

# Managing emergency call-taking in Australia

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## Developing a new framework for call taking in the deregulated telecommunications environment: Where have we come from?

Until early 1996, Emergency Service Organisations (ESOs) had been largely content to leave the '000' emergency call handling, associated policy and direction to Telstra, who had developed the network and operator arrangements to be able to effectively place emergency calls with ESOs. Broadly ESOs were happy with the Telstra service.

At this time however, Telstra was considering its future. Legislation was emerging that would, among other things, lead to greater competition in the Australian telecommunications market.

Telstra made it clear that it was only required to provide access to the 000 service under its licence as a telecommunications carrier, and that it was actually going beyond this requirement by providing operators to answer all 000 calls, ask the caller which ESO they require and then switch the call to the requested ESO. Telstra's (and the wider industry's) preferred position was to have ESOs take on sole responsibility for this aspect of emergency call handling<sup>1</sup>.

So there were a number of threats to ESOs emerging with the plans for the new telecommunications environment:

- the familiar relationship with Telstra could become fragmented, particularly if each carrier had to make their own 000 arrangements
- the legislation and licence requirements were not generally understood
- the telecommunications industry was taking the view that the ESOs should pick up full responsibility for the 000 service, adding substantial costs to ESO budgets.
- the Bill was being drafted in isolation from ESOs, who could have no certainty about the 000 arrangements continuing in an acceptable way or having the capacity to develop.

In March 1996 a national meeting of emergency service organisations (ESOs)

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Disclaimer: The views expressed in this paper are those of the author only and do not represent the views of the Department of Justice, Victoria or the national Emergency Calltaking Working Group

was convened in Melbourne, at the direction of the Ministers with fire and emergency services responsibilities, to consider emergency call handling matters. Participants were briefed on the preparations of the Commonwealth Government for a new Telecommunications Bill. The briefings, from Austel and Department of Communications and the Arts representatives, led the participants from all over Australia to the view that emergency services were not ready for the impending substantial change in the telecommunications industry and its consequent impact on emergency services.

The workshop determined that an ongoing working group was required to gather information and represent ESOs in discussions on the new legislation. This was convened and has become known as the National Emergency Call Taking Working Group (NECWG). NECWG has participated in telecommunications forums to promote the emergency service perspective.

One of NECWG's first tasks was to develop a set of *Emergency Call Taking Principles*, setting out the basic requirements of the emergency services. The principles, agreed nationally, guided NECWG's negotiations on the content of the Act with various bodies.

Of particular importance in the debate, from the ESO perspective, was the funding of the 000 service. The industry argued that ESOs receive the service and therefore should pay the cost of its provision. Clearly the community, specifically the 000 caller, receive the service. The 000 service together with the call processing by the ESOs and the response to calls by the police fire and ambulance are all part of the service to the community.

Whether ESOs should pay for the 000 service became an important aspect of the debate on the Telecommunications Bill, and resulted in a Section of the Act providing that 'the objective that emergency service organisations should not be charged for services provided by a recognised person who operates an emergency call service'. While ESOs were pleased with this outcome, it has still not resolved the fundamental problem of ensuring a revenue base for the 000 service. This must be resolved and will be dealt with later in this article.

## The Telecommunications Act

The new Act makes a number of provisions by way of *Objectives*, that are to be implemented through a determination made by the Australian Communications Authority (ACA). The issues addressed *inter alia* in the Act are:

- as far as practicable there should be no more than one emergency service number for use throughout Australia
- this number is set within the Numbering Plan rather than the Act
- that reasonable community expectations for the handling of calls to emergency service numbers are met
- access free of charge to an emergency call service for users of a standard telephone service
- the recognised person should receive and handle calls made by the end users, if appropriate transfer to an ESO and if appropriate give information in relation to such calls to an appropriate ESO
- ESOs should not be charged for services or carriage services provided by a recognised person
- a common system is used to transfer calls to an ESO and give information
- the requirement to transfer calls to an ESO with a minimum of delay and provide automatic information about

## Notes

<sup>1</sup> Paper prepared by Telstra and BEST (Bureau of Emergency Services Telecommunications, Victoria).

the location and identity of the customer.

### Single national emergency number

The Act requires that, as far as practicable, there should be only one emergency service number for use throughout Australia. While there are practical difficulties to be resolved with special services, there should be no reason why this cannot be achieved in the medium term. The Minister, Senator Alston, acknowledged the importance of a single national emergency number in the parliamentary debate on the Bill and undertook to have the ACA report regularly on progress toward achieving it.

At present, while 000 is well recognised in Australia as the emergency number, there are still a range of numbers in use.

