COMMONWEALTH OF AUSTRALIA

Official Committee Hansard

SENATE

ENVIRONMENT AND COMMUNICATIONS REFERENCES COMMITTEE

Capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters

TUESDAY, 9 AUGUST 2011

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SENATE

ENVIRONMENT AND COMMUNICATIONS REFERENCES COMMITTEE

Tuesday, 9 August 2011

Senators in attendance: Senators Bilyk, Boyce, Cameron, Humphries and McKenzie

Terms of reference for the inquiry:

To inquire into and report on:

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 radio, telephone, Internet and other alert systems (in particular drawing on the spate of emergencies and natural disasters of the 2010/2011 Australian summer):
   (i) in warning of the imminent threat of an impending emergency,
   (ii) to function in a coordinated manner during an emergency, and
   (iii) to assist in recovery after an emergency;
b. the impact of extended power blackouts on warning systems for state emergency services, including country fire brigades and landholders or home owners;
c. the impact of emergencies and natural disasters on, and implications for, future communication technologies such as the National Broadband Network;
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;
e. new and emerging technologies including digital spectrum that could improve preparation for, responses to and recovery from, an emergency or natural disaster; and
f. any other relevant matters.

WITNESSES

BARRIE, Mr Peter, Advisor, Australia New Zealand Policing Advisory Agency

KURUPPU, Dr Palitha, Advisor, Australia New Zealand Policing Advisory Agency

SCIPIONE, Mr Andrew, Board Member, Australia New Zealand Advisory Agency

Committee commenced 9.07

Evidence was also taken in camera—

ACTING CHAIR (Senator Cameron): I declare open this hearing of the Senate Standing Committee on Environment and Communications in relation to its inquiry into the capacity of communication networks and emergency warning systems to deal with emergencies and natural disasters. I must advise the witnesses that it is not the intention of the committee to publish or present to the Senate all of the evidence that you are about to give. However, you need to know that it is within the power of the committee to do and that the Senate has the authority to order the production and publication of undisclosed evidence. You should also know that an individual senator may refer to in camera evidence in a dissenting report to the extent necessary to support the reasoning of the dissent. We would try to seek your view on any proposed disclosure. You should be advised that if you give evidence that reflects adversely on another person, including anything in camera, the committee generally is required to provide reasonable opportunity to give that person to access to the evidence and an opportunity to respond. For any of your evidence that is taken in camera, any response would generally also be received in camera. With the formalities over, I welcome representatives of the Australia New Zealand Policing Advisory Agency here today. Commissioner Scipione, I invite you to make a brief opening statement before we go to questions.

Mr Scipione: Good morning. I appear before you this morning as a representative of the ANZPAA organisation but I do that in my role as a member of the board of ANZPAA on behalf of Australian police commissioners. It is in that capacity that I appear before you today.

Thank you for the opportunity. This is an issue because of the critical role that we believe that police play in emergency management within and across each of the jurisdictions around Australia. We are here because we have an interest in this but more importantly because we believe that there is a need to ensure that emergency services—and that includes the police and other emergency services—should be placed in a position that will enable them to best serve Australia well into the future. We simply propose that 20 megahertz of the digital dividend be reserved for police and other emergency services so that we have an effective and modern 21st century communications capacity. That is especially important during emergency incidents.

I have with me today Assistant Commissioner Peter Barrie and Dr Palitha Kuruppa from the New South Wales Police force. They are here representing the operational command that has responsibility for communications within New South Wales. Dr Kuruppa is a technical expert who works within that area. I am happy to hand it over. I would take the submission as having been read. If not, I am quite happy to tease out some of the more salient points—that is entirely a matter for you. I am quite happy to take any questions.

ACTING CHAIR: Thanks. I will cut to the chase. The evidence that we have heard has been about the debate over the 700 megahertz, which is the digital dividend, and the 800 megahertz. It would be interesting to know what your view is in terms of any technical differences, Dr Kuruppa, and any impediments to using the 800 megahertz range. Also, we heard evidence from Telstra yesterday that, if the emergency services tried to build your own system, you would run into lack of technical expertise, lack of finance and lack of skilled labour. They are the two fundamental points from my point of view.

Mr Scipione: I will respond to the last question that you asked. Heaven help us if we are going to have a lack of skill and a lack of understanding in an area in which, when it all goes wrong, we are the only people standing on the block. When there was an earthquake in Christchurch, we did not see too many people other than police and emergency workers on the ground. We in fact had to send from Australia almost 300 police and urban search and rescue people, with 75 of those from the New South Wales fire brigade. Not having the skills is not something that would stand us in good stead. That is not an appropriate comment.

Having said that, there has been a lot of discussion on the issue of 700 megahertz versus 800 megahertz. On the 700 megahertz, there are different technical points of view. Dr Kuruppu might tell us that in a strict technical sense there may not be a lot of difference between 700 megahertz and 800 megahertz. But it is what sits around a decision between 700 and 800 that is important. First and foremost, we know that 700 megahertz has many advantages over a number of other bands, particularly the wide area coverage for the broadband mobile communications that we are so interested. That is why it is known as dress circle spectrum or waterfront property.

We know that 700 megahertz must be better than 800 megahertz simply because the proposal that is contrary to ours is that you would sell the 700 megahertz to a carrier who would then in turn sell it back to us at a premium rate. If it is not the best part of the spectrum to be, then why would we even entertain paying good money for it? I do not know that that has been explored before.

From our position, we know that we would make very good use of it. Within a New South Wales police context, we have seen the importance of communication at times of crisis. And it does not matter whether we are talking about a Victorian bushfire, a flood in Queensland, an earthquake in Christchurch or this very morning in the UK, where I am sure that they would be looking to their communications. I believe that they have sought out—like the Canadians and the Americans—a small part of the 700 megahertz spectrum to have that made available to them for emergency response. In places like Tottenham and Peckham Lewisham, there are major problems this morning with rioting and I know that they need everything going for them, which is why we are before you. When times are good, the importance may not be quite so stunning. But when times are bad and you need something going for you, we believe that a small allocation of some 20 megahertz will make a crucial difference for us, potentially, right across the nation.

ACTING CHAIR: The analogy that you have used is fine, but there is also another analogy that, if I was to be the devil's advocate here, I could use. You do not put Lamborghinis on as police pursuit cars; you put high-speed Holdens and Commodores—cars that are equipped to do the job in a safe and effective way. Are you looking for a Lamborghini approach with the 700 megahertz—and I am not even sure if this is an appropriate analogy—as against a Holden/Ford position that would do the job?

Mr Scipione: Interestingly, the New South Wales government submission talked about this. It said that currently, New South Wales is using low-speed data that is effectively in the 400 megahertz band. That is being used to provide dispatch information in text form to ambulance services. But we require high speed. The fact is, in the past we would have relied on voice communications. We are now increasingly looking to push video.

A highway patrol car is a classic example; a very good example. If you look at what is carried on board a New South Wales police highway patrol vehicle, it is a mobile data terminal. So we are looking for data, in and out. There is in-car video. We would be looking to take images from a car to a command post so that we can make critical decisions. There is a mobile automated number plate recognition system, a very big consumer of bandwidth. In New South Wales alone, we currently run 500 biometric infield wireless radio detection systems. We can go in, take two fingerprints, send that information back to Canberra in real time and have a response back to the officer who is with the offender within about 30 seconds. The sheer volume as well as the nature of what is changing in this space means we need high speeds.

If we as a police force are trying to police in the 21st century, I do not think that it is right that we should be restricted to what we were given in the 20th century by way of an allocation. The world has moved on. We are trying to police a world that has moved on. When you combine things like the high-speed video that we require and the other things, these are critical decisions. It is pointless to say, 'Package it up and you'll get it in 30 minutes,' if it could be available to us in a much shorter timeframe. Much better decisions come from much better information, and the sooner that we get it the better it is.

