tailored to the characteristics and functionality of the individual device. For example, an application on a smartwatch could potentially provide voice call functionality, and send key sensory data (heart rate), and positioning data to Triple Zero in real time. In particular, apps:
- can be developed and implemented in a much shorter timeframe than more complex network or handset based solutions;
 - present significant cost efficiencies in comparison to network-based solutions;
 - offer significant scope for future scalability and increased functionality; and
 - can be utilised for promotional and/or awareness raising purposes.
49. The potential future uses for apps are also compelling given their ability to support additional user data, which could be held securely on a smartphone or device, but passed on automatically in an emergency – such as allergies, family emergency contacts and so forth. In this context, the Department’s research indicated consumers would be willing to automatically share identity information (77 per cent), next of kin information (79 per cent) and medical device information (76 per cent) in emergency events, although respondents were less supportive of their medical history being made automatically available (see Graph 1).⁶⁸
50. The Emergency+ app currently provides a readily available tool that can provide address and latitude/longitude coordinates on screen to the device user for them to verbally relay to the Triple Zero operator when required. Funding and development of the Emergency+ app has been supported by the Commonwealth Government and is endorsed by emergency service organisations.
51. However, the lack of coordination at a national level for the Emergency+ app has resulted in promotional and awareness raising activities associated with the app generally being conducted on a case by case basis throughout the States and Territories. Further, there is currently no national strategic plan or additional funding immediately available for further development or enhancement of the Emergency+ app or other similar applications.

Access to geocoded address data

52. While the ability to have more accurate location details available to emergency service organisations is important, consistent, authoritative and robust geocoded address data will also assist those organisations in managing individual incidents or larger scale events.
53. Emergency services currently rely on address data provided by the individual State or Territory government in their own jurisdiction to physically locate emergency callers. This operates well in most cases, however there are inconsistencies, timeliness and accuracy issues in the way each jurisdiction collects and maintains their address data. This can lead to problems when assistance needs to be provided in complex address sites (such as caravan parks or multi-story dwellings), regional areas, newly-built areas, and in cross-border situations, for instance fire, flood and disaster management.
54. Free and open access to a nationally consistent, high quality authoritative geocoded address data set would largely eliminate such problems, and would also make it easier to develop new business applications for this data for use in the Triple Zero system. The Australian Government is currently exploring ways to achieve this outcome by working with the States and Territories on improving the timeliness, accuracy and completeness of their data and to increase the machine-

⁶⁸ Triple Zero Review Research conducted by Australia Online Research Pty Ltd, September 2014.

to-machine capabilities of their delivery infrastructures. Ultimately it is envisaged that the national geocoded address data set will be the single point of truth for all users of addressing data in Australia, and this will significantly improve the delivery of Triple Zero Services.

SMS

55. The potential adoption of SMS into Triple Zero was widely discussed by stakeholders with many advocating its integration into the service. Introducing SMS into Triple Zero would offer obvious benefits to the deaf and hearing impaired sectors of the community, and has the potential to be useful in various emergency situations where individuals would prefer and/or need to communicate in an inconspicuous or discreet manner. Unlike some other technologies (i.e. video calling), usage rates of SMS demonstrates a high degree of SMS literacy and understanding within the Australian community and arguably helps to diminish the risk of SMS being inappropriately used within an emergency context.
56. However, stakeholders recognise concerns that the potential benefits of SMS and various other proposed contact methods do not satisfy crucial standards to justify immediate endorsement and adoption into the Triple Zero service at this time. Some of the issues identified with SMS and a number of other alternative technologies include:
- challenges of accurately locating users via non-voice contact methods;
 - technical issues in providing appropriate network prioritisation for non-voice contact (although mobile carriers have indicated it could be possible to develop and implement a dedicated network solution that would address some of the limitations normally associated with the 'store and forward' nature of SMS);
 - efficiency/timeliness of alternative communication processes (i.e. potentially lengthier and less direct interactions required compared to voice);
 - reliability – subject to user or environmental factors during an emergency;
 - network and emergency service readiness (capacity of carriers, carriage service providers, the national operator, and emergency service organisations to provide end-to-end solutions);
 - cost implications and the ability of all emergency service organisations to commit funding and resources for consequential system and operational changes to support consistent national introduction and maintenance of alternative contact methods;
 - inconsistent technology formats/standards (i.e. video calling);
 - response enhancement value (i.e. SMS or video contact may be highly beneficial in specific scenarios, but may not add value or could be counterproductive in other cases);
 - potential resource implications during natural disasters or other large scale incidents (i.e. if there are lengthy call delays consumers may also seek to make contact via SMS, potentially tying up staff and resources dealing with duplicate requests for assistance);
 - increased risk of hoax/malicious contact; and
 - issues associated with the transmittal, analysis and archiving/storage of situational data (i.e. images or video).
57. In addition, new technologies are continually emerging and evolving. This presents significant challenges in terms of their integration into the Triple Zero platform given the need for reliability, stability and long term investments in infrastructure and skilled operators. However, SMS, in particular, is now a very mature platform and probably represents the most viable option at present in terms of alternative communications methods.

58. The implementation and associated benefits of certain technologies in many international jurisdictions remains at an early stage with implementation proving to be challenging. In the US, the introduction of SMS-to-911 has to date seen only a very small proportion of individual states and counties having the ability to receive and process emergency SMS, causing operational inconsistencies and potential consumer confusion. There also appear to be discrepancies between how Internet-based text messaging services interact from a regulatory perspective with regular SMS that is routed through telecommunications networks, which is causing some stakeholder concerns around liability.⁶⁹
59. In contrast to improvements in location/positioning technologies, reforms around introducing SMS capability into emergency call operations in other international jurisdictions have reported 'teething' problems during implementation⁷⁰ and remain subject to key network/infrastructure limitations (i.e. no network prioritisation for emergency SMS), readiness of emergency service organisations and consumer technology preferences. The Department's consumer research conducted in 2014 also found of those surveyed, there was almost universal support (93 per cent) for sharing precise location coordinates with Triple Zero, but with just over half (53 per cent) interested in using SMS to contact Triple Zero if it was available.⁷¹
60. Multiple submissions⁷² viewed the further adoption of location-based technologies as 'critical' or 'essential', but considered technologies that fundamentally serve as additional channels of communication (i.e. SMS, video calling) should be considered as supplementary and desirable only. Although some submissions argued that SMS/text access to emergency services should be considered a 'critical' technology for the deaf or hearing impaired⁷³, an SMS relay service is already available as part of the National Relay Service. Despite it not formally being a designated emergency call service, SMS relay accounts for about half of all calls for emergency assistance to the National Relay Service.
61. The development of agreed technology-specific principles and criteria to guide the consistent integration of technologies is needed. Not only will this assist emergency service organisations in their strategic planning and technology refresh cycles, but it will also help assist and provide certainty to innovators (i.e. app developers, commercial ventures etc.) that make and develop products and/or solutions for potential use and adoption within the Triple Zero environment.

Changing technological environment

62. In discussions held as part of this review, Australia's three mobile carriers, Optus, Telstra and Vodafone have noted that the current rollout of 4G mobile network capacity and the continued rollout of the national broadband network will see the Australian telecommunications industry transition to a largely IP network based environment over the next five years.
63. The transition to an IP-based environment presents a step-change in Australia's underpinning communications networks and Triple Zero stakeholders will need to implement an informed and coordinated national approach to technology adoption that ensures service continuity and reliability. As domestic and international carriers continue their transition to IP-based networks to replace circuit switched networks, existing legacy systems, regulations and policies that were founded, or rely, on switched telephone networks will need to be considered and potentially

⁶⁹ See <http://recode.net/2014/08/08/feds-push-for-more-text-to-911-services-but-its-still-safer-to-just-call/>.

⁷⁰ See www.cnet.com/news/text-to-911-is-here-but-it-isnt-everything-you-might-think/.

⁷¹ Triple Zero Review Research by Australia Online Research Pty Ltd, September 2014.

⁷² NT Government submission, Page 3; NSW Government, Page 8.

⁷³ ACCAN's submission supports the use of SMS by the hearing impaired via the NRS, but does not support SMS as a stand-alone method for requesting assistance, Page 4.

refreshed. As noted in Telstra's submission, "...the current ECS dedicated access networks only transport voice calls over the PSTN and...infrastructure would require upgrading to support new technologies, such as high quality video calling".⁷⁴

64. While Telstra's existing Emergency Call Person systems are capable of dealing with emergency voice calls delivered over both traditional and IP based communication networks, it will be necessary and desirable to upgrade and migrate Emergency Call Person systems to IP based solutions in future, noting the ability to continue to support circuit based systems will decrease over time, and the increased flexibility that IP based solutions can bring. Such a change will need to be carefully managed by both the Emergency Call Person and emergency service organisations to ensure appropriate funding is available and new systems are tested and introduced in a coordinated way.

1.6 Findings

65. **Integrating location-based technologies is widely supported and endorsed; the adoption of SMS and other alternative contact methods into Triple Zero involves more significant operational risks at this point in time.** There is strong support for the national operator of the Triple Zero service and other stakeholders to continue to support and enhance more accurate location-based information, namely handset position coordinates within the emergency call service. However, the integration of additional technologies and alternative communication methods, including SMS, requires further consideration to ensure that current Triple Zero service standards can be guaranteed. In particular, they would involve more complex operational changes as well as a significant investment in awareness activities to inform the community of how and when to most appropriately use alternative contact methods.
66. **Smartphone apps are a readily accessible technology that can be better utilised within the Triple Zero environment.** The integration of location-based technology should initially focus on smartphone app technologies, with network-based options considered, if required, after the IP network transition has been completed. The Emergency+ app is considered an effective initial step in introducing enhanced location-based technology and functionality into Triple Zero. The Australian Government should work with other stakeholders to introduce enhancements to the app enabling location-based coordinates to be automatically 'pushed' from a smartphone to the Emergency Call Person and state/territory emergency service organisations. However any costs associated with system upgrades for individual emergency service organisations will remain the responsibility of the State and Territories.
67. **While there are some immediate technical, operational and funding issues to be resolved before new contact methods are introduced, Triple Zero should continue to seek to technologically diversify and respond to consumer trends in technology use over time.** Voice calls will remain the central contact method for Triple Zero for the foreseeable future. However there is a clear expectation from consumers that the Triple Zero service should technologically diversify. Consumers expect Triple Zero to be adaptable and operationally capable of utilising future technological innovations beyond the current voice only service arrangement – particularly from a caller-to-operator standpoint.

⁷⁴ Telstra submission, Page 18.

68. **The establishment of an agreed set of technology criteria and principles will maximise the scope for the timely, coordinated and consistent adoption of technology and support key strategic objectives for Triple Zero.** To avoid inconsistencies and fragmented technological take-up across the entire emergency service response framework, assessing the merits of new technologies against an agreed set of criteria and technology principles should occur. As the Australian telecommunications market continues its transition to an IP-based environment, monitoring and assessing technology directions against such industry developments is vital.
69. **Coordinated and centralised awareness raising activities are required to support effective consumer usage and take-up of any new technologies.** While alternative contact methods may improve the overall service, they may not be able to deliver against current very high community expectations for reliability and speed. Critically, further consultation should test the appetite amongst consumers for such trade-offs. As technology adoption and take-up is different across demographic groupings, any new technologies introduced to Triple Zero over time should be backed by a strong understanding within the community in relation to the benefits and appropriate use of certain technologies in life threatening situations.

1.7 Recommendations

Recommendation 1.1

The inclusion of capability to reliably receive and automatically forward more accurate location-based data (coordinates) from mobile emergency callers to Emergency Service Organisations should be a priority in the development of the Triple Zero service.

- > The Australian Government should work with stakeholders to develop necessary standards and take a leadership role in progressing enhancements to the Emergency+ app and other necessary system changes to provide additional functionality so that detailed location coordinates can be automatically disclosed to Triple Zero during an emergency call.
- > In parallel, the Emergency Call Person and State and Territory governments should also commence planning and implementing changes as a priority to support coordinated based positioning data being received and effectively disseminated by Emergency Service Organisations.

Recommendation 1.2

A set of technology principles and criteria to guide a nationally agreed, and consistent, integration of future technologies across the emergency service framework should be developed.

This may include, but are not limited to, the following:

- > cost/benefits
- > risks
- > functionality
- > user awareness and take up / likely longevity of technology
- > network and stakeholder readiness / capability
- > international standards / specifications.

Recommendation 1.3

Stakeholders involved with Triple Zero should undertake consultation to test consumer willingness to accept different service or performance characteristics in order to enhance and increase the use of new technologies within Triple Zero.

It will be important to make clear to consumers the performance limitations of new or alternative technologies in terms of providing an emergency contact service, noting that they are likely to supplement rather than replace voice services.

2. Chapter Two: Governance and Coordination

This chapter discusses the current governance and coordination arrangements that relate to the national operator and the broader Triple Zero service. It also examines administrative, governance and coordination arrangements in other jurisdictions, highlights stakeholder views and suggestions, and canvasses potential options for improving the national governance and coordination arrangements of Triple Zero.

2.1 Background

70. This review provides an important opportunity to examine the efficiency and effectiveness of existing oversight and coordination arrangements to ensure Triple Zero can continue to deliver a world class emergency service into the future.
71. There is no single body overseeing or coordinating the entire end-to-end delivery of the Triple Zero service. In practical terms, the Triple Zero service comprises a series of integrated communications activities and supporting systems and infrastructure delivered collectively by the Australian Government, State/Territory Governments and the telecommunications industry.
72. At the heart of the arrangements is the Emergency Call Person which provides the first point of contact for the public. The Australian Government has core responsibility for policy and regulation of this part of the Triple Zero service, under contractual arrangements with Telstra, with the Emergency Call Person receiving funding towards its net annual operating costs through Australian Government funding and the Telecommunications Industry Levy (TIL).
73. The States and Territories have primary responsibility once an emergency call is transferred by the Emergency Call Person to emergency service organisations (police, fire or ambulance service) in the relevant State or Territory, or to Victoria's Emergency Services Telecommunications Authority (ESTA).⁷⁵ Within each State and Territory, emergency management, health, public safety and policing responsibilities are typically shared between several ministers and multiple agencies.
74. The Department provides policy advice to the Minister for Communications in relation to the Commonwealth's regulatory framework for the Emergency Call Service. A number of Government departments and agencies also have responsibilities or interests in relation to delivery of the Triple Zero service, including the ACMA and the Attorney-General's Department.
75. The Telecommunications Universal Service Management Agency (TUSMA) was previously responsible for administering the contract with the Emergency Call Person, but from 1 July 2015, TUSMA was abolished, and its functions and contract management responsibilities were transferred to the Department of Communications.
76. From an industry perspective, telecommunications carriers and carriage service providers (or CSPs) provide the necessary infrastructure to support the Emergency Call Service and the delivery of relevant Triple Zero communications to the Emergency Call Person. The key responsibilities and obligations on industry relating to Triple Zero are set out in the *Telecommunications (Emergency Call Service) Determination 2009*⁷⁶ (the Determination), which is regulated and monitored by the ACMA. The Determination imposes industry wide requirements on carriers and carriage service providers and places specific requirements on Emergency Call Persons, including performance

⁷⁵ ESTA provides Victoria's 24 hour emergency call-taking and dispatch services for police, fire, ambulance and SES.

⁷⁶ See www.acma.gov.au/theACMA/emergency-call-services--what-is-the-acma-s-role.

standards and requirements relating to the prioritisation of emergency calls to emergency service organisations. ACMA also oversees the registration of codes, standards and guidelines developed by industry under section 136, Part 6 of the *Telecommunications Act 1997*.⁷⁷

77. Communications Alliance (CA) is the primary telecommunications industry body with its membership comprised of service providers, vendors, consultants, suppliers and consumer groups and generally accepts an overall representative coordination role for industry standards and codes⁷⁸. CA has established a number of industry guidelines relevant to Triple Zero.