- Emergency Service Access Numbers (ESANs) are still used in Victoria, South Australia and the ACT. These numbers, the 1144x range, are not listed in the Numbering Plan as emergency numbers and are paid for by ESOs. Calls to them do not receive the caller and customer information.
- There are special numbers in place for disabled callers.
- '112' was introduced with GSM digital phones. It is recognised in the Numbering Plan and is trunked into 000 centres. We are advised that the GSM protocol is a European standard and that special programming for small markets like Australia is not practical. By implication we are stuck with 112. It is of concern that this was done without consultation with the emergency services and procedures should be put in place to ensure that other emergency numbers are not inadvertently introduced into Australia with decisions to introduce another communication protocol.

### Problems with 000

The intuitive solution is to stay with the 000 number and work to remove the others. But 000 does not necessarily offer the solution. There are concerns about the health of 000 as an emergency number. For example, 2,523,025 calls were made to 000 in Victoria in 1996, 25 per cent of these calls were abandoned before they could be answered by an operator, while another 41 per cent were less than 10 seconds in duration. These statistics (see *Figure 1*) suggest we have a problem with 000.

There is a view that many calls to 000 are made as a result of misdials. The

Calls presented	2,523,025
Calls answered	1,873,652
Calls abandoned	641,371
Calls of < 10 seconds	1,044,808
% abandoned	25.4%
% < 10 seconds duration	41.4%
Average call value	12.66 sec

Figure 1: Calls made to '000' in Victoria, 1996

position of 000 in the same number range as international numbers commencing with '00' is believed to have contributed to these unwanted calls. The usual dial-out number on PABXs is also a '0', contributing to the number of misdials. In addition faxes and inventory machines are also believed to default to a string of zeros and ring 000!

Recently the issue of calls with no voice being transferred to the Public Safety Answer Point (PSAP) has been raised. Telstra has made it clear that it is standard policy to put calls with no voice through to the police answer point. In the US the practice is to ring back callers who hang up on 911, at or before answer. There are cases documented where the ring-back has led to police patrols being sent to places where people were discovered to be subject to duress.

The practical difficulty of ringing back callers who hang up on ringing 000 are clear with the volume of unwanted calls occurring in Australia. This problem with the emergency call number limits the effectiveness of the service in Australia. We need to establish urgently whether the 000 problem can be fixed.

The ACA and Telstra have agreed to conduct a survey to assess the cause of the unwanted calls to 000. This research is intended to clarify the situation and assist to determine whether they can be eradicated to make 000 a viable emergency number. In the event that 000 can be rehabilitated, then the ACA must confront what to do with the 112 number. Ignoring it will not be an acceptable option, as it would be contrary to the objective of the Act and clearly contrary to the Minister's commitment in the Senate. In the meantime 112 provides a handy alternative option to 000 if the problems with 000 cannot be adequately addressed.

Given the experience with the 000 number, NECWG has argued for the protection of the national emergency number in the number range. 000 has suffered the proximity of a range of numbers commencing with 00. Fortun-

ately these numbers have reduced but the key ones for international dialing and fax remain. Anecdotal evidence suggest that fax machines are a significant problem.

So what of the alternative '112'? We have urged the ACA to protect this number in the Numbering Plan for the time being to preserve it as an option. Recently however, Telstra elected to use the number 1223 as the Shared Directory Assistance number, a number that is expected to receive many millions of calls annually. While one cannot be sure that there will be an impact on the emergency number, it presents an alarming similarity to 112. The remainder of the 122x range is also allocated. Any immediate impact however would be expected to be slight given that 112 is not advertised at this stage.

My concern is the loss of the opportunity to protect 112 as a viable alternative national emergency number. Remember 112 is already trunked into 000 so any overlap will impact 000 now. To his credit the Minister recently wrote to the Queensland Minister stating categorically that Telstra would not be guaranteed the use of this number. It is also intended that the research undertaken by ACA and Telstra would seek to assess the impact of 1223.

### Telecommunications (emergency call service) determination

The determination was made on 26 June 1997 as an interim measure to ensure the ongoing provision of emergency call services at the previous standard or better. The background statement to the Determination indicated that it is likely that a further determination will be made reflecting new arrangements for emergency call services in Australia.

I believe that it will be necessary to address the requirements for a dynamic and effective emergency call service. The requirements must include the arrangements for the ongoing provision and funding of 000, the full specification of the service outputs, inclusion of new requirements that constitute enhancements to the service provided and accountability provisions.

The ongoing arrangements for the Emergency Call Person must be resolved for the future. Telstra have developed the role over the years and as a monopoly service provider could recover the costs of the 000 service in its normal charging regime. It is assumed they did. With competition, this ability will be impacted.

In 1996 Telstra argued that 'under an environment of full competition, it is questionable whether the carriers, or as presently is the case, one carrier Telstra, should conduct emergency services call taking, a function which is not the core business function of a telecommunications carrier' (Dougall, 1996<sup>2</sup>). It proposed the formation of a National Emergency Services Agency (NESA) that would be dedicated to the provision of Enhanced 000 through the answering of emergency calls and transferring them to the appropriate ESOs.

