

## Terms of Reference

That the following matter be referred to the Environment and Communications References Committee for inquiry and report by 2 November 2011:

**The capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters, with particular reference to:**

**a. the effectiveness of communication networks including:**

The Tasmania Fire Service has the capacity to disseminate community warnings and information messages to the community via all available media including commercial media organisations and the ABC with the establishment of memorandums of understanding for each media outlet, we also engage the social media and make available all warnings and community messages to the TFS web site and social media outlets Twitter and Face book.

Our jurisdiction had no significant incidents over the past six months to draw on but the intent of using all available media is aimed to ensure information and warnings and available and timely.

There is no one method that can ensure the delivery of alerts to the public. When there is a disaster the infrastructure required to deliver information and alerts will fail in some way and infrastructure is normally shared in rural areas, which is the most of Tasmania. Regardless of the communication method used the percentage of the people affected that have received the information is unknown. With many methods there is no way for the public to know that they have failed to receive a communication or the communication method being used is delayed. The public can tell if a public broadcaster is off the air however they cannot tell if there are delays or failures in SMS, facebook or twitter for example.

Prioritising ESO messages higher than the public traffic on the mobile phone network will assist in negating issues of congestion and delays. This is becoming more critical as most ESO in Tasmania (and in Australia) use or plan to use the public mobile phone network for operational usages. Congestion or failure not only affects the ability to get information to the public it will also considerably reduce the operational effectiveness of the ESOs. Most suppliers of these services, understandably, are driven by profit not by the ability to supply ESOs with service in times of emergencies and there is no community obligation imposed on them.

### **Radio**

Many radio stations are not manned locally after hours, they often broadcast a pre-recorded session after hours, in some scenario's this can have a negative effect when the public tunes into a radio station running a pre-recorded session only to find no information about an emergency which can give the public a false sense of security.

Less people today tend to listen to public radio or have a portable battery powered radio. Many portable radios now available, including those found in mobile phone, only have the FM band which is an issue in Southern Tasmania where the local ABC radio station is on the AM band.

### **Telephone**

Tests of the Emergency Alerts system in Tasmania have found that the delivery throughput of local telephone exchanges away from the CBD severely limit the speed or rate that alerts are delivered to the public.

### **Internet**

The Internet is not an effective medium for reaching certain sections of the population:

- usage amongst the elderly is typically lower than other age groups
- access to members of lower socio economic sections of the community who may not be able to afford Internet access
- access to regional areas is either higher cost or lower quality leading to lower usage, and
- Internet providers broadly fall into two groups in Tasmania and connections between these groups are via the mainland. That is, networking peering between Telstra and other providers only occurs on the mainland. If the network links between Tasmania and the mainland fail then a large group of internet users will lose access to the internet based alerts such as ESO websites and the social media sites facebook and twitter.

In terms of using social media as a communications method, such as Twitter or Facebook, it is that these 3<sup>rd</sup> party site have no delivery guarantee or message timeliness guarantee. An emergency alert sent via these method could either be delivered hours after the event or not at all.

### **b. the impact of extended power blackouts on warning systems for state emergency services, including country fire brigades and landholders or home owners;**

Generally as an Emergency Services Organisation (ESO) we build into our operational systems and networks the resilience and redundancy to allow for the continuity of operation through extended blackouts.

Major telecommunications carriers similarly have redundancy built in to allow for such outages but probably from the perspective of commercial risk management as most ESO's use such networks to deliver critical services and have contractual requirements for high availability and reliability of those services.

A weak link in the telecommunication infrastructure is the power supply to regional exchanges and regional cell towers, typically this infrastructure will have a limited backup power supply which has been rated to run the infrastructure for a designed timeframe, outages that exceed that designed timeframe will result in the infrastructure failing. This is less of an issue for metropolitan exchanges or cell towers as these typically have multiple mains power feeds and onsite generators resulting in a longer ability to function without main's power.

It is our experience that most public broadcast operators don't operate with the same commercial or contractual imperative to supply services and are more likely to suffer outages during extended outages.