Council of Australian Governments (COAG)

78. The Council of Australian Governments (COAG) Law, Crime and Community Safety Council (LCCSC) is the main ministerial council assisting COAG on emergency management issues.⁷⁹ The Australia-New Zealand Emergency Management Committee (ANZEMC) is the senior officials committee that reports to the LCCSC. ANZEMC provides strategic leadership on nationwide emergency management policy and supporting related capability and capacity development activities.⁸⁰
79. The Attorney-General's Department has federal responsibility for overarching national emergency management issues, which involves developing policy and plans to respond to, and minimise, the effects of natural disasters, and as such, has a general interest in the Triple Zero service.⁸¹ The Attorney-General's Department also administers the National Emergency Management Projects (NEMP) program which funds emergency management projects of national significance.⁸² The Secretary of the Attorney-General's Department also co-chairs the ANZEMC reporting to the LCCSC with a rotating State and Territory representative.⁸³

Existing Working Groups

80. Over time, a small number of working groups (formal and informal) have also been established that bring together key stakeholders to collaborate on a range of issues related to, or impacting on, Triple Zero. Key working groups currently include the Emergency Call Service Advisory Committee (ECSAC), the Triple Zero Awareness Work Group (TZAAG) and the National Emergency Communications Working Group – Australia and New Zealand (NECWG-A/NZ).

⁷⁷ See www.acma.gov.au/theACMA/Library/Corporate-library/Forms-and-registers/register-of-telecommunications-industry-codes-and-standards.

⁷⁸ See www.commsalliance.com.au/about-us/overview.

⁷⁹ See www.lccsc.gov.au/scli/lccsc_about_us.html.

⁸⁰ See www.directory.gov.au/directory?ea01f99120.&organizationalUnit&f5337aee-8f5e-4a76-a913-428104150b5d.

⁸¹ See www.ag.gov.au/emergencymanagement/Pages/default.aspx.

⁸² See www.em.gov.au/nemp.

⁸³ See www.directory.gov.au/directory?ea01f99120.&organizationalUnit&f5337aee-8f5e-4a76-a913-428104150b5d.

81. Section 58 of the Australian Communications and Media Authority Act 2005 enables the ACMA to 'establish advisory committees to assist it in performing any of its functions.' ECSAC is one such advisory committee which provides advice to the ACMA on a range of operational, performance and priority matters relating to the regulation of the Emergency Call Service. The terms of reference⁸⁴ for ECSAC reflect ACMA's primary statutory functions in relation to regulation of the delivery of the Emergency Call Service and includes members drawn from government, consumer groups, emergency service organisations, carriers, carriage service providers and the Emergency Call Person.⁸⁵
82. TZAWG was established by endorsement of ECSAC and operates as a working group under both the ECSAC and NECWG-A/NZ to further the aims of these bodies in raising awareness of the Emergency Call Service. TZAWG develops and administers programs and activities to enhance community awareness of Triple Zero⁸⁶ with membership consisting of representatives from emergency service organisations, Government agencies and the telecommunications industry.⁸⁷
83. NECWG-A/NZ is a cooperative advocacy group aimed at examining operational issues relating to emergency management in both Australia and New Zealand and ensure that relevant issues are considered and discussed within both a national and Australasian framework. Among other things, NECWG-A/NZ seeks to advocate improvements or change to the Emergency Call Service in relation to effective operation of Triple Zero between the Emergency Call Person and emergency service organisations. Membership includes representatives from emergency service organisations, public safety agencies, the Emergency Call Person and the telecommunications industry.⁸⁸ This group does not have any specific decision making role, powers or formal reporting lines.
84. An ongoing challenge for all existing working groups has been to adequately balance key policy interests against operational realities while ensuring meaningful outcomes are achieved. All three working groups have involvement from the telecommunications industry, the Emergency Call Person, the Commonwealth Government (policy and regulatory) and individual emergency service organisations. There is less consistency in how consumer interests or other interests (e.g. innovators or vendors) can be involved. Importantly, membership and participation within these groups vary. Key decisions relating to operational, funding, or policy matters often require individual members to seek additional senior level approval or endorsement, and implementation of changes tends to rely on a relatively top down approach, often reliant on the Commonwealth adjusting regulatory settings, and those regulatory changes flowing through to action taken sequentially by the telecommunications industry, the national operator and finally individual state/territory jurisdictions. An approximate outline of the current arrangements appears below.

⁸⁴ See www.acma.gov.au/Industry/Telco/Carriers-and-service-providers/Emergency-call-service/emergency-call-service-advisory-committee.

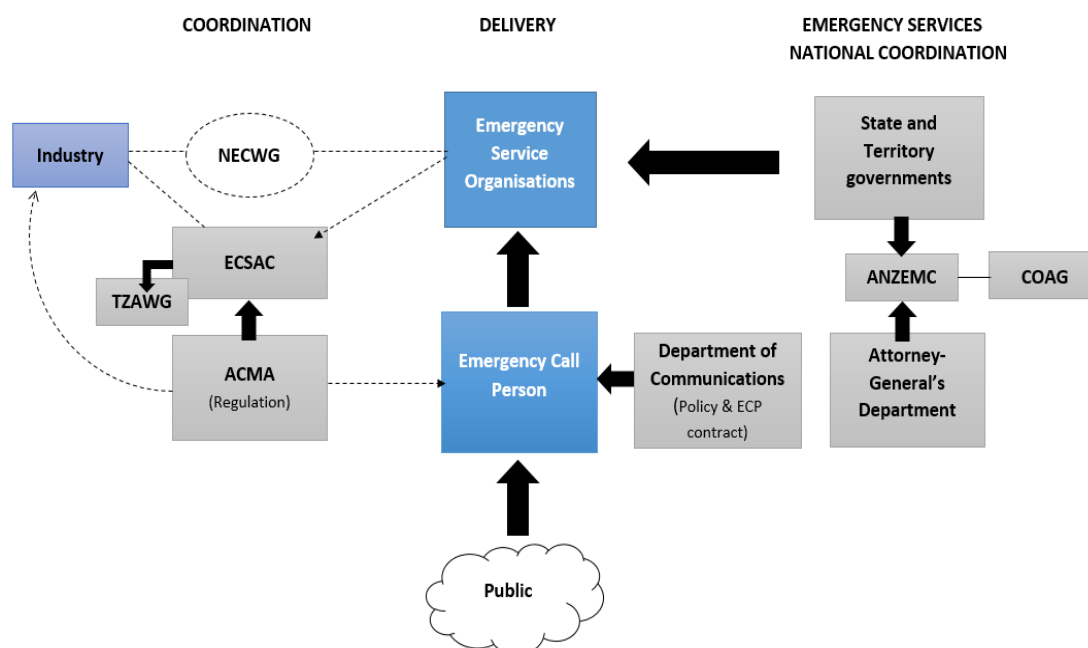
⁸⁵ See www.acma.gov.au/Industry/Telco/Carriers-and-service-providers/Emergency-call-service/emergency-call-service-advisory-committee.

⁸⁶ Triple Zero Awareness Work Group Terms of Reference.

⁸⁷ TZAWG submission, Page 1.

⁸⁸ NECWG-A/NZ submission, Page 1.

Figure 2: Outline of existing Triple Zero governance and coordination arrangements



2.2 Other jurisdictions

85. It is worth examining the structures of various national emergency call frameworks that are in place overseas, including any reforms these jurisdictions have implemented, or are in the process of implementing.

2.2.1 Canada

86. Similar to Australia, Canada's emergency 9-1-1 service is a collaborative arrangement involving federal and provincial and municipal governments, advisory boards and associations and standards making bodies.⁸⁹ The Canadian Radio-television and Telecommunications Commission (CRTC) sets national policies in relation to 9-1-1 telecommunications requirements and functionality. The CRTC regulates the telecommunications carriers who supply the network to direct and connect 9-1-1 calls to Public Safety Answering Point (or PSAP) dispatch facilities.⁹⁰ Emergency responders, Public Safety Answering Points and dispatch facilities fall within the jurisdiction of multiple provincial, territorial and municipal governments and authorities.⁹¹
87. Canada has also established the CRTC Interconnections Steering Committee to assist in developing information, procedures and guidelines in respect to CRTC's regulatory activities.⁹² The committee has a number of working groups reporting to it, one of which is the Emergency Services Working Group, which considers technical and operational implementation of 9-1-1 services.⁹³

⁸⁹ Commissioner Timothy Denton, A Report on Matters Related to Emergency 9-1-1 Services, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iiie>, 5 July 2013 (prepared for the Canadian Radio-television and Telecommunications Commission), Page 14.

⁹⁰ See www.crtc.gc.ca/eng/telephone8.htm.

⁹¹ See www.crtc.gc.ca/eng/archive/2014/2014-342.htm.

⁹² See www.crtc.gc.ca/eng/cisc-cdci.htm.

⁹³ Commissioner Timothy Denton, A Report on Matters Related to Emergency 9-1-1 Services, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iiie>, 5 July 2013 (prepared for the Canadian Radio-television and Telecommunications Commission), Page 16.

88. The CRTC commissioned a report in 2012 on 'Matters Related to Emergency 9-1-1' Services. The report found the existing governance structure for 9-1-1 in Canada to be fragmented and inconsistent due to there being no national single authority responsible for 9-1-1.⁹⁴ The review specifically noted, *"the 9-1-1 system is working because of the good faith of its participants, but not because we have the appropriate institutions of governance"*.⁹⁵ The report recommended the establishment of a multi-stakeholder national policy forum for 9-1-1 in order to overcome existing silos, engage with all relevant stakeholders and retain appropriate expertise and authority controls.⁹⁶

2.2.2 New Zealand

89. New Zealand's emergency call service (1-1-1) is overseen by two primary bodies which oversee and advise government on the 1-1-1 service. The Ministry of Economic Development provides policy advice to the New Zealand Government on emergency call services, and is supported by the Emergency Services Calling Advisory Board. The Advisory Board comprises of representatives from emergency service providers (fire, ambulance and police), industry, and government agencies and it is responsible for overall coordination between government and industry parties. New Zealand's Telecommunications Carrier's Forum takes the lead role for its members on regulatory, technical and policy issues within the telecommunications industry and the voluntary Emergency Calling Codes which outline minimum 1-1-1 emergency call requirements (service performance and customer information standards via voice telephony services).⁹⁷ New Zealand Police take the lead role on operational matters relating to 1-1-1 services.⁹⁸
90. In February 2012, the Minister for Communications and Information Technology commenced a review of New Zealand's 1-1-1 system. The review examined three key components: the governance framework; the service delivery model and the potential impact of advancements in device and network technology in relation to the 1-1-1 service.⁹⁹ The outcomes of the review were reported in 2013 and found the current 1-1-1 service to be working well, but highlighted where improvements could be made to existing governance arrangements to ensure better role clarity, stronger lines of accountability, and additional resources to progress policy work.¹⁰⁰ The review endorsed a number of recommendations including the development of overarching policy objectives and updated terms of reference to guide the future development of the 1-1-1 service in New Zealand. The report also recommended investigating the impact on the 1-1-1 system of

⁹⁴ Commissioner Timothy Denton, *A Report on Matters Related to Emergency 9-1-1 Services*, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iie>, 5 July 2013 (prepared for the Canadian Radio-television and Telecommunications Commission), Pages 4 – 6.

⁹⁵ Commissioner Timothy Denton, *A Report on Matters Related to Emergency 9-1-1 Services*, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iie>, 5 July 2013 (prepared for the Canadian Radio-television and Telecommunications Commission), Page 6.

⁹⁶ Commissioner Timothy Denton, *A Report on Matters Related to Emergency 9-1-1 Services*, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iie>, 5 July 2013 (prepared for the Canadian Radio-television and Telecommunications Commission), Pages 52 – 56.

⁹⁷ See www.tcf.org.nz/content/a21f526e-5f82-41fa-9aa8-4dd8538b6b7d.html

⁹⁸ See www.med.govt.nz/sectors-industries/technology-communication/pdf-docs-library/communications/emergency-call-services/111-review/Discussion%20paper-Emergency%20services%20calling%20review.pdf.

⁹⁹ The scope of the review covered only the 111 calling process, from the caller dialling 111 to the handover to the appropriate emergency service providers.

¹⁰⁰ See www.med.govt.nz/sectors-industries/technology-communication/communications/emergency-call-services/111-review.

increasing use of Voice over Internet Protocol (VoIP) devices and a consumer shift away from fixed line phones and towards mobile devices.¹⁰¹

2.2.3 United Kingdom

91. The United Kingdom (UK) emergency call delivery model and framework differs from Australia in that communications providers are responsible for providing their own emergency call person functionality, or contracting a third party to do so. The UK's telecommunications industry regulatory and competition authority, Ofcom, has responsibility for setting emergency call handling performance requirements and relevant national guidelines.¹⁰² Ofcom oversees key obligations on industry providers that, among other things, ensures end-users can access emergency organisations using the national emergency call number 9-9-9.¹⁰³
92. The UK is also part of the European Emergency Number Association (EENA), a non-profit non-government organisation established to promote high quality emergency services reached by the number 1-1-2 available throughout the European Union. EENA serves as a forum for emergency services, public authorities, decision makers, researchers, associations and solution providers with an aim to improving emergency response based on best practices and experiences from different countries. EENA's membership includes over 75 European countries with representatives from solution providers, international organisations, emergency services representatives, researchers and members of the European Parliament.¹⁰⁴

2.2.4 United States

93. The FCC has broad regulatory responsibility over the United States' national emergency call number, 9-1-1, which is provisioned by commercial service providers and subject to FCC jurisdiction. However, unlike Australia's centralised delivery model characterised by a national operator, emergency calls in the US are handled by Public Safety Answering Points within each state.¹⁰⁵ The FCC's Public Safety and Homeland Security Bureau (PSHSB) is responsible for developing and administering policies relating to public safety communications issues, including the 9-1-1 service.¹⁰⁶ The Communications Security, Reliability and Interoperability Council also provides recommendations to the FCC on issues relating to 9-1-1¹⁰⁷ as appropriate.
94. A broad range of stakeholders contribute to 9-1-1 emergency management processes. Some of these include:
 - the Department of Homeland Security;
 - Office of Emergency Communications, which manages the SAFECOM program (improving multi-jurisdictional and intergovernmental communications interoperability)¹⁰⁸ and which developed the National Emergency Coordination Plan (a national strategic plan for emergency communications, including Next Generation 9-1-1)¹⁰⁹;

¹⁰¹ See www.beehive.govt.nz/release/technical-review-111-service-completed.

¹⁰² See www.ofcom.org.uk/files/2012/03/Programme-of-Work-2012-13.pdf.

¹⁰³ See <http://stakeholders.ofcom.org.uk/consultations/emergency-call-handling/statement/>.

¹⁰⁴ See www.eena.org.

¹⁰⁵ See *Chapter Four: Delivery Model*.

¹⁰⁶ Commissioner Timothy Denton, A Report on Matters Related to Emergency 9-1-1 Services, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iie>, 5 July 2013 (prepared for the Canadian Radio-television and Telecommunications Commission), Page 19.

¹⁰⁷ See www.fcc.gov/encyclopedia/communications-security-reliability-and-interoperability-council.

¹⁰⁸ See www.dhs.gov/safecom-program.

¹⁰⁹ See www.dhs.gov/publication/2014-national-emergency-communications-plan.

- the Department of Transportation, which hosts the National 911 Program (Federal leadership and coordination in supporting and promoting optimal 911 services)¹¹⁰;
 - the National Association of State 911 Administrators representing US states in 911 matters¹¹¹; and
 - the National Emergency Number Association (or NENA) which promotes the technological advancement, availability and implementation of 9-1-1.¹¹²
95. In 2011, the FCC announced a 'Next Generation 9-1-1 (NG911) five-step action plan' for accelerating NG911 deployment. The plan recognised that because there was no single overarching entity, the FCC should commence work with *"state 911 authorities, other Federal agencies, and other governing entities to provide technical expertise and develop a coordinated approach to NG911 governance"*¹¹³.