We know that we will be moving forward. This is not just an allocation that we are seeking to meet today's needs. We also want to meet tomorrow's needs. When you are looking to find crucial evidence very quickly so that you can stop an offender from going out and committing another offence or—god forbid—some act of terrorism, you want everything going for you. Right now, we are reliant on carriers to provide that. In times of emergency, when systems are being taken down and you are in crisis, invariably we know that those systems go into meltdown. Everyone wants to get on the cellular phone at the end of the grand final and ring home and say, 'Our team won,' or 'Our team lost.' That shuts us down. It is not the carriers do not care about us; it is more that they have millions of customers who want to get access at the same time. They maybe do not have that depth of resilience that we might like.

The car example is a good one. The unfortunate reality is that we are out there trying to catch the Lamborghinis. And when I talk about the Lamborghinis of criminals, we are dealing with the worst case situations. If we are really going to be able to cope in the 21st century then we need to get access to 21st technology as opposed to what was allocated to us in the 20th century.

ACTING CHAIR: We may come back to more on the 700 megahertz or 800 megahertz issue a bit later.

Senator HUMPHRIES: I want to pursue the issues that the chair has raised. The issue that the committee is looking at here is the divergence in technical advice that we are getting about the effectiveness of the 700 megahertz versus the 800 megahertz bands. We have been told by some people in the telecommunications industry, for example, that the 800 band is an acceptable alternative that will deliver high-speed broadband and

that is capable of doing what the emergency service organisations want. I will come to their arguments in a minute. The point that I am going to make to you is that, to the extent that you give evidence about the relative values of those two bands, I assume that you will not have a problem with us putting that evidence to other witnesses and asking them, 'What do you think about that?'

Mr Scipione: Not at all.

Senator HUMPHRIES: That is the critical question that we are trying to resolve.

Mr Scipione: If you were to say that you feel that you should be putting this evidence into the public domain with the obvious opportunity to perhaps tailor what is released I would not have a problem with that. If is more just in case something came up that would be problematic for us. To come back to your question, I will get Assistant Commissioner Barrie to talk to it. But I will start by saying that from my perspective that is clouding this argument a little. I do not know that technically we would be too much worse off from a science perspective—although I am sure that the doctor could give us a view on that. But we do know is that there is a one-off opportunity here. We are about to clear the field with that 700 megahertz digital dividend. As we move away from analog television channels, that spectrum is at the moment pristine. The 800 megahertz range is not. From what I am advised, we would have to migrate people off 800 and move on. That would still mean that it is not clear space, while 700 is.

Then there is argument about equipment. We know that there is off-the-shelf equipment available in that 700 megahertz area. It is not quite so in the 800 megahertz area from what we are told. It could of course be built, but that would normally mean that it would be at premium rates. It would be new and you would have to fund that. That becomes problematic for us. What I might do is give Mr Barrie a chance to talk to your point and, if you like, I am more than happy for the doctor to talk about some of the technical issues.

ACTING CHAIR: Before you start, we think that it would be very helpful to have some of the evidence that you have given this morning on the public record. The committee will probably have a quick meeting after you have given evidence. But I would be recommending that we send you a copy of the Hansard. We will look at the areas that we think might be a problem and you can do the same and then we will see as to whether we can reach an agreement on what can be put into the public arena.

Mr Scipione: I am more than happy with that.

Mr Barrie: I can say that I have struggled with the same issue over the last 12 months in dealing with this. I have sought advice and then I have done what all old police officers revert to, which is seek evidence to either support or refute that advice. One of the key things that I have found in regards to this is that the majority of stakeholders in this space have a commercial interest in the outcome—a significant commercial interest. I would point to the fact that, as Commissioner Scipione has said, this is a view that has been arrived at by all commissioners nationally. It would be fairly rare for that to occur. That is on the advice that has been provided to them. In speaking with each of the commissioners about an address that was provided by my predecessor, Assistant Commissioner Waites, it was clear to me that they had all been very well briefed in terms of their capacity to absorb the technical detail. Likewise, there have been police ministers who have supported that same proposition.

In terms of the 700 versus 800 argument, in the first instance people talk about the technical details—the propagation characteristics and what it is capable of in terms of transmitting information at a high speed over reasonable distances. That provides the opportunity to design a network and architecture that meets our requirements. From that perspective, it is true to say that the propagation characteristics of 800 versus 700—and some portions of 900, for that matter—are very similar in nature. There is very little doubt about that.

But this argument is not a simple one about the propagation characteristics of a radio frequency spectrum. There is also a variety of other factors that impact significantly, not the least of which—as the commissioner has outlined—is the harmonisation factor. This is an area of spectrum that, while not being managed identically in all three regions across the region, has a significant component that is harmonised worldwide. Across all three regions recognised by the International Telecommunications Union, the 700 megahertz radio frequency spectrum is seen as suitable for LT broadband applications. The technology is already starting to be developed and deployed in greenspace. If you like, it is building block with no house and no structure as and from the switch across from analog to digital TV. We know that that is going to occur across the world.

When you look at other segments of the radio frequency spectrum, there is the legacy of previous years of usage of those. In the 800 particularly, there are thousands of incumbent users who use that band of spectrum for a variety of different purposes. Any suggestion to refarm that in the first instance requires a lot of work to relocate those people, who all have legitimate commercial purposes or other requirements in that space. They will need to

be relocated. Public safety, for example, has point-to-point links in the same area of spectrum and they would need to be relocated under that sort of proposal.

That is similar on a country by country basis. Each country or region around the world have already utilised that area of spectrum. It is not sitting free or vacant. If they were to look to harmonise that then they would need to create the market force required to deliver the sorts of technologies and the range of features that public safety requires. If Australia were to go it alone, the public safety market by itself is not large in comparison with the market for smart phones and so forth across the general community. If you were to segregate that even further to a point at which Australia was isolated in terms of the need for that particular technology to be developed in a particular band of spectrum it would certainly be expensive. It would likely take a considerably longer period of time to be developed and delivered in the marketplace. Anything can be done. It is a question as to the availability, the development of standards, the market forces and the commercial interests of those people who develop this technology in providing that to the marketplace. It is not such a simple equation.

Going back to Senator Cameron's analogy in terms of a motor vehicle and whether or not we are asking for a Ferrari, in some ways it is indeed the opposite. I will put it to you in the following terms. A colleague of mine recently retired and his first purchase was a brand new Land Rover Discovery. It is a beautiful motor vehicle; it has every feature under the sun; and it works beautifully. But it is a petrol driven motor—so premium fuel—and, whilst it delivers a capability for off road, there is not a sufficient market for bullbars, windshields, steps and so forth to be developed. So, at the moment, as he is touring around Australia, his Discovery is actually sitting in the driveway.

He went out and purchased two Landcruisers to take with him because the Landcruisers, whilst a similar vehicle, were freely available and there was a significant market for after-market products and it operates on low-grade diesel fuel and he can take it anyway. The situation is similar in the 700 versus the 800 in some ways. Both vehicles can go on off-road terrain and were probably designed for that purpose, but there is a whole range of factors that he should have taken into consideration in planning that trip. In this instance, one of the key differences is that the Landcruiser has no occupants and the Discovery has people crammed to the ceiling, which is the case in 800. I am not sure if that helps you in terms of a simple analogy.

Senator BILYK: I quite like this car analogy. Basically I think what you are saying is that the 700 megahertz would be a basic Ford and the 800 megahertz would be a Ford with all the extras and it would cost more. Or is it the other way around?