It is therefore reasonable to expect that warnings systems can be delivered to broadcasters but it would be expected that with extended power outages not all affected

areas would receive warnings via radio broadcasters. Messages sent via mobile systems are more likely to endure extended outages.

One of the main issues concerning warnings being sent during a period where power outages are occurring is the public's reliance on mains powered equipment. In the absence of mains power, TV as a communication method is useless, public radio less so but the portion of the public with a non mains power radio has been decreasing.

Access to Internet services during a mains power outage is also suspect as the majority of the public still access internet services via a home personal computer which is reliant on mains power supply, this reliance is changing with the increased uptake of internet connected portable devices such as mobile phones but is still a significant issue.

The increased uptake of portable phones (not mobile phones) by the public means that fixed line telephone services are also vulnerable during a power outage.

### **c. the impact of emergencies and natural disasters on, and implications for, future communication technologies such as the National Broadband Network;**

Normally the main impact is on the infrastructure and the ability of the networks to operate standalone or locally without connection to a central network control point. Modern networks seem to fail this test and we have experienced several outages in recent years where an isolated community (eg Flinders Island) loses all phone services both fixed and mobile because of a system fault in a central exchange a hundred kilometres away.

The secondary impact during emergencies is that of network capacity to handle the volume of calls or connections. With the increase and reliance of mobile voice and data services within the community and everyone being connected phenomena, network availability and capacity to service users is questionable during peak periods now e.g. New Years Eve where networks don't handle the midnight call capacity. The same capacity issues are experienced during emergencies and particularly nearest to the area affected by the emergency. This affects the ESO's ability to use messaging/warning systems. It has been discussed previously the requirement for ESO's to have priority access to make calls across networks for both operational and messaging use during such emergencies and particularly in and out of the local area impacted by the emergency.

Therefore, it should be implied, that telecommunications carriers and their networks have reasonable resilience and redundancy to withstand such disasters and have mandated community service obligations to ensure reasonable capacity to deliver services during disasters and provide priority capacity for ESO's to receive and deliver warnings and messages to the affected community.

The NBN infrastructure is delivered in Tasmania above ground on poles with cables exposed to the elements and therefore very vulnerable to direct damage by fire and wind. It has been noted through other inquiries the vulnerability of services in remote and bushland areas that are above ground and recommendations made that such services be located below ground.

Future technologies will still rely on network infrastructure and its vulnerability as discussed.

**d. the scope for better educating people in high-risk regions about the use of communications equipment to prepare for and respond to a potential emergency or natural disaster;**

There is scope to better educate people in high risk regions about the use of communications equipment to prepare for and respond to a potential emergency or natural disaster, with the following cautions:

-Not all who may be impacted by an emergency or disaster will have access to all communications networks, and some will have access to none of them;

-Even people connected with one or more communications networks should not, nor be encouraged to, rely solely on warnings delivered via these mechanisms. During emergencies, network congestion and outages, and power blackouts, will affect system performance and public access. Rather, people should also be encouraged to pay attention to environmental cues, and take appropriate action in the event of these cues and in the absence of official warnings;

-A range of mechanisms to educate people about the use of communications equipment before and during emergencies and natural disasters should be utilised. Relying solely on traditional media to educate people may not reach those who increasingly rely on the internet and social media sites for information. And 'education' has largely proved ineffective in changing people's behaviour regarding preparedness for and response to natural disasters, if used as the sole mechanism. Educational approaches supported by community development approaches are likely to be more effective in changing people's behaviour to adopt one or more communication networks as a means of being informed about emergencies and natural disasters.

**e. new and emerging technologies including digital spectrum that could improve preparation for, responses to and recovery from, an emergency or natural disaster;**

ESO's have put a case to ACMA to have radio spectrum set aside for ESO usage in the digital spectrum. This would enable the ESO to have high speed wireless data networks for example to use for command and control operations from response to the recovery phase of an emergency or natural disaster. The intent of having spectrum set aside for ESO usage would mean that suppliers and manufactures have a platform to invest R&D resources around the known spectrum availability and known customer base within emergency management to supply useful hardware tools for ESO's. Enabling video imaging, high speed mobile data transfer, GIS apps etc

**f. any other relevant matters.**