2.3 Stakeholder views (submissions and consultations)

96. The majority of submissions to the Triple Zero review discussion paper directly or indirectly touched on Triple Zero's coordination arrangements – often referred to as issues of 'governance'. While not all submissions were prescriptive in detailing a new framework, submissions collectively suggested the following key elements should be considered, and ideally characterise, any proposed reforms:
- establishment of a new overarching multi-jurisdictional coordination body to drive consistent national strategic directions, including responsibility for implementation and establishing consensus on technology principles and objectives to support a high quality Triple Zero service both now and into the future;
 - recognition that effective Triple Zero coordination arrangements must start at the Federal and State and Territory level while acknowledging that funding comes from all stakeholders;
 - ensuring Triple Zero's coordination body has membership with sufficient authority and expertise to address ongoing operational issues and to provide high quality input and advice on strategic issues for consideration by the Minister for Communications (particularly where there are broader funding or implementation issues which will need co-ordinated action by all Australian governments);
 - ensuring a balanced and appropriate representation from key stakeholders, including scope for involvement by emergency service organisations, policy makers, the telecommunications industry, service providers and consumer representatives;
 - establishment of clear lines of reporting and decision making to ensure confidence, transparency and accountability in Triple Zero's decision making processes and actions;
 - ensuring the coordination body can take an 'end-to-end' view of the Triple Zero service, including consideration of emergency service organisation arrangements and the broader emergency service environment;
 - ensuring the coordination body is flexible, responsive and positioned to consider the changing technology environment and associated community expectations; and
 - ensuring the coordination body is able to consider international developments and apply relevant experience and standards to the Triple Zero service as necessary.

¹¹⁰ See www.911.gov/about.html.

¹¹¹ See <http://nasna911.org/>.

¹¹² See www.nena.org/?Mission.

¹¹³ See www.fcc.gov/document/fact-sheet-five-step-action-plan-improve-deployment-next-generation-9-1-1-ng911.

97. Submitters recognise the current Triple Zero coordination arrangements rely heavily on a variety of formal and informal arrangements between the Commonwealth, State and Territory governments (including individual emergency service organisations), and the telecommunications industry to ensure the alignment of policy, funding, technical, regulatory and operational matters.
98. NECWG-A/NZ's NG000 Strategy argues that the current Emergency Call Service environment lacks a multi-jurisdictional authority that provides "*on-going governance to the operating capability - ensuring a trusted system and service excellence*"¹¹⁴. It considers the establishment of a multi-jurisdictional body will drive consistency across States and Territories in the deployment and configuration of next generation technologies.¹¹⁵
99. The NG000 Strategy's views on the Triple Zero governance framework was also supported by the Victorian, Queensland, and New South Wales Government and CA/AMTA submissions.¹¹⁶ Other submissions were not dissimilar in their approach to revised governance arrangements. Telstra's submission proposed the establishment of a centralised governance framework between the national Triple Zero (000) operator, government, emergency service organisations and industry stakeholders in order to determine fundamental priorities of the Triple Zero Service.¹¹⁷ This approach was echoed by the South Australia Government's submission which recommended establishing an overarching governance structure (with representatives from the Commonwealth and States and Territories) that sets clear objectives for the future capacity and capability of the emergency service.¹¹⁸
100. A number of submissions highlighted the lack of any formal senior decision making body and ongoing dependence upon available resources as a risk.¹¹⁹ For example, Vodafone and Telstra noted achievements facilitated through NECWG-A/NZ have been subject to delays due to the lack of an overarching governance body continuously driving outcomes. Telstra also noted the lack of an existing body that brought together all the technical and strategic experience required to ensure operational uniformity within the Emergency Call Service, which resulted in long lead times to implement new initiatives.¹²⁰
101. Various State/Territory and industry submissions also raised concerns that existing governance arrangements needed to recognise disparate budget cycles and acknowledge the importance of costs associated with any technological changes, which often served as inhibitors to the implementation of changes and improvements to the Triple Zero service. Improved governance arrangements were seen as a potential mechanism for managing this issue and sustaining momentum and consistency in any enhancements to the Triple Zero service.¹²¹
102. Submitters were generally supportive of arrangements which made use of existing working groups and forums to ensure expert knowledge and experience is retained and utilised, but recognised working groups may not remain in their current form. The NSW Government

¹¹⁴ NECWG Next Generation Triple Zero (NG000) Strategy Proposal – June 2014, Page 11.

¹¹⁵ NECWG Next Generation Triple Zero (NG000) Strategy Proposal – June 2014, Page 25.

¹¹⁶ Queensland Government submission, Page 6; NSW Government submission, Page 10; Victorian Government submission, Page 12; CA and AMTA submission, Page 13.

¹¹⁷ Telstra submission, Page 24.

¹¹⁸ SA Government submission, Page 1.

¹¹⁹ Tasmanian Government submission, Page 13; NSW Government submission, Pages 11,14 ; Victorian Government submission, Page 12; Queensland Government submission, Page 5, ACCAN submission, Page 10; TZAWG Submission, Page 4, Next Generation Triple Zero (NG000) Strategy Proposal, June 2014, Page 5.

¹²⁰ Telstra submission, Page 25.

¹²¹ ACT Government submission, Page 3; Victorian Government submission, Page 3; CA & AMTA submission, Pages 10, 13.

submission was supportive of establishing a national body via existing capability and alliances through NECWG-A/NZ and ECSAC, noting representatives should have appropriate seniority.¹²² The Tasmanian Government submission recommended that existing working groups such as NECWG-A/NZ and TZAWG could be folded into a single working group under ANZEMC, with ANZEMC serving as the governing body for Triple Zero reporting to COAG.

103. In regards to the role and additional functions of a Triple Zero coordination body, promotional and educational activities were seen as an important priority across many submissions.¹²³ Telstra saw awareness raising/education of the Triple Zero service as a fundamental issue where a new governance model could drive an agreed agenda and set a strategic national approach. There was general consensus from all submitters for a formal, ongoing and funded strategy to be developed for awareness raising/customer education, despite differences in opinion on whom (Emergency Call Person, industry/ government) should be responsible for delivering it¹²⁴. TZAWG also identified the ongoing promotion of Triple Zero as a critical priority and argued the establishment of a governance council to manage and deliver awareness programs would ensure consistency and alignment across state and territories in regard to national awareness campaigns¹²⁵.

2.4 Discussion

104. There is a widespread view amongst stakeholders that improved coordination or 'governance' models are needed to ensure that Triple Zero operates effectively into the future. While the current coordination structures have been effective within their remits, it is argued that they will need to be strengthened to ensure that decisions about future models and technologies are coordinated across affected governments and businesses. A number of international jurisdictions have experienced similar issues and have made recent changes to decision making structures and coordination mechanisms.
105. Existing collaborative arrangements between Commonwealth and State and Territory governments, industry and consumer bodies have to date, delivered valuable results for the Triple Zero service. However, submissions noted that implementation of technology upgrades or service improvements across the Emergency Call Service continuum is often characterised by resource and technical implementation limitations or delays. For example, the deployment of 'Push MoLI' (see Chapter One) required network upgrades by the mobile carriers (Optus, Vodafone and Telstra), upgrades by Telstra to its Emergency Call Person systems, and technical system upgrades by all emergency service organisations in each State and Territory. As a result, testing and implementation across all States/Territories has occurred on a staggered basis and is not yet fully rolled out by all emergency service organisations. Triple Zero is a national service and greater coordination, collaboration and guidance from a national perspective through a revised coordination structure has the potential to enhance the efficiency and uniformity of future implementation endeavours.
106. Refocussing current structures in Australia into a single, multi-jurisdictional body, with appropriate representation, focused on Triple Zero coordination at a national level should help address the concerns of stakeholders. This body would provide a framework to consider and

¹²² NSW Government submission, Pages 10, 14.

¹²³ Tasmanian Government submission, Pages 7, 11; ACT Government submission, Page 2; NSW Government submission, Page 3; Victorian Government submission, Page 6; ACE submission, Page 7; TZAWG submission, Page 1; University of Melbourne, Victorian Spatial Council and APCO Australasia submission, Page 10; Telstra submission, Page 12; Vodafone submission, Page 2; Next Generation Triple Zero Strategy Proposal, Page 19.

¹²⁴ NSW Government submission, Page 3; Victorian Government submission, Page 6; TZAWG submission, Page 4; Vodafone submission, Page 2.

¹²⁵ TZAWG submission, Page 1.

address ongoing operational issues, and also to raise strategic issues with significant national implications with the Minister for Communications for further consideration and action, including as appropriate, via COAG. This overall coordination approach would better support strategic decision making across multiple jurisdictions and more readily enable a cohesive and consistent national agenda to be developed and implemented.

107. It is therefore proposed that a Triple Zero Coordination Committee be established to replace the Emergency Call Service Advisory Committee, with the Department to work with the ACMA to review the existing membership, chair and working arrangements, and terms of reference. This Committee would have a high level focus on policy and coordination, but could establish technical and other working groups as needed, addressing particular issues and allowing a wider involvement of technical and other specialist expertise. In addition it could also refer matters for consideration to other bodies such as the Communications Alliance, where this provides the best way of advancing a particular issue.
108. The concept of 'governance' is more complex. As the Triple Zero Emergency Call Person function is delivered through a long term contract, and involves funding through a statutory levy on telecommunications companies (see Chapter 3 below), responsibility for this function would remain with the Department of Communications and the Minister for Communications. Equally, the proposed Coordination Committee is not intended to substitute existing Commonwealth and State and Territory government responsibilities or to make binding policy decisions. Rather, the Coordination Committee will provide the necessary forum for identifying strategic decisions to be made and providing advice to the Minister for Communications, particularly to assist in progressing issues where senior level cross jurisdictional agreement on funding or implementation is required.
109. Ultimate overall telecommunications legislative and policy frameworks relating to the Emergency Call Service and the Emergency Call Person would continue to be a matter for the Minister for Communications, drawing on advice from the Department and the regulator. Any changes to current Australian Government contractual arrangements covering the Emergency Call Person would be managed through existing contractual and associated funding mechanisms. Equally, States and Territories would retain responsibility for overseeing their own emergency service organisation operations in relation to calls received over Triple Zero.
110. Although the Triple Zero Coordination Committee is intended to replace ECSAC, using the ECSAC framework as a foundation for the establishment of the Committee will enable the leveraging an established framework familiar with the Emergency Call Service agenda.
111. A number of submitters raised concerns around reconciling disparate budget cycles and approval processes across stakeholder groups leading to delays in implementing change. A well constituted and engaged Coordination Committee would assist in mitigating some of these concerns, including through being able to identify and provide advice to the Minister for Communications on strategic issues needing a nationally consistent approach or agreement, although it needs to be recognised that budget decisions will always potentially impact on the capacity of individual stakeholders to implement change in a timely manner.
112. The Coordination Committee can also play an important role in considering the integration of new technologies to the Triple Zero service and ensure a coordinated and consistent national approach to technology adoption is achieved. To date, system upgrades and implementation of new technologies has been largely driven by informal and bilateral processes and operational information sharing arrangements. If the Government accepts Recommendation 1.1, the Coordination Committee should make the implementation of location-based functionality into

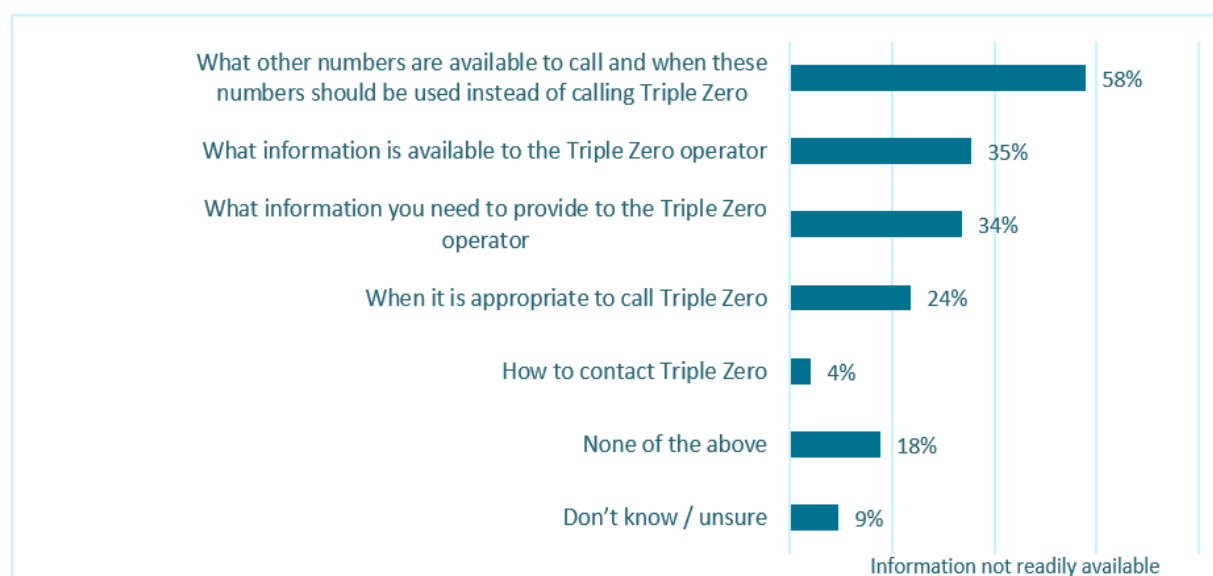
the Triple Zero service a priority, but more generally should also seek to develop an agreed national technology roadmap to inform the future technical direction of the Triple Zero service. In addition, the Department can separately facilitate discussion and/or seek the collective views of industry on specific technical and operational matters in regards to implementation issues as required.

113. Submissions included a number of suggestions that could help the Coordination Committee achieve agreement on a broader set of agreed policy principles for the Triple Zero service. Possible principles could include:

- the Triple Zero service must be highly resilient, robust and reliable ensuring access is available twenty-four hours a day, 365 days a year;
- the Triple Zero service should remain free of charge for genuine callers;
- emergency service organisations should as far as practical, be able to access accurate and reliable location information to enable prompt dispatch of relevant assistance;
- systems and processes should enable seamless transmission of information between the caller, Emergency Call Person and emergency service organisations;
- there be a national, coordinated approach to technology adoption/innovation that ensures service continuity and reliability;
- from an end user perspective, there is a nationally consistent Triple Zero service (regardless of networks, technology or communications devices used);
- consumers are well informed about contact methods available and the appropriateness of when to contact Triple Zero (including alternative non-emergency contact points).

114. There is also strong agreement from stakeholders of the need to improve the Australian public's awareness and understanding of the Triple Zero service (including education around alternative numbers where life is not at risk). Consumer research supports this view with 58 per cent of individuals¹²⁶ indicating a lack of information about alternate numbers to Triple Zero (see Graph 5). Submissions also identified improved public awareness as an opportunity to reduce unnecessary demand on the Triple Zero service, in particular reducing 'non-emergency' calls.

Graph 5: What information about Triple Zero do you believe is not readily available to the public?



¹²⁶ Triple Zero Review Research conducted by Australia Online Research Pty Ltd, September 2014.

115. The Coordination Committee could have a role in coordinating a national strategy to underpin awareness raising and promotional activities. Agreement of a national awareness strategy (and shared funding mechanism) will ensure consistent messages can be delivered to the Australian community and potentially help reduce non-genuine calls which place unnecessary demand on both the Emergency Call Person and emergency service organisations.
116. The establishment of a national Triple Zero Coordination Committee will contribute to addressing many concerns raised in submissions, with further arrangements to ensure that via the Department, key strategic issues requiring a national approach can be raised with the Minister for Communications for further senior level consideration and decision if appropriate.

2.5 Findings

117. **Key stakeholders currently work collegially and cooperatively.** However, there are calls for national Triple Zero oversight and coordination arrangements to be improved.
118. **An improved coordination structure will help drive changes to Triple Zero as needed.** However, implementation decisions will require agreement of the Australian Government (who administers the contract for the Triple Zero service), as well as other jurisdictions, and may also require investment decisions by businesses.
119. There are no core policy principles for the future direction of the Triple Zero Service that have been agreed and endorsed by all relevant stakeholders. A coordination structure could help develop such principles as non-binding guides for governments and industry in relation to the future of Triple Zero.