Mr Barrie: By virtue, it would be exclusive in its use by us at this moment in time. It is not currently recognised for LTE mobile broadband. If we were to go that way, rather than taking a general type vehicle, we are actually specialising because we are locating ourselves in such a small segment of the market that products would have to be developed specifically and tailored specifically for our use.

Senator BILYK: At 800 megahertz or 700 megahertz?

Mr Barrie: At 800.

Mr Scipione: One would be the position of the carriers. If they were offered 800, they would probably come back and say, 'You can't buy the equipment that you need off the shelf, so it is going to be purpose built.' That is the analogy. The Range Rover is wonderful but, if you actually want to use it for its design—that is, off road—you cannot buy wheels for that car to take into Kakadu now.

Senator BILYK: And you have paid a lot more for it.

Mr Scipione: You have paid a lot more for it and you cannot use that car because they do not make the accessories—the bullbars, the wheels and so forth. So it has become almost useless. In fact, it is sitting in the garage waiting for this particular person to come home and start using it and drive around the block.

Senator BILYK: That is right. Or he could go out and get things custom made, but he would pay three times the amount.

Mr Scipione: Yes, he is going to pay a premium and he has already paid a premium for it.

Senator BILYK: Thank you. I just wanted to be very clear that I was clear that I knew which was which.

Senator HUMPHRIES: To extend that analogy, Telstra's submission to us would certainly argue that the 700 spectrum is the Lamborghini option. Their estimate is that the cost of reserving that amount of spectrum otherwise available in the market would be in excess of a billion dollars. We all want our police and emergency services to have high-quality, up-to-date and effective communication systems and so on, but obviously cost has to be an issue there. I suppose you cannot answer the question of whether or not it will cost a billion dollars.

Telstra go on to talk about the question of harmonising frequencies with what is happening in our region—and by that I mean the Asia-Pacific region. They say that the International Telecommunications Union has identified a spectrum for public protection and disaster relief and they say that that should be in the 806 to 824 megahertz and the 851 to 869 megahertz ranges. They said that that is the arrangement being adopted across the whole of South-East Asia and around the Pacific rim. Do you have knowledge about that? Is that the case? We have heard different views about whether or not this is the case.

Mr Scipione: I am happy for doctor to respond. The only thing I would say, though, is that most of our interactions are with US, UK and European agencies. We do not have a lot to do necessarily with the Filipinos or the Indonesians in this regard.

Senator HUMPHRIES: But if there was a regional emergency, you are relatively likely to end up in places like Philippines, Singapore or whatever. You are not likely to end up in the US or the UK.

Mr Scipione: Except to say that New Zealand is going through this very issue right now. We were in New Zealand last week and all commissioners met with the commissioner from New Zealand and they said, 'We're in exactly this sort of situation at the moment.' There is this notion that we are somehow locked into what we would generally do.

Let's talk about Timor. When we were in Timor-Leste as part of police response after the Indonesians moved out, effectively we were in there working with a whole range of countries—and the Americans were there. In New Zealand we were working alongside the Israelis, the British and the Americans. There were people from Singapore—that is a given. But, as a general rule, we source most of our material—because most of our people train—in that European-UK environment. I am sure that Dr Kuruppu might have something to add.

Dr Kuruppu: What we are looking for is LTE long-term wireless technology. That is 4G technology. The International Telecommunications Union has band plans. In the case of 700 and 800, they have band plans. The particular frequency 806 to 820 and 851 to 869 is what that document was talking about. In the Asia-Pacific region currently that band is taken for narrowband voice com cases. In our case, we are using a 400 megahertz band for narrowband voice com cases. That is the difference. That means that that particular band is not yet recognised by the international community for 4G type technologies.

Senator HUMPHRIES: I put that issue to Telstra yesterday and they said that they did not understand the issue. They said that the 800 and 700 bands had equal capacity to deliver both broadband and other applications like voice, radio communications and so on.

Dr Kuruppu: Worldwide they are manufacturing broadband for internationally recognised band signals. What I am saying here is that 806 to 820 coupled with the 851 to 869 is not yet recognised by the international community for 4G technologies. It is in their plan but it is not yet recognised. It could happen in the future. That is the problem. It is for PPDR. In the case of PPDR, there are two areas. One area is narrowband voice communications and the other area is broadband communications. In the case of the USA, for example, they have their narrowband voice communications as well as broadband communications in 700 megahertz. In Australia, the ACMA have given 400 megahertz under the spectrum harmonisation for our narrowband voice communications.

Senator HUMPHRIES: We are going to hear from the Department of Broadband and Communications.

Mr Scipione: Assistant Commissioner Barrie might be able to add a little bit to that as well, which might clarify things a little.

Mr Barrie: I think you will probably hear from ACMA on a similar point. I think they are coming along this afternoon. They may go through and explain to you that there are a range of bodies internationally and within the region that look to develop standards. I guess what the standards then do is provide direction for companies to develop technology to meet those bands recognised within the standards. What the doctor was informing us was that the particular PPDR from 806 onwards is recognised for narrowband services. So it is recognised for voice communications and the like. It is not currently recognised in those standards for broadband LTE applications.

Senator HUMPHRIES: That is directly contrary to what Telstra told us yesterday.

Mr Barrie: I can take that a step further for you, Senator. There is work underway—and ACMA are in some ways leading some of this. The 3GPP is a third-generation project partnership which looks at development of areas that might be suitable for these types of deployments. They have recently—I think within the last couple of weeks—issued communique to say that they are currently exploring that or it is on their work plan for region 2, which is the Americas, excluding the USA. So they have identified that in their work plan. But that is about as far as it has been taken.

Through the AWG, which is an Australian-Pacific telecommunications working group, I think it was Ericsson, supported by ACMA that proposed that that again be considered within that working group. That is a body of work that may occur over time. Generally these sorts of standards take some years to develop before they are released and then the technology is applied and developed for release and deploying in those bands. Currently the information is freely available and the ITU actually publish what is recognised in terms of their standards for the deployment of LTE equipment.

Mr Scipione: And as published, we are advised its use has been allocated and designated for narrowband voice coms. It may change in the future, and perhaps someone has some better exposure to that future. But right now, as we stand today, it is not allocated.

ACTING CHAIR: We are over time and there are other witnesses that we need to hear from. It is a pity, but we have to wrap up now. The advice that I have is that Sweden, the UK and other European countries are moving to broadband on 800 megahertz and that in the Asia-Pacific region the 800 megahertz will be developed as broadband and, once you start getting that done, suppliers like Siemens will provide the equipment and the interoperability issue disappears. These are the counterarguments that we are getting, and we have a lot of thinking to do on this. Maybe we can put some more technical questions to you in writing on notice and maybe you can come back to us on them.

Mr Scipione: Sure. Can I just say in conclusion that this will be a commercial decision. Clearly, that is the case. We are asking what we believe is for a very small proportion of a very lucrative area within the spectrum. We are looking for two times 10 meg slots. I am here today because, as a police officer, we have one thing in mind. That is not to make a profit; we just want to add to the safety and security of our nation.

The fact is that if we are going to have to look at either dealing with an allocation in the 800 mega area, should that be the decision that is made by government, or, alternatively, buying service, it is going to cost us—and cost us significantly as we become more reliant on this type of technology. If there was some means by which we can be helped as a profession to transition through into the 800 megahertz area and, if the allocation was made perhaps there is some means by which we can take some assistance from the Commonwealth to make it, if you like, more achievable.