Sensibly, in the interim, the ACA nominated Telstra as the Emergency Call Person in the Determination. It is now incumbent on the rest of the telecommunications industry to work with Telstra and the emergency services to plan the strategy for the long-term arrangements.

Why not Telstra for the long term? While Telstra have generally done an excellent job in this area and can be expected to continue to do so for the time being, they have indicated that they plan to exit the 000 product. They have stated that it is not their core business. Therefore forcing the responsibility on to them in what will be a turbulent environment (both within the industry as post-July 1997 competition warms up and internally with the partial float) would not be the best for the emergency call arrangements.

It is in the community's interest to have stability in this service and therefore a smooth transition to a long-term service provider and a strategic approach to service enhancements is required.

To this end the NESA approach has merit. It would also provide a body with emergency call service as its core business. The opportunity to bring the management of emergency call service into the open with industry, ESO and community representation on its board is worthy of further consideration.

It is also vital to sort out secure funding arrangements to ensure an ongoing dynamic service and to allow the service to expand to take advantage of technology that emerges. The Act ensures that calls to 000 are free of charge to the caller. This provision is founded more in sentiment than practicality. NECWG argued that there should be no barrier to calls being made to 000. For example, calls must be able to be made from any phone or call box without the need for coins or cards.

Nuisance calls to 000 should attract a charge and it should be at a penalty

level. The owner of a fax machine that calls 000 many times on redial should be made aware of the impact their action is having on the emergency call service.

In the US calls are levied on individual subscribers. I believe that the 000 service should have its own publicly disclosed budget. The source of the funds should be the community that enjoys the benefit of the availability of the emergency service. The most appropriate way of collecting the funds is through the carriers and service providers who can identify it on the bill as is done with fire service funding collected through the insurance companies. It is important that the public can identify the cost of the service. With this will come greater accountability, which is to be welcomed.

### 000 enhancement

The emergency call service is a basic service to the community. It is a life saving service that must be as efficient and effective as possible. It will therefore need to adopt enhancements in technology as they become available.

Calls to emergency services from mobile phones are growing. Anecdotal estimates put the volume at about 15 per cent of all calls. Calls from mobiles are not handled in the same way as calls from landlines. The operator is required to ask the caller where they are ringing from and then select the appropriate PSAP manually. This is time consuming and open to greater error.

BEST<sup>3</sup> has been notifying Telstra of misdirected calls for some months now and while the number is small (less than one per cent) some of the cases have been significant.

ESOs require location information on calls from mobile phones. This is already becoming a reality in the US where the Federal Communications Commission (FCC) recently made a ruling requiring the staged implementation of locational information with mobile calls. By October 1998 the cell location is required and by 2001 a location to 125 metres is required 67 per cent of the time. This has caused a lot of interest in the US and trials have been underway. I have received advice that the trials are very encouraging and that better performance than that required by the FCC may be achievable. We will watch with interest and if possible improve on the 2001 timeframe.

The accuracy of the database information that provides the CLI and customer information is also important.

The Determination requires carriers and carriage service providers to provide customer information within 24 hours of a new service being supplied. This is excellent, however there is a need to ensure the accuracy of the data and that common data standards are used. The States and the Commonwealth are involved in determining data standards for geographical data bases and these standards will be required in the Determination. I would like to see the carriers and carriage service providers use the same mapping and address information as is used by the ESOs.

The manner of presentation of calls and customer information is also an issue and the most effective approach will be sought. Of course there is a point at which the ESOs PSAPs technology becomes a limiting factor. There is a need to take account of the different levels of the technology adopted across the country. A lowest common denominator approach is not necessarily the best one.

In this regard the ACA's inclusion in the Determination of the provision to charge ESOs for higher levels of service is flawed. There will be technology differences from place to place depending on a range of matters, among these being population and acceptance of change. The ACA's position in the Determination may stifle innovation and development of the emergency call service. I can see many discussions on the meaning of the words 'significantly higher than the service provided to most emergency service organisations'. I suspect this approach is a consequence of not conclusively handling the issue of funding of the service in the Act and the Determination.

Measurement and accountability are also important issues to be dealt with in the Determination. Basic statistical reporting is currently required. The Determination (Section 5.4) requires the emergency call person to keep records:

- about the number of emergency calls received
- about the percentage of calls that were answered in 5 seconds or less and 10 seconds or less
- the number of emergency calls

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### Notes:

2 Charles Dougall, December 1996, IIR Conference

3 Bureau of Emergency Services Telecommunications, part of the Victorian Department of Justice.

transferred to an ESO and the number made but not transferred to an ESO

- the number of calls abandoned in less than 5 seconds.