2.6 Recommendations

Recommendation 2.1

A Triple Zero Coordination Committee be established to replace the Emergency Call Service Advisory Committee, with the Department to work with the ACMA to review the existing membership, chair and working arrangements, and terms of reference. This Committee would have a high level focus on policy and coordination, but could establish technical and other working groups as needed.

- > The Coordination Committee should include senior representatives from the Commonwealth and State and Territory governments, and appropriate representation from the telecommunications industry, consumer groups and other stakeholders to inform decisions.
- > The Coordination Committee would coordinate, but not replace the individual regulatory, funding/investment or other decision-making processes of its members.

Recommendation 2.2

The Triple Zero Coordination Committee should develop a set of non-binding core policy principles for potential national endorsement to help inform and guide future strategic considerations for the Triple Zero service.

Recommendation 2.3

The Triple Zero Coordination Committee should be responsible for coordinating a national awareness-raising strategy to guide future and joint awareness-raising and promotional activities.

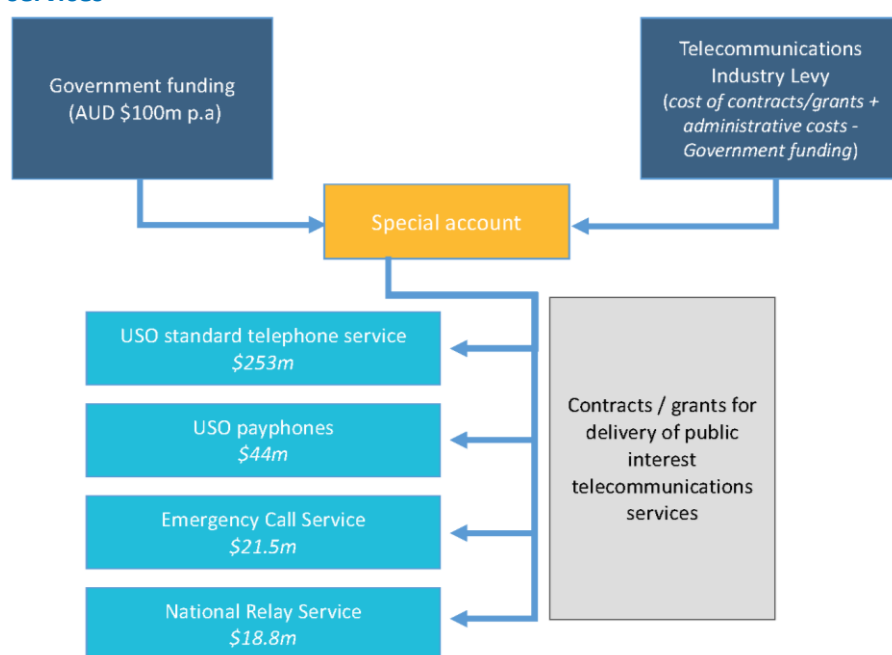
3. Chapter Three: Funding

This chapter outlines the current funding arrangements underpinning the Triple Zero service and examines the adequacy of the funding framework to deal with emerging technological issues, jurisdictional (State and Territory) cost pressures and priorities, and costs associated with handling non-genuine calls to Triple Zero.

3.1 Background

120. The costs of the Emergency Call Person are met in part by Australian Government funding and an industry levy known as the Telecommunications Industry Levy (TIL) which is paid by telecommunications carriers with eligible revenue of \$25 million or more.¹²⁷ Under the TIL, telecommunication carriers are required to lodge eligible revenue returns with the ACMA. The ACMA makes a written assessment of each carrier's eligible revenue for that return period. Carrier contributions to the TIL occur on a financial year basis, and are proportional based on the total pool of industry eligible revenue for the relevant period.

Figure 3: Funding of the Emergency Call Service and other public interest telecommunication services¹²⁸



121. Telstra receives annual reimbursement towards the net operating costs of performing the Emergency Call Person role during the previous financial year. This is capped at \$22 million (including GST). The payment is a flat rate and is not directly linked to the number of calls received, processed or transferred to emergency service organisations. In 2013-14, Telstra sought reimbursement of \$18.7 million (including GST) for providing this service.¹²⁹

¹²⁷ *Telecommunications (Participating Persons) Determination 2013 (No. 2)*

¹²⁸ Figures from the TUSMA *Annual Report 2013-14*. Stated contract expenses are GST inclusive. Not shown are smaller expenses (\$1.7m for untimed local calls in extended zones and \$0.4m to support migration of voice-only and public interest services).

¹²⁹ TUSMA, *Annual Report 2013-14*, Page 20.

122. In addition, Telstra is able to be reimbursed for the cost of major upgrades that are reasonably required for the functioning of the Emergency Call Service under the contract with the Commonwealth. During the 2013-14 financial year, TUSMA assessed and approved several proposals¹³⁰ totalling \$2.8 million (including GST) including upgrades to:
- Telstra's Enhanced Calling Line Identification Processing System (ECLIPS) which supports the Emergency Call Service and controls the flow of all calls to emergency service organisations by matching the caller's location to the closest emergency service organisation;
 - Telstra's Call Recording Platform, which is used to record all incoming calls to the Emergency Call Service;
 - Collect locational information for mobile phone callers to the Emergency Call Service through Push MoLI.¹³¹
123. These arrangements have provided a dedicated and stable funding source that has supported annual Emergency Call Person funding requirements and has also allowed some necessary system changes/upgrades to be undertaken by the Emergency Call Person. However, it may not offer sufficient flexibility should the scope of the Emergency Call Service (and the role of the Emergency Call Person) substantially change in future, as the TIL 'operates on a cost-recovery basis, which makes it difficult for the Government to fund new policy objectives through the TIL'.¹³²
124. The contractual cap on the amount of funding available to the Triple Zero Emergency Call Person means that any new developments must either be negotiated as changes to the contract or justified and agreed under the major upgrades provisions. This in turn will have implications on other telecommunications providers, given the levy arrangements. In practice, this means any major future upgrades to Triple Zero that impact on the national operator will need to be carefully managed and planned, enabling carriers to understand their likely levy impacts.

3.1.1 Industry costs

125. In addition to larger carriers contributing to the levy, under Part 5 of the *Telecommunications (Emergency Call Service) Determination 2009*, carriage service providers are required to provide free access to the Emergency Call Service from all standard telephone and mobile services in Australia. This means carriage service providers are prohibited from charging emergency service organisations¹³³ and the Emergency Call Person¹³⁴ for emergency calls and the Emergency Call Person is prohibited from charging emergency service organisations for emergency calls.¹³⁵
126. Carriers/carriage service providers are also responsible for meeting any ongoing infrastructure and regulatory compliance costs due to requirements to prioritise Triple Zero calls and to interconnect with Triple Zero.

¹³⁰ Information provided by TUSMA (6 January 2015) .

¹³¹ See Push MoLI case study in Chapter One.

¹³² Vertigan M, Deans A, Ergas H and Shaw T, *Independent cost-benefit analysis of broadband and review of regulation, Volume 1: National Broadband Network – Market and Regulatory Report*, Page 158.

¹³³ *Telecommunications (Emergency Call Service) Determination 2009*, section 54.

¹³⁴ *Telecommunications (Emergency Call Service) Determination 2009*, section 55.

¹³⁵ *Telecommunications (Emergency Call Service) Determination 2009*, section 56.

3.1.2 State and Territory government costs

127. State and Territory governments are responsible for the funding and management of individual emergency service organisations. This includes ensuring their operational systems, in particular their dispatch systems, are coordinated and able to receive relevant voice calls and relevant information (e.g. such as Push MoLI data) from the Emergency Call Person.
128. Generally the States and Territories meet these costs through direct budget funding from consolidated revenue, some form of levy arrangements, or end user charges (e.g. ambulance fees) or a combination of these funding sources.

3.2 Other jurisdictions

3.2.1 United States

129. In the US, funding sources for the 9-1-1 and Enhanced 9-1-1 (E-9-1-1) services vary across different levels of government (i.e. municipality, county, regional, state, and federal).
130. In general, there are four principal funding sources that support 9-1-1:
 - direct end-user surcharges;
 - state-level general funding sources (which ultimately flow from public taxes or grants);
 - local, county or regional-level funding sources (such as proceeds from gross receipts taxes or property taxes); and
 - federal funding sources (especially grant initiatives).
131. The most common source for 9-1-1 services is end-user surcharges, where consumers help pay for 9-1-1-related costs.¹³⁶ End-user surcharges generally apply to fixed line telephone connections, with surcharges increasingly being applied to mobile or VoIP services.

3.2.2 Canada

132. In Canada, the funding for its 9-1-1 emergency calling system comes from several sources – end users, service providers and the Government.
133. The incumbent Canadian telephone companies collect a monthly fee approved by the Canadian Radio-television and Telecommunications Commission from their retail wireline (fixed line) customers for the provision of access to the 9-1-1 service. The monthly fee is based on each company's costs incurred to provide access to the 9-1-1 service and is reviewed on an annual basis. Currently, wireless customers are not charged for access to the 9-1-1 service, despite the fact that about 70 per cent of 9-1-1 calls are made from wireless devices.¹³⁷

¹³⁶ ColoComm Group, LLC: Dale Hatfield, Brad Bernthal and Phil Weiser, *Health of the US 9-1-1*, 2007, Page 62. See www.theindustryCouncil.org/91A_Health_of_US_911%202_.pdf; Blue Ribbon Panel on 911 Funding, Report to the National 911 Program, December 2013, Pages 7 and 10. See www.911.gov/pdf/BlueRibbonPanel-911Funding-report-dec2013.pdf.

¹³⁷ Commissioner Timothy Denton, A Report on Matters Related to Emergency 9-1-1 Services, <http://crtc.gc.ca/eng/publications/reports/rp130705.htm#iie>, 5 July 2013, (prepared for the Canadian Radio-television and Telecommunications Commission), Page 13.

3.2.3 New Zealand

134. In New Zealand, the Telecommunications Service Obligations (TSO) regulatory framework provides for Telecom (current operator) to be compensated through an industry levy if it incurs net costs from providing the TSO service, which includes free 1-1-1 emergency calls for residential customers.¹³⁸ The Commerce Commission is responsible for determining whether Telecom incurs net costs from providing TSO services. The costs of Telecom's initial call answering platform are met in part through an interconnection charge on other voice service providers.¹³⁹
135. The *Telecommunications Act 2001* (NZ) allows for funding through the Telecommunications Development Levy for upgrades to the emergency calling system.¹⁴⁰ The levy is a charge on the telecommunications industry.

3.3 Stakeholder views (submissions and consultations)

136. The majority of submitters advocate for the Triple Zero Service to continue to be free for the community to access, however, a number of submitters argue that the Triple Zero service needs to be innovative and continuously improve to meet community expectations and emergency service responder's needs, which may require a new sustainable funding model.¹⁴¹
137. Telstra (the current contracted Emergency Call Person) supports the current funding arrangements, but recognises that these arrangements may need to be revised to support any changes to the Triple Zero operator model in order to fund innovation.¹⁴² Some State and Territory governments have highlighted that there are likely to be significant costs to change or introduce systems and infrastructure to incorporate new forms of technology or ways of contacting Triple Zero and this may place financial pressure on States¹⁴³ and Territories.¹⁴⁴ Alternatively, ACCAN expressed the opinion that it does not expect that enhancements to the Triple Zero service to accommodate SMS and mobile app calls would incur onerous additional expenses to industry or consumers.¹⁴⁵
138. The ACT Government's submission called on the Commonwealth to fund Triple Zero connections.¹⁴⁶ While the Victorian Government and NECWG-A/NZ's NG000 Strategy both indicated there should be a more flexible funding model that can draw funding from multiple sources.¹⁴⁷ This view is also held by the NSW Government.

¹³⁸ Ministry of Economic Development, Discussion Paper 111 Emergency Calling Review February 2012, Page 24. See www.med.govt.nz/sectors-industries/technology-communication/communications/emergency-call-services/111-review.

¹³⁹ Ministry of Economic Development, Discussion Paper 111 Emergency Calling Review February 2012, Page 25. See www.med.govt.nz/sectors-industries/technology-communication/communications/emergency-call-services/111-review.

¹⁴⁰ Ministry of Economic Development, Discussion Paper 111 Emergency Calling Review February 2012, Page 43. See www.med.govt.nz/sectors-industries/technology-communication/communications/emergency-call-services/111-review.

¹⁴¹ Victorian Government submission, Page 10.

¹⁴² Telstra submission, Page 26.

¹⁴³ SA Government submission, Page 4; Victorian Government submission, Page 3.

¹⁴⁴ SA Government submission, Page 4; Victorian Government submission, Page 3.

¹⁴⁵ ACCAN submission, Page 9.

¹⁴⁶ ACT Government submission, Page 4.

¹⁴⁷ Victorian Government submission, Page 10.

139. The NSW Government also proposed all providers of services that enable contact with Triple Zero should contribute to an industry levy. This may also include mobile handset sellers.¹⁴⁸ The Tasmanian Government raised the issue of whether it is appropriate for the levy to be used to cross subsidise VoIP services and encouraged the Australian Government to consider whether the TIL should be paid by smaller providers whose eligible revenue is less than \$25 million.¹⁴⁹
140. The CA/AMTA submission proposed additional consideration is required to determine how costs of establishing new emergency communication services will be met and whether future emergency voice and other services can remain free to all callers.¹⁵⁰ The CA/AMTA submission noted that it may not be technically possible for future modes of emergency communication to the emergency service organisations to remain completely free. For example, VoIP services running over a mobile or fixed data service may incur data charges.
141. Optus and Vodafone both raised concerns around the need for increased transparency in commercial industry funding arrangements.¹⁵¹ Vodafone advocates for the Australian Government to address inconsistencies in Triple Zero interconnection call charges paid by other carriers to Telstra, either through eliminating interconnect fees or through a standardised interconnect rate applying to all services connecting to the national operator.¹⁵²
142. Both the NSW and Queensland Governments raised concerns regarding whether there are sufficient drivers or incentives built into the current funding arrangements for the national operator to improve its service provision and/or expand its service offering in line with community expectations.¹⁵³ However, Telstra argued, as the largest individual contributor to the TIL, it already has substantial incentives for cost effective performance and reduction of Emergency Call Person costs.¹⁵⁴
143. The South Australian Government recommends that high priority needs to be given to estimating the total cost of potential changes to the Triple Zero service and reviewing and recommending equitable and transparent funding arrangements to sustain the Triple Zero service and meet the total cost of any changes.¹⁵⁵
144. CA/AMTA submission also raised the issue of whether the cost of handling a non-genuine call to emergency service organisations, could be recoverable from a malicious or non-genuine caller (similar to a fire brigade charging for attendance of vehicles to false alarms).¹⁵⁶ Optus also raised the issue of potentially imposing financial penalties for the cost of a nuisance call.

¹⁴⁸ NSW Government submission, Page 11.

¹⁴⁹ Tasmanian Government submission, Page 11.

¹⁵⁰ CA and AMTA submission, Pages 11 and 12.

¹⁵¹ Optus submission, Page 2.

¹⁵² Vodafone submission, Page 1.

¹⁵³ NSW Government submission, Page 10; Queensland Government submission, Page 5.

¹⁵⁴ Telstra submission, Page 26.

¹⁵⁵ SA Government submission, Page 4.

¹⁵⁶ CA and AMTA submission, Page 12.