We know that Siemens and the like will move in there but they will still charge a premium rate because they will not be making a million widgets; they will make a hundred for law enforcement for our specific need. Whereas, when everyone is on 4G they will be making millions and millions and millions. So we will never get a cost comparative opportunity to buy at the rates that we would should we have been in that 700 megahertz area. Certainly we have discussed this with my colleagues. We are before you simply asking for support. If that is not something that the government decisions is acceptable, for whatever reason, we would be asking for support in perhaps another way, and that might be some supplementation.

ACTING CHAIR: Thanks, Commissioner Scipione, Assistant Commissioner Barrie and Dr Kuruppu, for your evidence here this morning. I would like to formally place on the record our appreciation for the work that all the police departments have done over the various disasters that we have had in recent times. We thank you and your various police forces for the work that they have done.

BROWN, Ms Naomi, Chief Executive Officer, Australasian Fire and Emergency Service Authorities Council

[09:49]

ACTING CHAIR: I welcome representatives from the Australasian Fire and Emergency Service Authorities Council. Thank you for talking to us today. Do you wish to make a brief opening statement before we go to questions?

Ms N Brown: Yes, I will. The Australasian Fire and Emergency Service Authorities Council is the industry body for rural fire, emergency fire, rescue state emergency services and land managers. We are a not-for-profit company and we are funded primarily by our members. We have a huge interest in the criticality of warnings and issuing information. It is now a major feature of managing emergencies and has become so much more over the last few years. That is really very much because community expectation has risen exponentially and the access to the technology that everybody has enables that. That in itself is an issue that I want to come back, about expectation. One of our contentions is that warnings and information dissemination extends far beyond the technology. As important as the technology is, it is really part of a whole system. That system has a number of elements, particularly the preparation and education of the community. Without that a lot of the warnings are not particularly useful.

All of the features around the collection of the intelligence that the authorities need in order to have the information to issue the warnings is a major feature that we are interested in, as well as actually disseminating the warnings themselves. We would contend that you need a balance in the investment and in the focus on preparing communities on survivability, and the investment in the technology will allow that to happen. We are pretty strong on the concept of shared responsibility which has probably come up in this inquiry before.

One of our major concerns is the increasing and often unrealistic expectations that the community has on what is actually possible with warnings. Whether it is lack of information that the authorities have—power failures are obviously a major feature—or the unpreparedness by individuals to receive the message, or sometimes it is downright confusion. I was asked by somebody doing a story in the media on whether the warnings were the silver bullet. 'No, not really,' was my answer. We are also not particularly well informed in understanding how people behave when they get warnings and what they actually do with them. That is a fairly large feature that the Bushfire Cooperative Research Centre are doing a fair bit of research on. The access to the technology and its weaknesses is obviously something that occupies the minds of fire and emergency services a lot and I am sure we will be talking about that.

The last thing I want to say is that, despite emergency management being a state and territory matter, the more we can have a national approach to the whole matter of providing information during disasters and during emergencies the better off we are for the future.

Senator BILYK: In light of past experiences and some of the evidence you have already given have your members already sought to change their relationship or arrangements with the media to improve how they get their message out on the flow of information?

Ms N Brown: Yes, they have. The media is a very important part in the issuing of the information. For a long time the major relationship the agencies had was probably with the ABC, which has been very successful. I think all of them would have MOUs with their particular ABC. One of the parts that was missing until fairly recently was the same relationship with the commercial providers.

Senator BILYK: That was going to be my next question.

Ms N Brown: I would say that they are getting there. It is getting better. Victoria has been quite successful and that obviously came about because of the major bushfires. They have had some success in working with commercial radio stations to do something similar to what the ABC does. I think New South Wales is having some success. It is not quite as easy as with the ABC but there is a fair bit of movement in that area.

Senator BILYK: The commercial radio station people gave evidence yesterday and they told us that they had developed MOUs with a number of states and were working in the other areas, so it did sound as though it was a bit more hopeful.

Ms N Brown: It is certainly a bit better than it was a few years ago. I have worked at a couple of the agencies both in WA and in Victoria and really could not get much joy at that stage, but it has improved a lot.

Senator BILYK: Do you have any view on whether the impact of the rollout of the NBN will make a difference to communication processes through disasters or terrorism incidents?

Ms N Brown: I think there is a lot of hope that it will. One of the things that the emergency agencies increasingly need is data. For all sorts of reasons what is available now can be pretty hard to come by and fails a lot. This is important in two ways: both in getting the intelligence from wherever the disaster is when relying increasingly on applications that are pretty data-heavy and in the community having expectations that they can see events happening in real-time and complex maps, and that is going to take a lot more than we have now. Yes, there are hopes and expectations.

Senator BILYK: You mentioned how people deal with the information they get. We heard from the Australian Psychological Society about people getting so many warnings it is a bit like crying wolf with people starting not to listen and warnings not taking effect. Do you have any further comments in regard to that?

Ms N Brown: It is a danger that we are all pretty aware of. One of the things happening now is that there is an application which allows for landline messages—State Alert is the Western Australian one—an application which the Commonwealth funded and they are all using.

Senator HUMPHRIES: Emergency Alert.

Ms N Brown: That's the one. State Alert is the WA one that does the same thing. You get SMS and landline messages. One of the weaknesses, which I am sure you are aware of, is that it goes to the billing address. I know a lot of work is happening and I am sure in the not too distant future they will be able to go to the actual location. Having technology that does not quite get to the right spot adds to the problem of having too many warnings. In addition to the number of warnings, there is sometimes an assumption that in 165 characters you can convey enough information for people to know what they should be doing. I heard a good example the other day from the Queensland floods. Somebody had a relative there who did not know she was living in a flood-prone area. She got the message telling her to go to higher ground and it came out of the blue because she was not prepared. More importantly, she had no idea where higher ground was. This was a really good illustration that without all the preparation a 165-character message may not give what you think you are giving despite the massive investment that has gone into it.

Senator HUMPHRIES: I was taken by the last comment you made in your opening remarks about a greater role for the national government in disasters and emergencies. With respect to the disasters this last summer, it seems that Emergency Management Australia had responsibility for triaging some federal assets like military personnel. They monitored what went on in state emergency coordination centres and did very little else. Is that your impression of what was taking place? Obviously the Commonwealth was funding a lot of things through social security-type arrangements, but in terms of actual involvement with managing the crisis beyond triaging some military assets there was not much at all. What sorts of things would you suggest ought to be occurring?

Ms N Brown: As far as I understand, that is more or less what the role is during an emergency because the actual legislative responsibility sits with the various jurisdictions. I think a lot of how the Commonwealth can assist is prior to an event. For instance, facilitating access to and data sharing is one of the things that would help the agencies and the jurisdictions enormously because a lot of the information and data is needed through the Bureau of Meteorology—who, I might say, are terrific. That needs a systematic approach. We also need to know what is available through defence assets. I know that is an extremely sensitive area but that is a lot of the pre-work that the Commonwealth can be particularly useful in—for example, facilitating common standards. What they have done with the emergency alert has been absolutely terrific. Prior to that, the various jurisdictions were charging down their own way. Whilst it is useful when it comes to large events, across borders it does not help particularly. It is also a lot more efficient to do it that way.

Senator HUMPHRIES: That leads on to the question of communication between different state emergency services. We had some evidence on the fact that there is not total interoperability yet of state emergency services.

Ms N Brown: I think you could say that.

Senator HUMPHRIES: How serious would you describe the problem as being? Does it hamper responses to major crises across borders? Is it only a minor irritant? Or is it something that we can simply put to one side as not being important?