These are basic reports that will assist in the overview of the emergency call service. This should also include the time taken to transfer calls to ESOs. Access to detailed information about particular calls is also required to help ESOs investigate particular events. This would cover specific information on the operation of ECLIPS, abandoned call reports, overflow and call waiting reports.

### Emergency response system

It is important to see the components of the emergency response system in an overall context. The BEST project in Victoria, which involves the private sector delivery of emergency call taking and dispatch of emergency vehicles, has led to an unprecedented level of scrutiny of emergency call taking, which is only a small component of the emergency response cycle. While this scrutiny will not go away, it would be more productive if it focused on the whole of the emergency response process. To this end it is likely to extend to the performance of the 000 system and the response of the ESO resources themselves.

In the context of seeking performance standards on the 000 system, as part of the Determination, industry representatives have asked why the emergency call service should be subjected to tight performance measurement, if the ESOs components of the process are not also measured and the entire process assessed. Having said this however there is a need to develop benchmarks for the individual components to be able to arrive at an overall meaningful benchmark for the cycle.

The BEST project has developed performance measurements, which have focused on call answer speed and total time to dispatch. These measures known, as the Customer Specified Service Standards (CSSS), have caused a lot of pain in getting to where we are now. It is acknowledged that there is still a long way to go.

What has been found by BEST is that police and ambulance have more exhaustive information requirements than fire and prefer to take more time to dispatch. Victoria Police have commenced a project to refine their requirements and determine performance measures that ensure they receive the optimum service

delivered to support the field and management requirements. It is expected that this will contribute significantly to the development of benchmarks for emergency call taking.

For ambulance, call answer speed and total time to dispatch continue to be the basic measures. The recent introduction to the BEST CAD of the Medical Priority Consultants call taking product *Advanced Medical Priority Dispatch System* (AMPDS), provides an internationally-recognised measure of call-taking performance. AMPDS is a strict protocol that provides a method for the assessment of compliance with the protocol. Compliance may also be a ready comparison with other ambulance communication centre's performance.

With the exception of fire, time based performance applied to call taking can be contrary to the information gathering needs of ESOs. While speed is a consideration there is a requirement to collect more extensive information and at times to stay on the line and continue to collect information or provide advice ahead of the arrival of the ESO resource. Call control, therefore, is often a more important aspect of the call taking process.

The CSSS specified in the contract with Intergraph were theoretically determined because we were unable to get benchmarking material from other places in Australia or overseas. This dearth of performance material was still the case earlier this year, although I have now become aware of work that is being done in 911 Centres in the US, which may complement our own work.

The work being undertaken by Real Decisions appears to have some promising aspects, although with a different focus to BEST's work to date. Real Decisions are taking a 'cost per unit of work approach' to arrive at an efficiency measure.

Metrics being considered include:

- total cost per citizen served
- cost allocation by agency and or city
- total time to dispatch
- training time per agent
- agent time accounting
- transaction complexity
- citizen and agency satisfaction
- cost distribution: equipment, network, personnel and facilities

BEST will consider joining or at least collaborating with the project. This would provide an international comparison for benchmark purposes.

Benchmarking is an issue for us all, if we are to deliver the best possible

service to the community and be able to prove it. There are a range of forums for sharing information on respective jurisdictions but, to compare performance, measures will have to be agreed on that are meaningful and universal. I would like to hear from interested ESO personnel who would like to participate in an exercise to identify and define appropriate measures and set up a benchmarking group.

### The future

NECWG now exists and is working to define ESO requirements for the emergency call service Determination and is now being consulted by industry groups on emergency call service issues. This is a satisfactory situation but we also need to consider how to broaden the input to emergency call service matters.

I have been approached by ESO and industry personnel seeking membership of NECWG. While this is not appropriate, given NECWG's specific role in providing advice to State Governments, there is a need for a body that can bring together ESO, emergency call person and industry points of view, and use the combined expertise to develop the emergency call service in Australia.

In the US the Association of Public Safety Communication Officials (APCO) and the National Emergency Number Association (NENA) provide this focus. There is the facility of local chapters but to date this does not appear to have developed sufficiently to provide the policy and direction that is required. Something along the lines of NENA with a national focus, would be worth considering.

Until NECWG there was little attention given to emergency call service. There is a lot of work required. I recently sought information from each State on the extent of training and whether the training packages for each ESO were accredited. There was a wide range of responses but again there is a need for a standard, which might also save ESOs development dollars if a combined approach can be agreed.

I have not given any attention to call takers themselves in this paper. They are a crucial part of any call taking service. In other places call takers are celebrated for their work. Awards are given for commendable efforts by call takers and dispatchers. Call takers and dispatchers are a vital resource and more attention to their training and development and the development of their profession will bear fruit in the future.