145. In addition, the Tasmanian Government recommended exploring additional capabilities as a means of reducing the calls to Triple Zero, such as requiring carriers to fund an alternative contact point/number (i.e. a dedicated 'assistance line') for the community on a cost recovery basis.¹⁵⁷ In this context, other alternatives suggested included improved use of media channels, and/or online resources (i.e. dedicated websites) to lessen unnecessary calls, issue emergency alerts, or to report emergency-related information.
146. Telstra and Vodafone suggest that further funding is required to deliver national awareness and school education programs informing and managing community expectations on the appropriate use of Triple Zero.¹⁵⁸ The NSW Government advocates that further consideration should be given to whether the next national operator should fund the delivery of promotional and awareness programs.¹⁵⁹ The TZAWG submission also supported significant funding being made available for the ongoing national promotion of Australia's emergency service.¹⁶⁰

3.4 Discussion

147. The current end-to-end funding model for Triple Zero is collectively dependent on direct and indirect funding or resource contributions from the Australian, State and Territory governments, the industry levy, and costs borne by carriers (e.g. interconnection charges). This is similar to most funding models used overseas.
148. The funding framework is sufficient to maintain the Triple Zero service in its current form and there is some, albeit limited flexibility to fund improvements. However, current industry levy arrangements as they apply to the current Triple Zero service cannot be easily modified, and are subject to long term contracts. Similarly, there are constraints on States/Territories and industry in funding operational or system changes for emergency service organisations, or broader changes to telecommunication networks and services. Any changes to the current arrangement will require State/Territories and carriers to successfully advocate for funding within their respective budget processes
149. The Push MoLI case study (Chapter One) demonstrates that stakeholders have been able to make investments to date to support technological developments, but this also highlights a need for greater coordination and agreement on the timing of such investments. Push MoLI illustrates the capacity of the current funding model to support some technological change once agreement has been reached between industry, emergency service organisations and the Australian, State and Territory governments on developments to the Triple Zero service.
150. During targeted consultations, stakeholders identified the need for increased transparency about where funding is being spent, by whom, and why. As discussed in Chapter Two, it is proposed a new Coordination Committee be established which would be able to consider ongoing operational issues, including what future costs are likely to be and the expected timing of those costs. This will help stakeholders to effectively plan for and support the implementation of service enhancements or required system changes, and will assist them to better align their funding arrangements and budget cycles against an agreed national strategy.

¹⁵⁷ Tasmanian Government submission, Page 12.

¹⁵⁸ Telstra submission, Page 15; Vodafone submission, Page 2.

¹⁵⁹ NSW Government submission, Page 3.

¹⁶⁰ TZAWG submission, Page 3.

151. If significant additional funding is necessary to support the future direction of the Triple Zero service, and savings or efficiencies cannot be achieved elsewhere to ensure all costs are covered, then there will be a robust business case to support any requirement for additional funding from stakeholders and decision makers. In this context, the Department acknowledges that the relative funding contributions from stakeholders may necessarily need to vary according to the costs and benefits of any future changes. For example there may be circumstances where emergency service organisations may consider it desirable to entirely fund or contribute to Emergency Call Person upgrades directly. This occurred in 2001, when each State and Territory Police agency contributed to the implementation of the Caller No Response IVR system as they were to be the main beneficiary of the change.¹⁶¹
152. Some carriers have raised concerns about inconsistent wholesale interconnection charges regarding the connection of their customers to the Emergency Call Person. This appears to be primarily a commercial issue for industry to seek to resolve in the first instance, noting these types of charges are not uncommon in other parts of the telecommunications industry. The Department also notes that changes to wholesale interconnection charges would also have potential implications for the amounts required to be collected under the industry levy.
153. A number of submissions commented on the desirability of having appropriate drivers and incentives for the national operator to find efficiencies, improve service provision or expand services. However, contractual and regulatory settings, as well as the nature and expectations of the service, will limit the effectiveness of normal commercial incentives. While efficiencies and improvements should be adopted by the national operator where possible and appropriate, there is also a strong case for promoting broader efficiencies, such as increasing awareness of alternative phone numbers or other means of obtaining assistance in non-life threatening situations, and encouraging the community to use the Triple Zero service appropriately (i.e. for genuine emergencies).

Reduction of costs associated with non-genuine calls / end-user charges for non-genuine calls

154. A number of submissions suggested possible approaches to reducing the operating cost of the Triple Zero service could include introducing measures designed to reduce the number of non-genuine calls. For example, allowing carriers to charge a penalty to a caller for the cost of serving a non-genuine or malicious call. A similar approach was explored in the New Zealand discussion paper '111 Emergency Calling Review' which suggested a more active use of the ability to impose penalties for false calls as a means of addressing the incidence of these calls.¹⁶² It is worth noting that New Zealand's emergency call service receives approximately 3 million calls each year with only 25 per cent of calls being sent through to emergency service providers and the rest (75 per cent) of the calls being classified as non-genuine.¹⁶³
155. In contrast to New Zealand, the number of non-genuine calls in Australia falls into the minority, rather than the majority. This of course can relate to how 'non-genuine' or 'hoax' calls are categorised or defined in different jurisdictions, and the extent of education, awareness and regulatory options (see paragraphs 159-163) to deter these types of calls.

¹⁶¹ Information provided by Telstra (March 2015).

¹⁶² Ministry of Economic Development, *Discussion Paper, 111 Emergency Calling Review*, February 2012, Page 37.

¹⁶³ Ministry of Economic Development, *Discussion Paper, 111 Emergency Calling Review*, February 2012, Page 14.

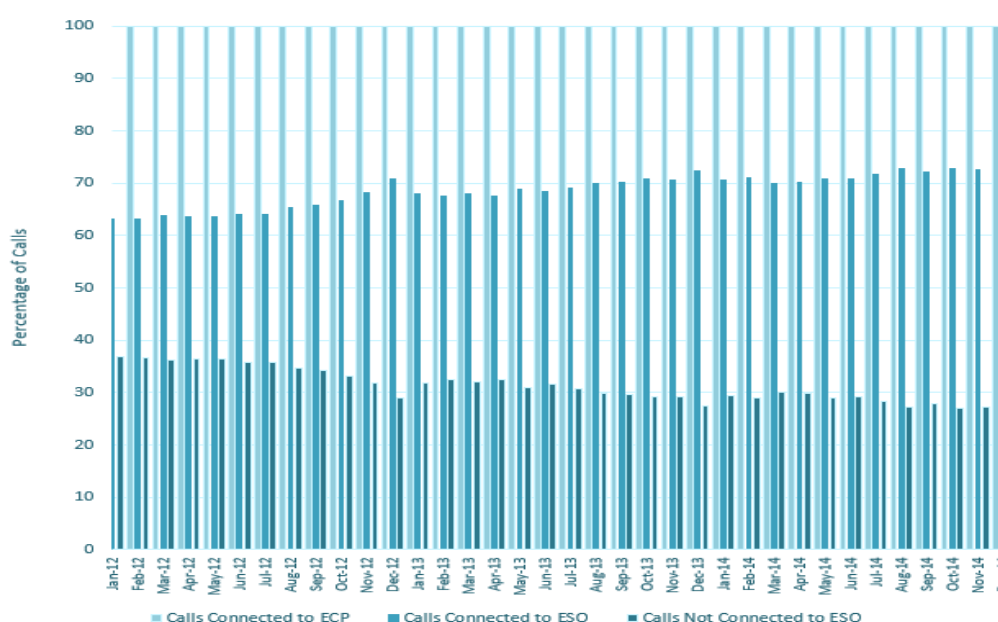
156. Data provided by the Emergency Call Person (see Graph 6 below) shows that within Australia, approximately 30 per cent of calls to the Emergency Call Person are not connected through to the emergency service organisation because the calls are categorised as non-emergency.¹⁶⁴

Non-emergency calls include nuisance calls, misdials, test calls, calls requiring SES assistance etc. The amount of nuisance calls (abusive or suggestive calls) results in less than one percent of the total calls dealt with by the Emergency Call Person. This data indicates:

- the Emergency Call Person is performing a valuable role filtering a proportion of non-emergency or nuisance calls which States/Territories would otherwise receive, and
- nuisance and hoax calls form a very small percentage of overall calls received by the Emergency Call Person and do not appear to be markedly increasing over time.

157. Of the approximately 70 per cent of Triple Zero calls transferred to emergency service organisations by the Emergency Call Person, many States and Territories expressed concerns regarding hoax/malicious calls or non-emergency calls continuing, yet there is limited visibility of this data. During the course of the review, the Department asked jurisdictions to provide information on non-emergency and hoax calls they receive. ESTA data indicates that in Victoria, approximately 7 per cent of calls are classified as non-emergency calls. ACT Policing advised the Department that 21 per cent of calls received by its call centre are considered non-emergency. NSW Police have indicated around 18 per cent of calls are non-emergency. Queensland Police have advised that only 4 per cent of calls fall into the category of non-emergency (including nuisance, malicious or hoax calls)¹⁶⁵. In other cases, jurisdictions have advised they do not face significant issues with non-emergency or hoax calls, or do not consider they have robust data available. It appears there are likely to be variations in how non-emergency, hoax and nuisance calls are defined and how data/statistics are recorded by Emergency Call Person compared to individual emergency service organisations within the States and Territories. In addition, the extent of hoax or malicious calls may not be able to be fully determined until an emergency service organisation further speaks to a caller and/or dispatches officers to respond.

Graph 6: Triple Zero Call Volume Data (Jan 2012 – Dec 2014)



¹⁶⁴ The Emergency Call Person did not connect 35 per cent of calls to emergency service organisations in 2012, 31 per cent of calls in 2013 and 28.3 per cent of calls in 2014. Information provided by Telstra (January 2015).

¹⁶⁵ Information provided by ESTA, ACT Police, NSW Police and QLD Police (January 2015).

158. It would be beneficial for the Emergency Call Person and the States and Territories to agree on a common reporting arrangement to assess the end-to-end extent of non-emergency and hoax/malicious calls and provide a consistent evidence base, including to inform strategies to further minimise non-emergency calls.

Penalties dealing with non-genuine calls under the Criminal Code Act 1995

159. Some submitters have suggested allowing carriers to charge a penalty to a caller for the cost of serving a non-genuine Triple Zero call. However, Australian legislation already provides protection under Part 10.6, Division 474 of the *Criminal Code Act 1995* against the use of a telephone to menace, harass or cause offence (section 474.17) and improper use of the Emergency Call Service (section 474.18). A penalty of three years imprisonment can apply to either offence.
160. Industry Code C525:2010 (*Handling of Life Threatening and Unwelcome Communications*) also provides detailed processes in response to unwelcome communications made to the Emergency Call Service.¹⁶⁶ This process may include education, warnings, police attendance, suspension of service, disconnection of service or blocking the device used to make unwelcome communications across all mobile carriers in Australia.
161. If alternative cost recovery/penalty arrangements were implemented there are a number of policy issues that would require attention, including:
- How to best strike a balance between administrative and criminal processes and penalties?
 - Would the administrative/compliance costs be likely to exceed any penalty raised?
 - How would any funding raised through such charges be used?
 - Could a charging/penalty regime have a detrimental effect and discourage use of Triple Zero (e.g. in borderline cases)?
162. Based on the percentage of nuisance calls received and the limited benefit and potential risks with implementing a cost recovery/penalty arrangement, there does not appear to be a strong case or evidence base for introducing additional regulatory or penalty measures at this time.
163. The number of non-emergency calls should continue to be monitored, including in light of potential future growth in automated devices, in car systems or applications that may increasingly be used to contact Triple Zero with relatively limited interaction from the consumer (potentially leading to 'false alarms').

Responding to non-genuine calls through awareness raising and other measures

164. As discussed in Chapter Two, attention should be given to the development and delivery of a national awareness campaign on the appropriate use of the Triple Zero service to seek to reduce the number of non-genuine calls.
165. A collaborative approach is required where all major stakeholders, such as the Commonwealth, the Emergency Call Person, carriers/carriage service providers, the States and Territories and the emergency service organisations take collective responsibility for promoting the reduction of non-genuine calls within the Australian community. This may involve each stakeholder reviewing their own internal systems and policies and implementing new strategies to reduce non-genuine calls.

¹⁶⁶ See www.commsalliance.com.au/_data/assets/pdf_file/0007/1330/C525_2010.pdf.

166. This collaborative approach would be supported by the new Coordination Committee guiding the coordination and ongoing implementation of a national awareness-raising strategy (see Recommendation 2.3), which may include promoting smartphone applications, the take up of any new technology and delivery of community messages to seek to reduce non-genuine calls. The Coordination Committee may wish to consider the merits of introducing a baseline or minimum level of awareness-raising activities. Such work could potentially be undertaken by a contracted third party – similar to the current National Relay Service model. Outreach activities for the National Relay Service are undertaken separately from the relay service provider. Under this model, a ‘cooperation plan’ has been developed to ensure appropriate procedures and processes are in place and that the activities of the service provider and outreach provider are complementary in meeting an overall objective.
167. All stakeholders (governments and industry) benefit from appropriate community use of Triple Zero and therefore should contribute to awareness-raising (through contributing funding, resources and/or sharing expertise).

3.5 Findings

168. **The current funding framework is able to maintain the existing voice only Triple Zero service.**
169. **Implementing technological changes or introducing new contact methods to the Triple Zero service in future will have funding implications for State and Territory emergency service organisations, the Emergency Call Person and the telecommunications industry. Given this a sound and persuasive business case for any changes will need to be developed. The proposed Coordination Committee should provide mechanisms for coordinating approaches to any changes.** This will enable all stakeholders to align future spending/investment and provide increased certainty as to whether additional resources are required to implement the future direction for the Triple Zero service.
170. **A collaborative approach should be adopted by all major stakeholders to continue to monitor and seek to reduce the number of non-emergency calls (and the associated costs).** Development of a national awareness-raising strategy on appropriate use of Triple Zero should be the first step in addressing rates of non-emergency calls – prior to further consideration of any increased penalties/user charges or further sanctions for making hoax or nuisance calls.

3.6 Recommendations

Recommendation 3.1

While the current funding framework has sustained the existing voice only Triple Zero service and some recent service improvements, there may be significant end to end future funding demands to accommodate service changes. The Triple Zero Coordination Committee should facilitate engagement between jurisdictions and other stakeholders to build and prosecute the business case for any major changes, including consideration of efficiencies to offset the expected costs.

4. Chapter Four: Delivery model

Australia's Triple Zero service is characterised by a centralised operational model whereby a designated national operator answers and transfers emergency callers to the appropriate emergency response organisation in each State/Territory. This chapter examines the limitations and benefits of the current delivery model and various operational alternatives, including those used in other overseas jurisdictions.

4.1 Background

171. Triple Zero's current 'delivery model' was implemented at a time when Australia's telecommunications landscape was characterised by voice-based communications delivered over a single fixed network – the Public Switched Telephone Network (PSTN). This resulted in a call-centre based model involving a central operator. This role has been delivered by Telstra as the primary fixed line operator in Australia.
172. Consumer information, as well as industry performance data¹⁶⁷ indicates the Triple Zero service has served - and continues to serve - the Australian community well. As advancements in technology occur from both consumer, operator and network architecture perspectives, the efficiency and effectiveness of the model to deliver long term policy and operational objectives should be examined.
173. As previously outlined, Australia's Triple Zero service appears as a single service from a caller's perspective. However, Triple Zero's current delivery model has two distinct parts:
 - Firstly, the national Triple Zero operator answers each call to 000 and transfers it to the appropriate emergency service organisation (numbers vary for police, fire or ambulance in each State and Territory);
 - Secondly, the emergency service organisation then dispatches the appropriate emergency response.
174. Telstra manages national Triple Zero call centre capacity via two dedicated and geographically separated call centres, and ensures they are appropriately staffed 24 hours a day, 7 days a week in order to meet its contracted performance requirements and regulated requirements as the current Emergency Call Person.
175. Relevant to the current delivery model are the two secondary emergency service numbers. Calls to 112 are handled by Telstra¹⁶⁸ and calls to 106 are provided by ACE through the National Relay Service¹⁶⁹.
176. In considering the current and potential future directions for Triple Zero's delivery model, there are a number of key considerations, which include:
 - ensuring the efficient and available use of relevant resources (i.e. funding, staffing);
 - identifying and harnessing relevant technology;

¹⁶⁷ Triple Zero Review Research conducted by Australia Online Research Pty Ltd, September 2014.

¹⁶⁸ 112 is the international standard emergency number, which can be called from a Global System for Mobile Communications (GSM) type mobile.

¹⁶⁹ 106 is a text-based emergency number for people who are deaf, or have a hearing or speech impairment, which can be called from a teletypewriter.

- providing national consistency;
- ensuring accuracy and trust in communication protocols; and
- ensuring the model is supported by appropriate levels of network and service reliability.