Ms N Brown: I would not put it to one side. I would say that the huge number of emergencies that the agencies and the states deal with are really what you would call routine. Most of the time the interoperability does not matter that much. However, in the last few years in particular a couple of things have happened. There have been some very large disasters as a consequence of the particular events themselves but also the growing population in risk areas. That has brought about these greater events. It is almost impossible for any one jurisdiction to have the resources that they need. So it is going to be important in the times of the big events and the major crises. It becomes obvious very quickly that there is different equipment and different standards. In the

areas that I am in—fire and emergency services—they get on with it pretty well. That is partly because they know each other so well but that does not necessarily filter down to the ground. Any effort or work in that area of greater interoperability is going to be really necessary for the future. Nobody is predicting any fewer of these large events so, yes, it is very important.

One area where the emergency services really have got it together—and they did this themselves—is not a technology thing but a system of operations, which is the incident control system. It is called AIIMS. Over a large number of years they have all adopted the same system. They use the same language and the roles are the same. So if you are, say, a planning officer and you are moving from South Australia to WA then they understand how it works and have been trained the same way. That is a really good example of how it can certainly be done.

Senator HUMPHRIES: Do you or AFAC have a view about this debate about accessing a 700 or 800 megahertz band for future broadband communications?

Ms N Brown: There are probably a number of views. It is a fraught issue and there are probably different views around. As a bottom line, there really is a common view that there is a great need to access broadband, have speed and have interoperability. There is concern in some quarters that, if there were allocation in the 700 band, there may be more cost, and there is a feeling that the 800 band is already very crowded. I guess that is a very confused way of saying that there is not one view, but there is great interest and, as I said at the bottom, there is a need to have the capacity, whether it is allocated in the 700 or the 800. AFAC is part of the government committee, the Public Safety Mobile Broadband Steering Committee, but I am also aware that their terms of reference are about allocation in the 800 band. So it is a very tricky issue.

Senator HUMPHRIES: We have heard a lot about educating the community on fire preparedness, evacuation plans and things like that. In a sense, all the different emergency services have a different set of messages to deliver to people about what to do in particular sorts of emergencies? Ideally, how do you think that should be approached? Should there be a national education campaign, maybe funded by the Commonwealth, which rolls through the different areas where messages need to get out? Should it be done on a state-by-state basis? Should it be done on a service-by-service basis? What is the ideal?

Ms N Brown: I think this falls into the category of the more national you can make it, the better. That is because the borders are very porous, with TV, and people need to hear the same message. There was certainly a very genuine attempt after the Victorian bushfires to have a national fire danger rating system, which I might say is pretty crude but it was a major effort by all of the states and agencies to come together to do that. With that there are some messages that fit certain scenarios, so there has been a really good attempt at that.

As it has been rolled out there have been some flaws and glitches, and it needs a lot more work. But I think that is the sort of thing that really is best run nationally, for the sake of the community. It is difficult because the same messages do not work for the same hazards, the timings are different and sometimes the language just has to be different. For instance, what you say for cyclones will not necessarily be the same as for bushfires. So, given that you have differences across the hazards, having more differences at a state level or, worse still, at an agency level, which is what we used to have about 10 years ago, is just too confusing. So, yes, very much so.

Senator HUMPHRIES: Thank you.

ACTING CHAIR: Ms Brown, in your submission—is it in your submission?

Ms N Brown: No.

ACTING CHAIR: I have been reading the wrong thing.

Ms N Brown: I can give it a go.

ACTING CHAIR: You were saying that the 700 to 800 megahertz issue is fraught, and I think we would agree, from the submissions that we have had. Are you in a position to talk to the technical aspects?

Ms N Brown: Regretfully, no.

ACTING CHAIR: Are you in a position to talk to us about interoperability of handsets and equipment?

Ms N Brown: No.

Senator BILYK: Ms Brown, how do your members deal with people with disability when trying to give warnings and access? Are there any processes or programs in place that they might undertake?

Ms N Brown: There are some, but they are not necessarily widespread. They are usually done on an agency-by-agency basis. It really is one of the gaping holes that everybody has identified. The issuing of warnings is a lot more recent in terms of emergency management than you might guess really. People have been working very hard to come to grips with that and make it as much a part of working in an emergency as fighting a fire, for instance.

As I say, it is fairly recent. They have really got to the point of saying: 'We sort of know what we are doing there, but we are not good at hearing impaired, sight impaired or people with other languages.' Having said that, there are good and very genuine attempts, but a lot of them are paper based and not instant sort of messaging. There are various interpreting services and so on but it is not what you would call systematic.

Senator BILYK: Are there any plans to improve the process?

Ms N Brown: There is but it is work very much at an agency level not at a broad national level.

Senator BILYK: As the peak though, do you have a role in bringing all that together?

Ms N Brown: Yes, we can. We work on demand from members on various issues. It is one that I can see is working its way up. We spent a long time on this fire danger rating and bedding that down. That took about 12 months or so. Yes, I can see it moving up. It is one of the roles that we will play.

Senator BILYK: So you are progressing it?

Ms N Brown: Yes.

Senator BILYK: That is good. Thank you.

Senator HUMPHRIES: I have a question about the resilience of infrastructure around emergency communications when there are crises like bushfires. Obviously, we saw during the floods and the 2009 bushfires in Victoria that a lot of civil infrastructure was knocked out very quickly. How much more resilient is the emergency service infrastructure and what redundancy or backup is there for that when towers that carry communication systems, for example, are knocked out?

Ms N Brown: I am not sure I can answer that on a national level. It is very much state by state and agency by agency. I am sorry I do not have the information to hand to say, 'It is very good here but in this area it is not.' It is certainly some work that could be done if it is required.

Senator HUMPHRIES: Could you take on notice to give any particular examples you have of serious failings in the system during any of these recent crises that we have faced which might have been addressed by a better configuration or outlay of infrastructure specifically for emergency service communications. It would help us to know where potential areas of shortfall are that we might recommend be looked at.

Ms N Brown: So you would like me to do that and pass it back to the committee?

Senator HUMPHRIES: If you could please.

Ms N Brown: Sure.

Senator HUMPHRIES: I think we have asked for answers to questions taken on notice to be provided by 29 August. If we could have it by then that would be great. Thank you.

ACTING CHAIR: Thank you, Ms Brown, for your evidence here today. It has been very helpful.

Proceedings suspended from 10:13 to 10:35

ALTHAUS, Mr Chris, Chief Executive Director, Australian Mobile Telecommunications Society; the Communications Alliance

BROWN, Ms Lisa, Manager, Policy, Australian Mobile Telecommunications Association

[10:35]

ACTING CHAIR: Welcome. Thank you for talking to us today. The committee has received your joint submission as submission 33. Do you wish to make any amendments or alterations to your submission?

Mr Althaus: No, Chair.

ACTING CHAIR: Do you wish to make a brief opening statement before we go to questions?

Mr Althaus: Thank you, and thank you for the opportunity on behalf of both the AMTA and Communications Alliance to speak to you today. There has been said already in this inquiry about the nature of natural disasters and emergencies, so I will not go over that ground again. But I will pick up on one of the key features that we see as critical in the management of our response to these situations, and that is the role of telecommunications. Before I go there, telecommunications are obviously an ingrained part of the way we live our lives these days both in the context of mobile and broadband. In fact, if you were to look at the influence of the internet and the mobile phone, I think history will record these two technologies as one of the most influential pairings that we will see. It is certainly driving productivity and connectivity in the digital economy. So the role of telecommunications is pervasive and ubiquitous.

We are looking at the situation of an emergency or disaster at some critical period of time and really what we see today is the industry in partnership with the emergency service organisations around the country. This is a good partnership, it is a strong partnership that has endured over a considerable period of time. In most cases you will see at times of crisis the industry standing in lock-step partnership with the ESOs to deliver service. That partnership goes to all phases of the emergency management life-cycle: planning, preparedness, response and recovery. The priority is obviously to maintain connectivity and restore connectivity should it be broken. In the debate that we have seen emerge in this place we are very keen on the notion of leverage and partnership. You leverage the capacity, you leverage the resources, you leverage the expertise and the infrastructure that the respective parties have. We have the utmost respect and admiration for emergency services in the way they carry out their duties on behalf of government and for the benefit of the Australian people. Similarly the telecommunications industry is extremely expert. We have billions invested in infrastructure. We have extensive expertise capacity and resources to play a critical role in the management of planning and preparing for, responding to and recovering from natural disasters.

Infrastructure is the key question here. The industry has billions invested and particularly in the modern day of the ubiquitous mobile device our key infrastructure is radiofrequency spectrum. This hearing and some debate around the whole issue of emergency service management has focused on spectrum into bands, 700 versus 800. Today, you will hear later from the Australian regulator of the spectrum, ACMA, who are expert not only in the technical side but expert in positioning and management of spectrum both nationally and internationally, and they will, I am sure, give some key information. From industry's understanding there is no difference between 700 and 800 technically. The spectrum has the same performance opportunity. Similarly, there has been an assertion made that the 800 spectrum band is less suitable for broadband as it is currently used for narrowband. That is not correct. There are significant networks using 800 megahertz spectrum in this country today for mobile broadband. We have some information that is being put forward that is not correct. I would urge the committee to and I am sure the committee will take the ACMA's advice on these matters. Importantly though, given what we are experiencing in terms of demand growth 700 spectrum for the mobile sector is absolutely critical. We have a doubling of the data volume annually. We have an expectation that the connections of not only people but things is going to increase. In fact, Cisco have estimated that by 2015 there will be twice as many connected devices as there are people on the planet. That forecast goes out to a suggestion of 50 billion connected devices by 2020. The use of 700 megahertz spectrum to carry this load is vital. It has significant productivity and connectivity implications for our economy in an increasingly global marketplace.

If we look at what emergency services will to do with that spectrum, should they gain access to it and effectively build their own network, it is very much a matter of looking at the cost and the benefit and what advantage would be gained from that course of action. In fact, the Attorney-General's Department commissioned a study on the subject by Access Economics and the resounding conclusion of that study was that the very best way forward was for the emergency service organisations to partner with the industry in the use of spectrum to manage emergency situations and that the 700 megahertz spectrum should be allocated to the telecommunications

industry as is currently planned by the Communications and Media Authority. That is an important point. Access modelled several scenarios. They looked at building a stand-alone network, they looked at partnering, they looked at a hybrid and they looked at using other spectrum, but the overwhelming conclusion was that the best option for cost benefit and service delivery was for the ESOs to partner with the industry.

The partnership approach is central to our theme. The cost of building a stand-alone network in this country would run into billions. It would be analogous perhaps to emergency service organisations wanting their own road network so that they could drive free of traffic. It is that kind of dimension. It would cost billions of dollars to build and billions of dollars to operate and maintain. Of course, if you want a setting to get a sense of cost, in the United States emergency service operations are looking to be deployed and the Obama administration has estimated $20 billion to $30 billion in this context and the United States is a land mass of a similar size to Australia. Of course, we have a very small population by comparison but it is simply a very difficult thing to observe particularly in this economic climate the notion that a separate stand-alone network would be built out to the extremities of Australia to provide the service and connectivity that is currently achievable by use of partnerships with industry.

I am winding up. The productivity implications for Australia are significant. We have research that estimates between now and 2020 some $140-odd billion in productivity gains is achievable through the use of spectrum and mobile broadband and that includes the digital dividend. This technology is a key economic driver. Technology trends are driving applications and use throughout society, and that includes the operation of emergency services where, as I stress again, the partnership exists and it is strong and viable and should be the way of the future.

Should the emergency service organisations be granted spectrum to do their own thing, there is spectrum internationally harmonised in the 800 band, which is available in roughly the same time frame as the 700 megahertz, that will not impact upon the digital dividend use for Australia's benefit. The ACCC will undoubtedly have more details on that but there is spectrum available. But I stress again that partnership with the ESOs should be the way forward.

ACTING CHAIR: I suppose that, when you say 'for Australia's benefit', it is also for the benefit of the industry.

Mr Althaus: The industry is a key player in society, certainly. In this context, as an industry we have a community and a social responsibility to respond to the needs of the Australian people during times of crisis, and the partnership with the ESOs is a key feature. Yes, there are commercial arrangements that exist in there but I think, again, the Access Economics study has looked at the cost-benefit here, and it is impossible to see an upside to duplication of infrastructure and networks to the extent that would be needed to achieve the same impact and performance that we have today.

ACTING CHAIR: I have heard the statement that what was good for the GM was good for the US. Are you arguing that what is good for the telecommunications industry is good for Australia?

Mr Althaus: The telecommunication industry is into our national productivity and global productivity and connectivity in a way that no other technology has ever been. We now touch productivity agendas and connectivity agendas throughout, and of course the digital economy is making us realise how imperative that is, not only for our national performance but for our performance globally. There is no question that this is a productivity- and connectivity-enabling suite of technologies, and I think that our key thesis here is that that will be a central part of emergency service management. We are the providers of that service who can best provide that. Leave emergency services to what they do best. Running networks and providing communication services is what we do best.

ACTING CHAIR: You spoke about the Access Economics report. Do you have a copy of that report?

Mr Althaus: Yes, I do. I could certainly make that available to the committee. It is a substantial analysis, an economic modelling that has covered a wide range of options and has come to a very strong conclusion.

ACTING CHAIR: I am always a bit hesitant to put 'strong conclusions' in the same sentence as 'econometric modelling' but I suppose, as the Treasury says, it is better than asking your uncle. Let us see what it says. Are you tabling a copy or will you send a copy?

Mr Althaus: I will make my copy available to the committee.

ACTING CHAIR: That will be additional information. That is good; thank you. Obviously the issues for the emergency services are cost and capacity. They want a proper capacity at a reasonable cost. Some of the evidence we have had here today would lead me to believe that there is some view that, if we simply leave it to market forces and leave it to the industry to provide the network, people will be captive to your industry's push for ever-

increasing profitability, and that will come at the expense of the various emergency service organisations. What is your view on that?

Mr Althaus: The recent range of unfortunate events from the 2009 bushfires through to the floods and Cyclone Yasi saw the industry and particularly the three primary carriers respond, as they do, at considerable cost. They see their community and social obligation to be in partnership with the emergency services organisations during these times of crisis. Yes, it is a business and it is a business relationship with the ESOs, but over and above the details of those relationships is the performance of an industry, and particularly the carriers, where extraordinary resources are brought to bear, because we know that the performance of the emergency services depends on viable communications. When we send people into the field using a helicopter to refuel a base station to maintain connectivity, our primary thought in doing that is completion of the end-to-end communications flow for emergency service management.

I am suggesting that the industry does not go and do those things with the immediate moment in mind in terms of profit and bottom line. We are there to be in partnership with ESOs to get the communications system viable at times of stress so we can use it to best advantage. You cannot get away from the fact that this is a business and that the carriers and the industry are in business to make money. However, this goes to a higher relationship, I think.

ACTING CHAIR: But you would be signing commercial contracts, wouldn't you?

Mr Althaus: There will be commercial arrangements put in place, but again I look to the examples of recent experience where the performance of industry goes well beyond the commerciality of an arrangement with an ESO. That is something that has been observed over time. Also, when you look at the cost-benefit arrangements and the likely engagement of a separate, stand-alone network to the extent that the current network performs, the costs and commerciality of that are quite mind-numbing in terms of what you would get for your investment in money. It is not just building a network; you have to operate and maintain it in a very big country with a very small population, and right next door to you is a commercial network doing what it does. Of course, the needs in an emergency service are sporadic—yes, there are peaks, but most of the time there would be very, very low levels of activity. Once again, from a cost-benefit point of view that is very, very suspect.