177. The emergence of new and innovative technologies has raised questions about the effectiveness of the current delivery model with some stakeholders considering more efficient and economical delivery models could be achieved. One of the largest contributing factors driving this case for change has been the introduction of technologies that provide consumers with greater connectivity with a range of networks, devices and applications capable of allowing voice, video and text based communications. As the current Triple Zero delivery model is premised on the receipt and dispatch of voice calls only, improved access to, and prevalence of, new communication technologies has inevitably led to some stakeholders querying the ongoing relevance and effectiveness of maintaining a centralised national voice-centric operator for Triple Zero.

4.2 Other jurisdictions

4.2.1 United Kingdom

178. In the UK, emergency calls (via 9-9-9 or 1-1-2) are directly routed by communications providers to emergency response organisations via an Emergency Call Handling Agent (ECHA) that determines the nature of the emergency and dispatches to the appropriate emergency response organisation. Importantly, the role of the ECHA (which broadly mirrors the function of the Triple Zero operator) can be performed 'in-house' by the communications provider or contracted out to a third party. Whether these activities are performed in-house, or by third parties, Ofcom has issued national guidelines the relevant entity must satisfy in meeting their obligations.¹⁷⁰

4.2.2 United States

179. The US has a highly de-centralised delivery model structure whereby callers to the national emergency number (9-1-1) are directly routed by carriage service providers to one of approximately 6,000 regional Public Safety Answering Points¹⁷¹, which then determine the nature of the emergency and dispatch to the relevant emergency response entity.¹⁷² Public Safety Answering Points are funded by the individual States. So from a consumer's perspective, Public Safety Answering Points across the US can exhibit significant levels of service disparity from region to region due to funding or technical capability limitations (e.g. currently there is no uniform national capacity for the US 9-1-1 service to receive emergency SMS although some individual Public Safety Answering Points are now able to accept emergency SMS)¹⁷³.

4.2.3 New Zealand

180. New Zealand has adopted a similar 'centralised' delivery model to Australia where all calls made to the national emergency call number (1-1-1) are received and filtered by a single operator at the national level, Spark (formerly Telecom New Zealand), before being dispatched to the appropriate emergency response organisation at a regional level¹⁷⁴.

¹⁷⁰ See <http://stakeholders.ofcom.org.uk/consultations/emergency-call-handling/statement/>.

¹⁷¹ See www.nena.org/?page=911Statistics.

¹⁷² See www.fcc.gov/encyclopedia/9-1-1-and-e9-1-1-services.

¹⁷³ See www.fcc.gov/guides/text-911-quick-facts-faqs.

¹⁷⁴ See www.police.govt.nz/contact-us/calling-emergency-111.

4.3 Stakeholder views (submissions and consultations)

181. Reform to Triple Zero's delivery model discussed by stakeholders can be broadly categorised as a debate focused on the merits between two potential policy directions:
- Firstly, a continuation of the national operator and its dispatching functions; or
 - Secondly, a reformed model that allows emergency callers to bypass the national operator and directly contact relevant State and Territory emergency service organisations.
182. Importantly, Triple Zero's delivery model structure must meet all the informal performance objectives and principles and formal legislative requirements (see Chapter Five) in order to achieve ongoing success. The delivery model should ideally remain operationally consistent, robust, and uncomplicated to Australian consumers and emergency service organisations.
183. While stakeholder views canvassing potential reforms to Triple Zero's delivery model were not as abundant compared to other issues being examined by the review, there were still some strong views expressed by various industry stakeholders. Further, several State/Territory governments and emergency service organisations noted the implications a reformed delivery model might have on existing strategic policy directions, technology use, operational investments, and existing efforts to ensure national consistency on various public-facing issues.
184. The establishment of the ESTA¹⁷⁵ model is a relevant case study when seeking to examine the merits of alternative delivery models for Triple Zero. Victoria is the only State or Territory in Australia that has implemented a single state-based emergency dispatch operating service for police, fire and ambulance (noting ESTA also includes dispatch operations for Victoria's Country Fire Authority (CFA) and SES). ESTA also manages the broader operational communications for Victoria's emergency services, including police, fire, ambulance and SES personnel in the field. This includes carrying radio calls and delivering messages to various emergency organisation volunteers and staff during State emergency events.¹⁷⁶ Potentially, this kind of State-based emergency service coordination could provide an alternative contact point for emergency calls.
185. In its submission, Vodafone noted that the ESTA model demonstrates that it is possible to have a State and Territory based delivery model that could fulfil the role that the current national operator performs from an 'end-to-end' service perspective and provide a more timely service to local authorities.¹⁷⁷ However, Vodafone noted the varying capacity of State and Territory emergency service organisations to implement such a model (from an operational perspective) may be problematic. Vodafone consider that in addition to existing activities, there may be an ongoing role for the Emergency Call Person to be 'both a passive receiver of communications and an active monitor of social media and other communication channels for those in need of emergency assistance'¹⁷⁸.

¹⁷⁵ See www.esta.vic.gov.au/.

¹⁷⁶ See www.esta.vic.gov.au/Our+Role/Background.

¹⁷⁷ Vodafone submission, Page 1.

¹⁷⁸ Vodafone submission, Page 2.

186. Vodafone also noted the benefits of potentially moving to combine existing contracts for the Emergency Call Person, the 106 National Relay Service contract, and the 106 awareness contract. This would result in a combined Emergency Call Person contract for 000 and 106 emergency services responsibilities, with a separate contract dedicated to related awareness raising activities for 000 and 106¹⁷⁹. While this suggestion has possible merit, the Department notes existing National Relay Service contracts will remain in place until 2018, so it may be preferable to consider it at that time.
187. In addition, Vodafone noted there may be various financial and commercial benefits associated with bypassing the current national operator and allowing callers to connect directly with State and Territory emergency service organisations. Vodafone argue that maintaining the current model financially impacts on carriers in the Australian market (namely Optus and Vodafone) who pay interconnection fees currently charged by the Emergency Call Person. Further, Vodafone queried the inconsistency in interconnection fees charged by the national operator which currently differ between the carriers¹⁸⁰.
188. The discrepancy in interconnection fee charges was also raised by Optus, which considers the lack of administrative transparency under the current delivery model favours the Emergency Call Person. As a result, Optus argues for the structural separation of the national operator functions from other commercial operations and interests.¹⁸¹
189. In discussions with the Department, Optus indicated an alternative approach for the national operator could include exploring potential for a 'shared' delivery model whereby the functions of the Emergency Call Person could be delivered by a consortium of industry entities.
190. The potential to explore alternative delivery models was also flagged by Telstra in its submission, which noted a number of alternative models should also be considered¹⁸². Telstra noted an examination of the effectiveness of the current delivery model will aid in the identification of an approach that will best help all stakeholders move towards building a future proofed national Emergency Call Service that will take advantage of the capabilities and features offered by next generation IP-based services and systems.¹⁸³
191. Despite this, Telstra's submission argues that the future Triple Zero service should retain the role and functions performed by a national operator¹⁸⁴. Telstra noted key risks inherent in introducing any alternative delivery model. Specifically, Telstra noted:
- alternative delivery models (that essentially remove a national operator and allow callers direct access to a single state based call centre or to individual State and Territory emergency service organisations) would likely need significant technical change and additional funding from all stakeholders; and
 - removing the national operator would create challenges for ensuring ongoing national consistency.

¹⁷⁹ Vodafone submission, Page 2.

¹⁸⁰ Vodafone submission, Page 1.

¹⁸¹ Optus submission, Page 2.

¹⁸² Telstra submission, Page 21.

¹⁸³ Telstra submission, Page 21.

192. Telstra advised that services it provides as the national operator extend beyond simply answering, filtering and transferring emergency calls to emergency service organisations. Telstra indicated there are a range of key performance activities, requirements and benchmarks it undertakes in its current role as the national operator. Telstra considers these collective actions, which may extend in some cases beyond its regulated or contractual obligations have been crucial in establishing Triple Zero as a highly trusted and reliable service. Telstra also consider these remain distinct advantages of the current delivery model structure whereby a national operator can undertake these actions in a centralised and accountable fashion. These actions and/or tasks include:

- meeting legislated performance benchmarks (i.e. ensuring Triple Zero calls are answered in five seconds or less 85 per cent of the time, and within ten seconds 95 per cent of the time);
- establishing informal relationships and processes to share important information with the State and Territories during large scale emergency events that often demand these kind of extracurricular arrangements;
- establishing robust processes to deal with unique operational/geographical challenges (i.e. Christmas Island);
- providing 24x7 technical support for faults relating to Triple Zero operations;
- providing assistance and advice to State and Territories emergency service organisations upon request in relation to the design and management of 'emergency answer points and associated IT networks'; and
- establishing a significant degree of expertise and capacity to filter non-genuine calls to Triple Zero to ensure valuable resources at all levels of the emergency response framework are not wasted.

193. Numerous submissions to the Department's discussion paper also supported the effectiveness of the current delivery model (one national operator) and recommended the current national operator functions be maintained.¹⁸⁵ A number of submissions agreed with Telstra's view that any removal of the current national operator under a revised model would increase reliance on State and Territory emergency service organisations and present significant funding challenges that may not be readily met.¹⁸⁶ However, other submissions noted future technological advancements may address current risks and challenges associated with removing a national operator¹⁸⁷ and such developments should not hinder providing the community new access channels or methodologies to communicate with ESOs.¹⁸⁸

194. Various stakeholders also noted that although the current delivery model works well, natural disasters or other large scale emergencies posed challenges to systems and procedures¹⁸⁹. Mitigating against inevitable surges in calls following large scale natural disasters was generally seen as a problem that could be addressed by the Emergency Call Person ensuring sufficient capacity and capability was available to manage these types of issues from both a technical and staffing perspective¹⁹⁰. However, in managing high traffic events, Telstra consider a consistent national approach is required to ensure the most effective management of calls, which may include improved collaboration between emergency service organisations and greater utilisation of media resources (social media, radio, television etc.) to engage with the community and

¹⁸⁵ C Anderson submission, Page 10; ACCAN submission, Page 9; ACT Government submission, Page 4.

¹⁸⁶ Queensland Government submission, Page 5; SA Government submission, Pages 4-5.

¹⁸⁷ Victorian Government submission, Page 9.

¹⁸⁸ Vodafone submission, Page 2.

¹⁸⁹ Victorian Government submission, Page 6; NSW Government submission, Pages 3-5.

¹⁹⁰ University of Melbourne, Victorian Spatial Council and APCO submission, Page 6.

provide information when needed¹⁹¹. The Tasmanian Government submission also emphasised the use of alternative information lines and government websites such as the Tasmanian Emergency Information Service (TEIS)¹⁹², the national Emergency Alert system¹⁹³ and TasALERT¹⁹⁴ as useful tools that can significantly reduce demand on the Triple Zero service during high call volumes due to disasters or significant events.¹⁹⁵

4.4 Discussion

195. Given the preference of stakeholders to maintain voice communications as the primary contact method underpinning caller-to-operator interactions, Australia's current centralised delivery model structure whereby a national operator receives and dispatches emergency calls remains an effective model in supporting voice communications. While advancements in technology have, and will continue to challenge the operational efficiencies of the current delivery model, de-centralised delivery models in other jurisdictions that provide more direct caller-to-ESO interaction in the first instance (whether through specific technology or different overall delivery structures) have not yet proven to be superior alternatives.
196. The Emergency Call Person's current integrated system architecture which obtains data from numerous sources to create a consolidated 'data set' (and is provided to emergency service organisations alongside each voice call) is highly complex. While stakeholders acknowledged that future technological advancements could successfully enable the potential removal of a national operator and allow emergency calls to be directly dealt with by State and Territory emergency service organisations, there are two key obstacles.
197. First, there would be a need to establish national consistency in technological and operational capability at the State and Territory emergency service organisation level. Ensuring the technical capacity of State and Territory emergency service organisations can develop in a coordinated and consistent fashion will maintain consumer confidence, trust and understanding in how the Triple Zero service operates. Challenges faced by de-centralised delivery models implemented in international jurisdictions have illustrated the importance consumers and emergency service organisations place on establishing consistent operational processes and capabilities for national emergency number services in order to ensure consumer confidence. As next generation technologies are being considered, international jurisdictions are reflecting on whether to consolidate existing de-centralised national frameworks given the service-related inconsistencies those models can create¹⁹⁶.
198. Second, supplementary technologies used to directly communicate (without an intermediary national operator process) with emergency service organisations in a real world operational environment remain untested and/or have experienced some implementation difficulties in international jurisdictions¹⁹⁷. Comprehensive field (practical) and scenario testing would be

¹⁹¹ Telstra submission, Page 13.

¹⁹² The Tasmanian Emergency Information Service (TEIS) is a dedicated 1800 number owned and maintained by the Tasmanian Government to reduce general information seeking calls to emergency services during disasters.

¹⁹³ Emergency Alert is the national telephone warning system used by emergency services to send voice messages to landlines and text messages to mobile phones within a defined area about likely or actual emergencies. See www.emergencyalert.gov.au.

¹⁹⁴ TasALERT is the Tasmanian Government's official emergency website that brings together information from emergency services and government agencies. See www.alert.tas.gov.au.

¹⁹⁵ Tasmanian Government submission, Pages 5-7, 12.

¹⁹⁶ See <http://m.urgentcomm.com/blog/how-many-psaps-do-we-need-o-rielly-s-challenge-could-portend-new-era-911-operations>.

¹⁹⁷ See www.cnet.com/news/text-to-911-is-here-but-it-isnt-everything-you-might-think/.

essential to ensure the relevant networks and systems can manage the necessary workload before any transition from a national operator model could be considered. In particular, introducing the technical capability to accurately, reliably and quickly determine the location of callers (see Chapter One) would appear a key pre-condition that must be met if there was to be any significant shift from the current centralised national model.

199. Various stakeholder submissions note the merits and potential for new technologies to bypass the functions of the national operator, but ultimately consider this should be an informed decision coordinated based on expert industry advice and supported by a consensus from State and Territory government representatives and emergency service organisations (also see Chapter Two). Further, future amendment to, or removal of, the national operator should be consistent with Triple Zero's national strategy and technology agenda and related principles that are intended to guide the future integration of new technology into the Triple Zero framework (See Recommendation 1.3).
200. The ESTA model in Victoria demonstrates how a single State-based operator service can cater for additional emergency response entities (i.e. the SES, CFA) and undertake key consumer awareness raising activities (including via dedicated social media channels¹⁹⁸). While ESTA provides a more targeted service for Victorians seeking emergency assistance, it still maintains the core 'transferring' functionalities similarly performed by the national Triple Zero operator.
201. In discussions undertaken as part of the review, industry stakeholders have highlighted that the Emergency Call Person role does not necessarily have to be fulfilled by one organisation. Collaborative industry models for delivery of outcomes are used elsewhere in the telecommunications sector, a key example being the Telecommunications Industry Ombudsman (TIO). While there is a legislative framework that establishes a requirement for the telecommunications industry to have in place a scheme for independent dispute resolution, the actual day to day operations of the TIO are managed by industry members through an independent board.
202. The Department notes a collaborative industry based approach to deliver the functions of the Emergency Call Person could achieve a range of positive outcomes, including:
 - establishing greater transparency and industry consensus for various administrative arrangements (i.e. interconnection fees and associated processes, setting industry standards, aligning upgrades with broader industry developments);
 - providing greater opportunity to leverage resources and operating costs (i.e. staffing, expertise, system upgrades); and
 - assisting in the timely adoption and implementation of new technologies (i.e. coordinated transition to IP-based architecture).
203. An alternative model similar to the TIO scheme could be pursued in the long term if there was sufficiently strong industry consensus and benefits from such a transition (noting this would still involve a national operator – but delivered via an industry partnership).

¹⁹⁸ See www.facebook.com/Esta000.

204. The current national operator is structured to ensure there is redundancy and resilience. Any move to a more decentralised state based model would need ongoing consideration of appropriate levels of redundancy. For example, this might see individual jurisdictions having to continue to maintain multiple call centres within their state/territory as well as needing to secure additional capacity for emergency calls to be transferred between individual jurisdictions (if required).
205. The Department recognises the increased demand placed on the national operator during times of natural disaster. The need for surge capacity could be potentially ameliorated through States and Territories continuing their efforts to provide consumers with access to up to date information during major incidents or disasters via a range of means (such as broadcast media, social media or other platforms). Also, as discussed in Chapter Two, ongoing broader awareness activities around alternate sources of assistance and information may assist with reducing 'request for information' calls to the national operator during large scale events.