ACTING CHAIR: We have also had witnesses argue that the emergency services do have a range of expertise, both technical and on the ground, to be able to build and operate their own network in a cost-effective way. Do you rely on the Access Economics report to challenge that view?

Mr Althaus: The Access Economics report certainly does challenge that view from a cost-benefit perspective—it makes that quite clear. But, also, we go back to the experience that industry has in what it costs to build, operate and maintain a network. These are very significant costs, let alone the opportunity cost in terms of spectrum impact to the industry if 700 was not available. It cannot be overstated that you would be seeing billions of dollars worth of investment in something that would effectively duplicate what is already in place. Yes, the emergency services have extraordinary expertise at a lot of things, including telecommunications, but they should be doing what they do best and we should be doing what we do best, and we should leverage each other to get the best outcome for the Australian people. That is what I think is the optimum.

ACTING CHAIR: The evidence we have had is that there is nobody who does emergency telecommunications better than the emergency services, particularly the police force. They are the ones who end up on the ground at the pointy end making sure that they have access to the equipment, the equipment operates and they have the technical backup.

Mr Althaus: Certainly they do have that capacity, but I think you will find standing shoulder to shoulder with them is the industry. In a sense, we have a mosaic in this country that covers 99 per cent of the land mass. It is inconceivable that government in this day and age would invest on a duplicate infrastructure basis to cover that level of land mass. To give you a sense of dimension, to go from 98 to 99 per cent population coverage in Australia requires the addition of 900,000 square kilometres of network coverage. This is a huge challenge. Once again, if we look at the cost/benefit, the performance and the relationship between expertise, capacity and resources, there is no question that the partnership between the ESO community and industry is the best and most viable way forward.

ACTING CHAIR: Does the National Broadband Network not provide a spine of communications across the country that could be used for this?

Mr Althaus: The NBN is undoubtedly going to be an important part of the future of how emergency services can work with industry to deliver their essential services. The NBN is a scalable infrastructure which uses fibre, which is in some respects as strong as any in an emergency situation but in other respects, such as power supply,

it can be equally challenged. Yes, the NBN is going to be an important part and it will be a complementary relationship that you will see exist between fibre-optic technology and mobile technology. Certainly the mobile sector will depend on the NBN's existence for carrying capacity.

ACTING CHAIR: Did Access Economics do an assessment of the emergency services buying into the NBN, having coverage through the NBN and having their own network through the NBN?

Mr Althaus: No, they did not necessarily. There is some reference but I cannot recall the details. Bear in mind that the NBN itself is a fixed infrastructure. In many respects, the NBN coverage into households is going to be 93 per cent, with I think four per cent mobile and three per cent satellite coverage. In the spectrum discussion, it is the mobility aspects that are critical in the context that we are discussing.

ACTING CHAIR: But the NBN provides you the stations to run your wireless from?

Mr Althaus: Certainly, it is a very important backbone, given the sorts of volumes of data that are expected.

ACTING CHAIR: What I am trying to get my mind around is that you are saying that there are going to be these billions of dollars for the emergency services to set up. Your members, like Telstra, are going to be retail providers through the NBN. The emergency services could also be a provider of emergency services through the NBN; they could buy directly from NBN Co. and cut out the middleman.

Mr Althaus: But they would still need to build a network. You cannot rely on the NBN in its own right; they would still need to build a mobile network complete with base stations and they would still need to deploy resources to manage, operate and maintain that network. Currently in Australia there are some 18,000 base stations that support the mobile networks. Along with the spectrum, that is the basis of our infrastructure to deliver the services that we manage.

ACTING CHAIR: I am not sure that we have actually analysed the potential of the NBN in this area yet—Access Economics have not. There might still be some arguments. As some of the emergency services are saying, they do not want to be beholden or locked into a commercial area; they would like to run their own, and I can understand why they would want to do that. That is something that we have to give some consideration to.

Mr Althaus: I guess you can understand, in times of critical need, emergency services reflecting and saying, 'Wouldn't it be wonderful to have our stand alone network et cetera completely in place for our own use?' There is no question that that would be a delightful situation for them, but I think we have really got to get back to pragmatics—economic and cost-benefit approaches here—and to deploy resources in the best way. It would be a shameful waste of 700 meg spectrum to have it sitting fallow for extensive periods of time, essentially, when natural disasters are not taking place.

ACTING CHAIR: As it has been put to us, why can the telecommunications industry not operate both within the 800—you have a fair chunk of the 800 megahertz spectrum now—and the 700? The argument that has been put is that the 700 is called the waterfront because it has some advantages. Why should commercial interests have the waterfront spectrum and the emergency services be pushed away from that?

Mr Althaus: In effect, the emergency services are also being offered waterfront spectrum. In terms of technical performance 800 and 700 are basically the same. You are talking about propagation and the business case for deploying the network. The longer the wavelength, the further it will go before you need to build another base station to take it further again.

The industry operates with a mosaic of spectrum, and spectrum has specific characteristics. Seven hundred and 800 have very good propagation: they go a long way and they have very good in-building penetration. But we go to higher frequencies—say, 2.5 gigahertz—for load-carrying capacity, particularly in metropolitan environments.

The mosaic of spectrum and the mosaic of performance give us our capacity to do what we do. Seven hundred is an important addition to our spectrum mix—critical to carrying the load of the future, particularly in Australia, where we have large distances and small populations. But 800 has virtually the same performance suite of characteristics as 700. Eight hundred is being made available, harmonised in the Asia-Pacific—

Senator BILYK: It is not broadband, though.

Mr Althaus: You cannot say that spectrum is broadband or narrow band. Spectrum can be used for a range of things. The notion that 800 megahertz cannot do broadband is absolutely wrong. We have major networks in this country today—right now—using 800 megahertz for mobile and mobile broadband.

Senator BILYK: But doesn't it clog quicker? I am not particularly technical so I think what has been—

Mr Althaus: No, there is virtually no difference in performance—

ACTING CHAIR: That is the point I want to get to. You say 'virtually no difference': what are the differences? And why is 700 waterfront and 800 not waterfront?

Mr Althaus: Seven hundred is waterfront for a couple of reasons. Firstly, as you know, we are making the transition from analog to digital television. This brings to bear a significant bloc of 700 spectrum. One of the key advantages in using this spectrum to carry data load is having contiguous spectrum. There is no point in having little bits broken up all around the place. The digital dividend is a significant bloc of contiguous spectrum. If you then look at 800 megahertz, the sort of spectrum amount that emergency services are talking about are available in the same sort of time frame with the same performance characteristics.

Let me just go to your point about what the difference is exactly; the ACMA will elaborate, I am sure. If you were in rural and regional Australia and you were looking to use 800 spectrum in an emergency services situation there are some areas where perhaps the use of an aerial would enhance 800 performance. It would do the same for 700, but our advice is that for performance there is no difference. Let me take the 'virtual' away: there is no difference for the task between the two bands.

ACTING CHAIR: The last question from me is on interoperability. If you put the emergency services on 800 megahertz there is not—and I do not know whether these are the exact words used—the capacity to quickly build new handsets and technical equipment on 800 because the bulk of emergency service technical equipment will be on 700 megahertz, in the US and other countries. The argument that has been put to us is that you will not get any benefits of scale under the 800 and, therefore, it would be more expensive.