4.5 Findings

206. There is a high level of support amongst stakeholders for the continuation of a national operator under Triple Zero's existing delivery model. The majority of responses from stakeholders across all relevant groupings (Industry, consumers, and advocate groups) supported a continuation of a centralised model and retaining a national operator.
207. **An industry or collaborative partnership approach to deliver the functions of the national operator has potential.** The telecommunications industry could explore opportunities to deliver the national operator role through a collaborative industry approach. Ultimately this would require renegotiation of the current service contract with Telstra.
208. Under any delivery model, high call demand due to natural disasters or large scale events will pose challenges for the national operator and emergency service organisations, but other ways of providing up to date and accurate advice to affected communities via multiple means (such as social media, websites, radio, television) should continue to be explored to help manage demand on Triple Zero.

4.6 Recommendations

Recommendation 4.1

The Triple Zero service should maintain a national operator delivery model for the time being, as this remains an effective and proven model.

5. Chapter Five: Regulation

This chapter outlines the regulatory framework relevant to Triple Zero and considers the adequacy of existing regulatory mechanisms to support the policy, regulatory, and operational objectives of both the national operator, and the Triple Zero service itself.

5.1 Background

209. The regulatory arrangements for emergency call services in Australia are currently covered by the *Telecommunications Act 1997* and the *Telecommunications (Consumer Protection and Service Standards) Act 1999* (Consumer Protection Act), as well as a number of other instruments such as the *Numbering Plan 2015*, and industry standards, codes and guidelines.
210. The *Telecommunications (Emergency Call Persons) Determination 1999* (the Emergency Call Persons Determination) specifies Telstra, as the current national operator of emergency call services, to receive and handle calls to Triple Zero and 112. It also specifies the National Relay Service provider, ACE, as the national operator of emergency call services, to receive and handle text based calls to 106 from TTY devices.
211. Part 8 of the Consumer Protection Act requires the ACMA to make a determination which places requirements on carriers, carriage service providers and the Emergency Call Person in relation to the provision of emergency call services – the *Telecommunications (Emergency Call Service) Determination 2009* (the Emergency Call Service Determination).
212. The Emergency Call Service Determination requires carriers and carriage service providers to undertake a range of activities. These include:
- providing users of standard telephone services with access to the Emergency Call Service free of charge, with special arrangements for VoIP and satellite phones¹⁹⁹;
 - carrying emergency calls in a way that would give consumers the appearance of a single national emergency call system²⁰⁰;
 - carrying emergency calls to the relevant termination point²⁰¹;
 - transferring Triple Zero and 112 emergency calls to the Emergency Call Person ‘with the highest priority’²⁰²;
 - providing other carriage service providers with access to their services, networks and facilities to enable them to comply with the Determination²⁰³;
 - minimising non-emergency calls to Triple Zero and 112²⁰⁴;
 - providing certain information to the IPND Manager;²⁰⁵
 - providing automatic information about the phone number and the caller’s location,²⁰⁶ with further information available upon request by an emergency service organisation²⁰⁷; and
 - providing information to the ACMA.²⁰⁸

¹⁹⁹ *Telecommunications (Emergency Call Service) Determination 2009*, sections 13, 14, 14A, 15 and 16.

²⁰⁰ *Telecommunications (Emergency Call Service) Determination 2009*, section 21.

²⁰¹ *Telecommunications (Emergency Call Service) Determination 2009*, section 22.

²⁰² *Telecommunications (Emergency Call Service) Determination 2009*, section 24.

²⁰³ *Telecommunications (Emergency Call Service) Determination 2009*, section 34.

²⁰⁴ *Telecommunications (Emergency Call Service) Determination 2009*, sections 35 and 36.

²⁰⁵ *Telecommunications (Emergency Call Service) Determination 2009*, Part 4, Division 4.1.

²⁰⁶ *Telecommunications (Emergency Call Service) Determination 2009*, section 49.

²⁰⁷ *Telecommunications (Emergency Call Service) Determination 2009*, section 52.

²⁰⁸ *Telecommunications (Emergency Call Service) Determination 2009*, section 58

5.2 Stakeholder views (submissions and consultations)

213. Stakeholders have differing views on the scope and operation of the regulatory framework for the Emergency Call Service. For example, Telstra consider there may be some scope for deregulation by moving the national operator's regulatory obligations to a commercial contract arrangement and establishing a new national governance framework.²⁰⁹ Submissions from CA/AMTA, Optus, ACE, the New South Wales Government and the Queensland Government all noted the desirability of a regulatory framework that supports innovation, introduces new services/capabilities and has built in flexibility to evolve with continuous changes in technology.²¹⁰
214. Numerous stakeholder submissions recommended that the future regulatory framework should require location identification information for voice and any future alternative non-voice channels. Other submissions consider that the current legislation has not kept pace with the proliferation of new technologies (such as VoIP services or the regulation of spatial data) and advocate for new or updated regulatory frameworks.²¹¹
215. Industry, State/Territory governments, and individual submitters also raised concerns that there are no consistent standards (technical and/or regulatory standards) that apply to VoIP services²¹² and the current arrangements may not adequately address issues raised by use of VoIP services to access the Emergency Call Service.²¹³ In particular, submitters have raised concerns regarding:
- the risk of hoax calls and issues in accurately locating VoIP callers²¹⁴; and
 - the capacity of interconnecting service providers in some cases to assist law enforcement in identifying hoax offenders using VoIP services.²¹⁵
216. The Tasmanian Government advocated consideration of additional regulation to ensure that the registered location for a VoIP service is related to the property address of the caller and not a default location, such as the location of the server.²¹⁶ The South Australian Government also recommended introducing legislation that requires all providers of VoIP technology or services in Australia to provide access to the Triple Zero service.²¹⁷
217. Telstra's submission raised concerns regarding potential legal liability resulting from a failure to deliver new emergency communications services due to a denial of service attack²¹⁸ or failure in technology. However, CA/AMTA advocated that liability concerns should not override the implementation of new emergency communications services and the benefits these services may provide to the community, with specific consideration of whether liability can be limited by the ACMA through regulatory measures.²¹⁹

²⁰⁹ Telstra submission, Page 28.

²¹⁰ CA and AMTA submission, Pages 6, 8, 10; Optus submission, Page 2; ACE submission, Page 5; NSW Government submission, Page 11; Queensland Government submission, Page 4.

²¹¹ Submissions from NSW, SA, Tasmanian and Victorian Governments and the joint submission from the University of Melbourne, Victorian Spatial Council and APCO Australasia recommend that current regulation is reviewed and modernised.

²¹² NSW Government submission, Page 7.

²¹³ C Anderson submission, Page 4.

²¹⁴ NSW Government submission, Page 4; Tasmanian Government submission, Page 5; Victorian Government submission, Page 5.

²¹⁵ NSW Government submission, Page 4.

²¹⁶ Tasmanian Government submission, Page 11.

²¹⁷ SA Government submission, Page 4.

²¹⁸ Telstra submission, Page 13.

²¹⁹ CA and AMTA submission, Page 11.

218. A number of submissions also advocated greater reporting and transparency mechanisms to increase the accountability of the national operator.²²⁰

5.3 Discussion

219. Stakeholders have provided the Department with a range of views on areas where the current regulatory framework could be modified, in some cases calling for greater or broader regulation, and in other cases, arguing for less regulation.
220. Under current arrangements, the Department has responsibilities for Triple Zero policy and managing the current Emergency Call Person contract with Telstra.
221. For a number of years, ACMA has had primary responsibility under legislation for determining requirements and setting regulatory standards applying to both the Emergency Call Service and the Emergency Call Person, as well as enforcing those requirements. These arrangements reflect that the Emergency Call Person function until recently was an unfunded obligation on Telstra. Although delivery of the service is now under contract, regulation remains the primary means of enforcement.
222. To ensure flexibility in regulatory arrangements, during a period of potential change to the Triple Zero service, consideration should be given to the Minister for Communications having a reserve capacity to direct the ACMA to make or amend legislative instruments dealing with key principles and requirements that apply specifically to the Emergency Call Person or the emergency call requirements applying more generally to the communications industry.
223. A number of stakeholders have called for greater flexibility in the current legislative and regulatory framework. The Department recognises that there is benefit firstly in considering if regulated requirements remain necessary and if there are elements which could be reduced or removed without causing consumer or stakeholder detriment. Consistent with the Government's approach to de-regulation, the extent to which future requirements can be delivered with no or limited regulation should be actively considered. For example, subject to having suitably robust contract provisions, some Emergency Call Person reporting or performance requirements may be better dealt with contractually rather than having those requirements set in regulation. This would be similar to the current operation of the National Relay Service, where most aspects are delivered under contract.
224. It is noted that current and historical compliance levels with Triple Zero key performance indicators and regulatory targets is high. Moreover there is a strong reputational risk associated with substandard performance or failure of the Triple Zero service which will help ensure that high standards continue to be met.
225. Some stakeholders called for greater visibility of peak Triple Zero workloads²²¹ or information on the total time taken by the Emergency Call Person to handle and transfer calls, or mechanisms for end-users to monitor their calls through a dispatch service location and receive time of arrival information.²²² These types of changes may be better accommodated under contract rather than through amending or creating new regulation.

²²⁰ WA Government submission, Page 1; NT Government submission, Page 5; Victorian Government submission, Page 9.

²²¹ WA Government submission, Page 1.

²²² NT Government submission, Page 5.

226. Further, there may be some areas where there may be no strong case for any regulatory intervention. For example, the Emergency+ smartphone application is an example spanning both innovation and service improvement which has been developed and made available to consumers without any need for regulatory amendments.
227. The current regulatory regime is based on the historical premise that voice telephony (or the text based 106 service for the deaf or hearing impaired) was the sole means of seeking emergency assistance in a life threatening or time critical situation. Some of the key regulatory concepts, such as requiring prioritisation of emergency calls to the national operator, may not readily carry over to any new contact technologies introduced in future. For example, many existing networks were built to prioritise voice over data, and therefore new contact technologies may not be able to offer exactly the same degree of prioritisation as emergency voice calls receive today. Similarly, the regulated timeframes for handling voice calls may not be realistic or achievable if applied to alternative technologies.
228. Therefore, if it is agreed additional contact methods will be introduced over time to request emergency assistance to supplement the existing voice based Emergency Call Service, then the current primary legislation and underpinning instruments should be reviewed and amended to ensure that, as far as possible, they are technology neutral – particularly so that any existing provisions to minimise hoax or nuisance calls operate effectively.
229. If alternative Triple Zero contact methods were introduced in future, the existing regulatory arrangements that provide for government and industry levy funding for the Emergency Call Person may need to be modified to reflect the broader scope of activities being undertaken. Similar approaches have been necessary as technical enhancements have been made to the National Relay Service over the past few years to provide non-voice based communications alternatives for people who are deaf or have a hearing or speech impairment.
230. A number of submissions raised concerns around emergency calls made using VoIP technology, particularly in relation to ‘nomadic’ VoIP services that can be purchased and relatively easily relocated by telecommunications end users. It is relevant to note that not all VoIP services can be easily relocated. The issues raised are primarily related to the relevance and accuracy of address details which are drawn from the IPND in cases where a VoIP service can be easily moved by the consumer. While accurately locating VoIP callers in an emergency or preventing possible hoax calls from VoIP is a legitimate concern particularly for emergency service organisations, carriage service providers are already subject to requirements to provide accurate information to the IPND, and make reasonable efforts to ensure that such data remains up to date. This requirement extends to most VoIP services.²²³ The ability of carriage service providers to make accurate and timely updates to the IPND is often highly reliant on the information each carriage service provider receives from its customers.
231. The Department has separately undertaken a review of the IPND, which includes recommendations on options to enhance the accuracy of customer IPND details, including potentially enabling users to easily review and update their IPND address details. On this basis, additional regulation on carriage service providers to provide location information relating to VoIP services does not seem warranted.

²²³ See www.acma.gov.au/Citizen/Consumer-info/All-about-numbers/VOIP-numbers/voip-and-emergency-call-services-i-acma.

5.4 Findings

- 232. **Although alternatives to regulation should be explored, given the critical nature of the Triple Zero service, some level of regulation is likely to be required to provide minimum standards and to ensure community confidence in the Triple Zero service. As far as possible, the legislative framework should be simple, technologically neutral and objectives based to support technological innovation and introduction of new services/capabilities over time.**
- 233. **The current regulatory arrangements dealing with non-genuine calls are sufficient.**
- 234. **Obtaining current address/location of VoIP callers to Triple Zero cannot necessarily be addressed through more regulation imposed on the telecommunications industry, but may be better managed by giving consumers the ability to more readily review and update their address information.**

5.5 Recommendations

Recommendation 5.1

To ensure flexibility in regulatory arrangements, during a period of potential change to the Triple Zero service, consideration should be given to the Minister for Communications having a reserve capacity to direct the ACMA to make or amend legislative instruments dealing with key principles and requirements that apply specifically to the Emergency Call Person or the emergency call requirements applying more generally to the communications industry.

Recommendation 5.2

To the extent regulation is necessary for the effective functioning of the national operator and the broader emergency call service, the Commonwealth should as far as possible ensure that the federal legislative framework is technology neutral, flexible, responsive, and future proofed. However, non-regulatory options should be considered wherever appropriate.

6. Chapter Six: Tender for the Emergency Call Person

The chapter explores key issues that relate to the future tender of the Emergency Call Person. It includes discussion and analysis associated with the value, contestability, and timing of the future tender against current and anticipated market developments.

6.1 Background

235. Since 1 July 2012, there has been a contract between the Commonwealth and Telstra for performing the role of the Emergency Call Person. This forms part of a broader agreement which also covers Telstra's role in delivering a number of other public interest telecommunications services, including those related to Telstra's delivery of the Universal Service Obligation (USO). The funding arrangements are detailed in Chapter Three. While Telstra receives funding under the contract, it also remains subject to regulatory requirements as set out in Chapter Five.
236. The contract was originally negotiated in 2011, as part of broader negotiations of Definitive Agreements between Telstra and nbn™, and agreements between Telstra and the Commonwealth to support the rollout of the national broadband network. At that time, it was agreed that Telstra would continue as the Emergency Call Person for up to 20 years, subject to a future competitive tender process.
237. The current Commonwealth agreement with Telstra requires a tender process for the Emergency Call Person to occur no later than 23 June 2016. In the event that no tender bids are submitted, or none of the tender bids are considered to be acceptable, the existing agreement states that Telstra will remain the Emergency Call Person until 2032.
238. In 2014, the Government and nbn™ engaged in negotiations with Telstra to amend the Definitive Agreements and Commonwealth Agreements to facilitate the shift of the national broadband network from a primarily Fibre to the Premises model to a 'multi technology mix' model. Those negotiations were primarily focused on necessary changes directly as a result of the multi technology mix. Accordingly, the amendments made during these negotiations did not weaken obligations imposed on Telstra or increase the annual amounts payable to Telstra²²⁴, including in relation to the emergency call service.

6.2 Stakeholder views (submissions and consultations)

239. Although the conduct of the tender for the Emergency Call Person was not included in the specific terms of reference for the review, the Minister requested the Department have regard to the future tender as part of the review. The discussion paper issued by the Department also allowed various stakeholders to present views relevant to the tender within their individual submissions and during the targeted consultations conducted by the Department.
240. Many stakeholders noted Telstra's long-time role as the only Emergency Call Person for Triple Zero. Telstra's own submission noted it maintained a deep institutional commitment and understanding as a result of undertaking the role for more than 50 years. Telstra also noted it had

²²⁴ Department submission, Senate Environment and Communications Legislation Committee inquiry into the Telecommunications Legislation Amendment (Deregulation) Bill 2014 and Telecommunications (Industry Levy) Amendment Bill 2014, 27 February 2015 (http://www.aph.gov.au/Parliamentary_Business/Committees/Senate/Environment_and_Communications/Telecoms_Deregulation2/Submissions) .

developed a complex and dedicated framework that underpinned its role as the Emergency Call Person, which in turn, was supported by specific engineering and information technology knowledge and capacity²²⁵. Telstra also noted that while the existing Emergency Call Service model worked well within the existing voice telephony environment, consideration should also be given to alternative approaches that ensured the future proofing of the Triple Zero service by taking advantage of the capabilities and features offered by next generation IP-based services and systems²²⁶.

241. In relation to the tender potentially resulting in a change of the Emergency Call Person, a number of other submissions noted the potential operational difficulties faced if the tender produced such an outcome. Among the concerns raised, it was noted that at a minimum, accommodating any change of the Emergency Call Person would require a long term engagement with the current national operator to ensure the logistics and practicalities associated with an effective transition to a new Emergency Call Person could be successfully and safely achieved²²⁷. In addition, some changes to instruments would be required by the ACMA to recognise any alternative service provider as the Emergency Call Person²²⁸.
242. The CA/AMTA submission suggested the future Triple Zero service remained a critical piece of public policy that needed sufficient time to be examined and developed and should not be linked to an arbitrary deadline set to the release of a tender for the Emergency Call Person²²⁹. The CA/AMTA submission also recommended a two-stage approach that would first develop a clear set of policy objectives to underpin the continued delivery of the voice services component of Triple Zero, with the second stage dedicated to determining how Triple Zero would migrate to, and deliver, a range of next generation technologies²³⁰.
243. Optus advocated for the structural separation of the Emergency Call Person function from other operations of the successful tenderer.²³¹
244. The Combined Pensioners & Superannuants Association of NSW Inc. (CPSA) raised concerns that the tender process could potentially be used to reduce funding to administer Triple Zero, resulting in a decrease in the quality of the service.²³²

6.3 Discussion

245. Following consideration of the views presented by stakeholders on the tender and against all the review's terms of reference, there are a number of market structure, national coordination and technical issues that need to be considered in decisions around a future tender.

²²⁵ Telstra submission, Page 21.

²²⁶ Telstra submission, Page 21.

²²⁷ See C Anderson submission, Page 12.

²²⁸ Section 19 of the *Telecommunications Act 1997* enables the ACMA to determine an alternative Emergency Call Person even if the person does not operate an emergency call service at the time the determination is made (this is intended to facilitate a transition to an alternative provider).

²²⁹ CA and AMTA submission, Page 6.

²³⁰ CA and AMTA submission, Pages 5-6.

²³¹ Optus submission, Page 2.

²³² CPSA submission, Page 4.

246. In particular, there are three threshold issues likely to significantly impact the scope and outcome of the 2016 tender process for the Emergency Call Person. They include the:
- ability to achieve an appropriate level of contestability to achieve efficiencies in delivery and test the cost of the service;
 - timing of a future transition of Triple Zero to an IP-based network environment (and associated costs for all stakeholders);
 - proposed reforms to national governance and coordination arrangements set out in Chapter Two.

Contestability

247. Telstra is subject to both regulation and a contract to act as the Emergency Call Person for Triple Zero. Telstra's role with Triple Zero has evolved over time, but largely reflects its longstanding historical position as a vertically integrated owner of a national telecommunications network.
248. Given broader market structure changes and that the Commonwealth and the telecommunications industry contribute to the ongoing costs of the emergency call service through budget funding and levy arrangements, in principle, it is desirable that the role of the Emergency Call Person for Triple Zero be opened up through a competitive process to alternative suppliers. As discussed further below, competitive process could achieve lower prices and also provide a means for additional capability to be introduced.
249. A number of stakeholders commented on Telstra's entrenched position as the Emergency Call Person. For example, consultations indicate Telstra has many formal and informal operational functions (procedures and systems) firmly embedded into current arrangements making it potentially difficult for alternative entities to meaningfully compete in a tender at this time.
250. There are other risks associated with conducting a tender at this time. As noted by many stakeholders, the transfer of Emergency Call Person functions to an alternative provider selected through a competitive process could adversely impact on the integrity and continuity of the Triple Zero service if that was not well managed. If a competitive process resulted in substantial efficiencies or improvements, then those benefits could be weighed up against the costs and risks of transitional arrangements.
251. There are also concerns that a lack of transparency of the current cost structure of the Triple Zero service would also disadvantage competitors, particularly in terms of implementing a voice network architecture. If there is limited scope that a tender will result in multiple competitive bids, then proceeding with a tender process may not be a value for money outcome for either the Commonwealth (which would incur costs in administering the process and evaluating tenders) or for tender participants (given the costs in participating in the tender process and preparing tender responses).

Transition to an IP-based network

252. The combination of Australia's broader current transition from a circuit switched voice network to an IP-based telecommunications environment during the next five to ten years, and the expected continued growth of mobile services, presents a significant opportunity to rethink the end to end delivery of the Triple Zero service. For example, the tender process could be used to seek proposals for introduction of new technologies, and provide opportunities for innovative and different models of operating the service – perhaps collaboratively.

253. While Triple Zero's current systems are capable of dealing with emergency voice calls delivered over both traditional and IP-based communication networks, Telstra's Emergency Call Person network was never intended to deal with newer or data rich forms of communication technology (e.g. SMS, still images, video).
254. If a tender process was to proceed in 2016, it is likely that from a network/technology perspective, the tender would broadly need to be structured to provide the options of:
- replicating existing voice based technology and functionality currently maintained by Telstra and/or
 - introducing a more flexible and modern IP-based network architecture.
255. Given the sunk costs, other parties would likely find it extremely difficult to cost effectively duplicate the majority of Telstra's existing dedicated voice based network infrastructure and systems currently used to support the Emergency Call Person role (and in any case, this type of network architecture will likely need to be replaced in the medium term). However, maintaining the existing network architecture during any transition period to a new operator would have the benefit of not immediately incurring disruption and changeover costs for Emergency Service Organisations.
256. For a tender to be successful in delivering a viable alternative to the current service model, the Government would need to have a clear view of the technological objectives, structure, functions, service standards and funding arrangements for the Triple Zero service, as well as some sense of the transition framework and process. Additionally transitioning to a new Triple Zero provider would need agreement from all stakeholders, including on timeframes and funding for consequential changes to state/territory systems.

National governance and coordination reforms

257. If the proposed reforms to Triple Zero's governance and coordination arrangements (see Chapter Two) are adopted, these arrangements should be implemented prior to the commencement of the tender process. There is benefit in the new Triple Zero Coordination Committee being given the time and opportunity to develop and establish a core set of policy and technology principles, ideally with 'buy in' from States, Territories and industry to help inform the relevant requirements for a future competitive process.
258. Allowing the proposed national coordination arrangements and reforms to Triple Zero to be implemented would also provide greater certainty and guidance to potential participants when planning and/or participating in a future competitive process. In this context, peak telecommunications industry bodies (AMTA and the Communications Alliance) which have called for an overarching set of Triple Zero policy parameters to be established in order to provide clarity to industry across various matters associated with a potential change in the Emergency Call Person. This includes any potential transitional costs required to update or adapt networks to work with a new Triple Zero operator as well as assist in identifying and assessing options for the delivery of the Triple Zero operator function, including whether the responsibility could be devolved to industry or ESOs.²³³

²³³ CA and AMTA submission, Page 5.

259. Alternative delivery model structures, including the possibility of a shared industry approach, is discussed in Chapter Four. Delaying the 2016 tender will assist industry, should it wish, to meaningfully explore the feasibility of pursuing a collaborative industry model approach to deliver the functions of the Emergency Call Person. If a viable alternative industry approach was to eventuate, this would best be implemented either in advance of, or at the time that Triple Zero transitioned to an IP based network. Further, this would also give Government the ability to consider aligning the tender for Triple Zero with future arrangements for the text based emergency call functionality currently provided to the deaf and hearing impaired via 106 (as existing National Relay Service delivery and outreach agreements run until 2018).

The future competitive process

260. On balance, there is merit in delaying the tender for a period to provide time to clarify the future requirements of Triple Zero, introduce locational capability, and put in place future coordination arrangements for the service.
261. While Telstra's current Emergency Call Person systems and infrastructure remain functional for the immediate future, it is likely that Telstra will find it increasingly difficult to continue to cost effectively maintain and support ageing existing circuit based systems over time. A major technology upgrade is inevitable in the medium term. Telstra's existing networks and systems used to support Triple Zero will eventually need to be replaced with IP based alternatives, particularly given Australia and many other countries are progressively upgrading and/or replacing legacy circuit based copper phone networks and moving to IP based networks to support delivery of fixed line phone and broadband services.
262. In such an environment, there need to be safeguards to ensure that required system changes or repairs, or any further investment in additional functionality does not occur in a way that would unduly limit the contestability of any future competitive process.
263. Telstra and the Commonwealth would need to agree to vary the current contract to enable the 2016 tender to be delayed. Telstra would benefit from remaining the supplier for a further period and would avoid the immediate costs of participating in a tender.

6.4 Findings

264. **A 2016 tender process for the Emergency Call Person may offer only limited contestability, and therefore may not offer significant benefits to stakeholders.**

6.5 Recommendations

Recommendation 6.1

The Commonwealth should seek to postpone the 2016 tender for the Emergency Call Person for up to two years so that long term policy and technology objectives, including location-based information capability and timing for transition of Triple Zero to an IP based environment, can first be resolved.

Abbreviations and acronyms

4G	Fourth generation of mobile telecommunications standards / networks
5G	Fifth generation of mobile telecommunications standards / networks
ACCAN	Australian Communications Consumer Action Network
ACE	Australian Communications Exchange
ACMA	Australian Communications and Media Authority
ACMA Act	<i>Australian Communications and Media Authority Act 2005</i>
ACT	Australian Capital Territory
AFP	Australian Federal Police
AGD	Attorney-General's Department
ALGA	Australian Local Government Association
AML	Advanced Mobile Location (AML): Method developed by BT, EE and HTC for locating mobile users, drawing on the use of an embedded software tool in certain HTC smartphones (UK)
AMTA	Australian Mobile Telecommunications Association
ANZEMC	Australia-New Zealand Emergency Management Committee
AOL	Australia Online Research Pty Ltd
APCO Australasia	Association of Public Safety Communications Officials Australasia
BT	BT Group plc
CA	Communications Alliance
CFA	Country Fire Authority
COAG	Council of Australian Governments. Group comprising representatives from State and Territory governments and the Australian Local Government Association (ALGA), chaired by the Prime Minister.
Consumer Protection Act	<i>Telecommunications (Consumer Protection and Service Standards) Act 1999</i>
CPSA	Combined Pensioners & Superannuants Association of NSW Inc.
Criminal Code Act	<i>Criminal Code Act 1995</i>
CRTC	Canadian Radio-television and Telecommunications Commission
CSP	Carriage Service Provider
Department	Department of Communications
E9-1-1-1	Enhanced 9-1-1 (US)
ECHA	Emergency Call Handling Agent (UK)
ECLIPS	Enhanced Calling Line Identification Processing System: Telstra's emergency call handling and management system

ECP	Emergency Call Person: The <i>Telecommunications (Emergency Call Person) Determination 1999</i> specifies Telstra as the current emergency call person for Triple Zero and 112, and Australian Communication Exchange Ltd as the current emergency call person for 106.
ECS	Emergency Call Service: As defined in the <i>Telecommunications Act 1997</i> . 'Service for receiving and handling calls to an emergency service number and transferring such calls to an emergency service organisation (police, fire or ambulance) in life threatening or time-critical situations'.
ECSAC	ACMA's Emergency Call Service Advisory Committee
EENA	European Emergency Number Association
Emergency Call Person Determination	<i>Telecommunications (Emergency Call Persons) Determination 1999</i>
Emergency Call Service Determination	<i>Telecommunications (Emergency Call Service) Determination 2009</i>
ESO	Emergency Service Organisation: Police, Fire or Ambulance
ESTA	Emergency Services Telecommunications Authority (Victoria)
FCC	Federal Communications Commission (US)
GPS	Geospatial Positioning System
GSM	Global System for Mobile Communications
GST	Goods and Services Tax
ICT	Information Communications Technology
IM	Instant Message
IP-based	Internet Protocol-Based Technology
IPND	Integrated Public Number Database: Database of telecommunications customer information in Australia, arranged by number, for all carriers and carriage service providers.
IT	Information Technology
IVR	Interactive Voice Recognition
LCCSC	Law, Crime and Community Safety Council (part of COAG)
MMS	Multimedia Messaging Service
MoLI	Mobile location information
nbn™	Company established by the Australian Government to rollout and operate the national broadband network
NECWG-A/NZ	National Emergency Communications Working Group – Australia and New Zealand
NEMP	National Emergency Management Projects: grants program administered by the Attorney-General's Department which funds emergency management projects of national significance.

NENA	National Emergency Number Association (US)
NG	Next Generation: General term for developments in network architecture using various access and core technologies covering wired, wireless and mobile communications.
NG000	Next Generation Triple Zero (000)
NG9-1-1	Next Generation 9-1-1 System (US)
NPSTC	National Public Safety Telecommunications Council (US)
NRS	National Relay Service: helps people who are deaf or have a hearing or speech impairment to use the telephone, or other communication technology, to contact other people. The service relays voice, SMS, video, internet and telephone typewriter communications. The National Relay Service also provides an outreach service.
NSW	New South Wales
NT	Northern Territory
OTT	Over the top (communications): Refers to ability to deliver services such as voice or video calling using IP based communication over a data network (often the internet) rather than using a dedicated delivery network or platform.
PMG	Postmaster General
PSAP	Public Safety Answering Point (Canada and US)
PSHSB	Public Safety and Homeland Security Bureau (US)
PSTN	Public Switched Telephone Network
QLD	Queensland
SES	State Emergency Service
SMS	Short Message Service
SMSA	Standardised Mobile Service Area
TEIS	Tasmanian Emergency Information Service
Telecommunications Act	<i>Telecommunications Act 1997</i>
TIL	Telecommunications Industry Levy
TIO	Telecommunications Industry Ombudsman
TSO	Telecommunications Service Obligations (New Zealand)
TTY	Telephone Typewriter
TUSMA	Telecommunications Universal Service Management Agency

TUSMA Act	<i>Telecommunications Universal Service Management Agency Act 2012</i>
TZAWG	Triple Zero Awareness Work Group
UK	United Kingdom
US	United States
USD	Universal Service Directive (UK)
VoIP	Voice over Internet Protocol: Protocol for transmitting voice over data networks.

Appendix A – Submissions received

The Department received 48 submissions to the Triple Zero Discussion Paper. Non-confidential submissions were published on the Department's website at www.communications.gov.au

Submissions were received from:

1. Australian Communications Consumer Action Network
2. Australian Communications Exchange
3. Australian Capital Territory Government
4. Alan (no surname provided)
5. A Hughes
6. A Wade
7. Australian Mobile Telecommunications Association and Communications Alliance
8. A Corrigan
9. A Marsh
10. B Baker
11. Combined Pensioners & Superannuants Association of NSW Inc.
12. C Anderson
13. D Green
14. Design One Graphics Pty Ltd
15. Emergency Services Volunteer Association
16. Ethnic Communities' Council of Victoria
17. Confidential submission
18. L Trezise
19. M Skipper
20. M Byford
21. N Munslow-Davies
22. National Emergency Communications Working Group – Australia & New Zealand
23. Confidential submission
24. New South Wales Government
25. Northern Territory Government
26. Optus
27. Confidential submission

28. Confidential submission
29. P Litte
30. Confidential submission
31. Queensland Government
32. Confidential submission
33. Rick (no surname provided)
34. R Steele
35. South Australian Government
36. S Small
37. S Corfield
38. Tasmanian Government
39. Telstra
40. Submission not published
41. T Rackley
42. Confidential submission
43. Triple Zero Awareness Work Group
44. University of Melbourne (Centre for Disaster Management and Public Safety), Victorian Spatial Council, and Association of Public-Safety Communications Officials Australasia (APCO Australasia)
45. Victorian Government
46. Vodafone Australia
47. Wave Digital
48. Western Australian Government