Mr Althaus: Our advice is exactly to the contrary. Region 3 and spectrum is managed in global regions. We in the Asia-Pacific are part of region 3, along with some our very significant South-East Asia partners. The planning is already underway and we see the equipment vendor community looking at the development of devices, technologies, chip sets et cetera that would be entirely compatible and interoperable in 800. In fact—

Senator BILYK: Where does that advice come from?

Mr Althaus: I am sure you will get it in spades from the ACMA this afternoon.

Senator BILYK: You said 'our advice'.

Mr Althaus: Our advice comes from the ITU, the International Telecommunications Union, and all the planning that is going on currently within the Asia-Pacific Telecommunity, which is part of the ITU network.

ACTING CHAIR: How quickly could you clear the 800 megahertz band for emergency services to use?

Mr Althaus: Our advice is that clearance of and replanning that band could be undertaken in roughly the same time frame as 700 megahertz. Bear in mind that 700 is going to be available in the shortest option of time to industry following an auction process in late 2013 or early to mid-2014. That is the time frame we are looking at. I stress that the rearrangement of 800 will be harmonised within the Asia-Pacific region. Leave the United States to one side; they have a different band plan for 700 meg. We need to focus on region 3, which is where we are. Those arrangements could take place in the same time frame as 700.

Senator BILYK: I have a couple of specific questions and then I want to ask you some questions about another submission we have received and get some feedback from you. We heard from the Australian Communications Consumer Action Network and they were quite critical of some of the telecommunication companies' disability equipment schemes. They had concerns about these schemes that included difficulty in accessing the schemes unless the individual is a customer of the relevant telco, schemes only providing equipment for landline type services as opposed to mobiles, and new equipment rarely being added to the programs. Could you comment on that?

Mr Althaus: We work closely with the community that has accessibility challenges. There is no doubt that we find these days the ubiquity of mobile devices having a range of fundamental advantages for people who are hearing or sight impaired or have a combination of both. Certainly the operation of equipment programs has been very successful. Our feedback suggests that the communities involved are already very significant users of mobile technology and have access to that in a very affordable—

Senator BILYK: That is what was put to us yesterday with regard to TTY and things like that.

Mr Althaus: Let me give you a statistic that helps in this respect. Australia is now at about 115 or 120 per cent market penetration for mobile subscriptions. There are just a shade under 26 million subscriptions in this country.

Senator BILYK: I do not know if that necessarily means that some people have more than one mobile phone and some do not have any.

Mr Althaus: That could be the case.

Senator BILYK: It is a variable statistic, I think, with regard to who actually owns the mobile phones and has access to them.

Mr Althaus: It gives you a very clear sense of the penetration of the technology. Industry's engagement with the disability equipment program has been longstanding and, up until now, very successful. We continually work with the disability sector to look at new and innovative ways of leveraging the technology to the advantage of someone with an access problem. Smart phones and their applications and the use of internet based applications are part of that transition or evolution. From an industry point of view, we see our interaction in this space as being very successful. I would be interested in the details of the concerns.

Senator BILYK: I am happy to put them to you. We are going to run out of time today but it was in relation to people who are deaf: how they use TTY, how they access information in a disaster or how they are accessed. You need a landline to do that and that was one major concern that came through yesterday.

Mr Althaus: We are currently proactively engaged in a range of activities with the ACMA and ACCAN—the organisation you mentioned—looking at, for example, the provision of SMS facilities in the context of the 106 number and the NRS. Again, it is a part of the technology evolution when you look at smart phones, applications and so on.

Senator BILYK: Concerns were brought up in regard to access of 106, especially for people who are deaf. I am happy to put some further notes to you if you are happy to take that on notice.

Mr Althaus: We are very happy to take that on notice. As I say, we have a good working relationship with the bodies involved and have been actively engaged with them for many years now.

Senator BILYK: The Tasmania Fire Service and the Tasmanian government, in their submissions, which you may not have seen or read, suggested that text messages from emergency service organisations be prioritised higher than other traffic to ensure that these messages do not get caught up in network congestion causing dangerous delays. For your members that are carriage service providers, do you know whether they currently prioritise those messages in any of the jurisdictions?

Mr Althaus: I will take it on notice but the capacity exists to prioritise. SMS is a more challenging environment than most. Let me take that on notice and come back to you with detail.

Senator BILYK: Is it technically possible or feasible to prioritise those messages?

Mr Althaus: It is and will increasingly be so in the future given the technology.

Senator BILYK: If it is possible, but is currently not being done, are there any steps being made by carrier service providers to work with ESOs to prioritise their traffic?

Mr Althaus: The answer to that question would be yes but I am happy to provide more detail.

Senator HUMPHRIES: I think Senator Cameron might have asked the questions that I wanted to ask. I want to ask you about the resilience of our telecommunications infrastructure in Australia. You say in your submission that Australia's telephony or telecommunications networks are quite resilient and effective in warning of an impending emergency or imminent threat. I am not sure if you are referring there to what is carried over the networks or the hard infrastructure of the networks themselves. Would you like to comment on whether you think that as Australians we achieve a high enough standard with the resilience of the infrastructure we use given that we live in a harsh environment which occasionally wrecks things in that environment?

Mr Althaus: Experience is that I would say yes. We do operate to a very high standard of resilience. No question, we have climatic events in this country which rival anywhere in the world in severity. But I think also the performance of networks and the ability of industry to recover following periods of damage is world-class. We are a small population in a big country with severe weather so that is a challenge in itself. The performance by industry across the board has been a very strong one. You can always build in higher levels of resilience to networks. Perhaps the highest level are those operated in military contexts et cetera. However, we have a capacity, not only in the infrastructure but also in the resources within the carriers and within the industry, to respond to emergency services which is of a very high standard.

Senator HUMPHRIES: So if a person came from Germany or somewhere like that and was familiar with the infrastructure there and looked at ours, would they notice a difference in how ours were hardened, bushfire proof or more able to resist the sorts of disasters we encounter?

Mr Althaus: Given the different climatic conditions, they may do., particularly given the sorts of geographic distances that are involved here and therefore the challenges in getting to sites. I think industry is like the emergency services: on a constant learning curve in terms of the impacts of unprecedented events like Yasi or bushfires and how we learn from that and build in a greater resilience, and what technology options we have available to us to achieve that. But, generally speaking, within the challenges of a huge continent and a small population, our performance in this respect is of a very, very high standard.

ACTING CHAIR: Thank you very much, Mr Althaus and Ms Brown, for your submissions here today. They have been very helpful.

HOLT, Mr Kenneth, Chief Executive Officer, Burdekin Shire Council

[11:17]

ACTING CHAIR: Mr Holt, you have made a submission, which I think was submission 36. Do you wish to make an opening statement to speak briefly to your submission?

Mr Holt: I will speak briefly to it. We raised three issues. I think you would be thoroughly familiar with the first one, which is the lack of power backup for the telephone network and also the mobile network. Of course, in rural areas that are prone to cyclones, trees take out power and roads are flooded. So it is the only connection that our outlying towns have if they need medical assistance or resupply for drinking water and medication. It is a critical issue, but I am sure you have heard that same issue from many others, so I will move straight to the second issue, which is quite specific for us.

We have a local community radio station that got a licence in 1998 and started transmitting in 1999. We have disasters every year. We would have major floods most years, sometimes multiple times each year, so the community radio station would be called upon several times each summer for major floods. But it does not cover all of our towns. So they asked for an extension to their licence so that they could transmit over a wider area, and it was rejected on the principle that the ACMA 'wouldn't expand the licence coverage area without first putting the proposed expansion of service to the market in accordance with the principal economic use of radio frequency spectrum.' That means that the local community based radio station with no money may need to bid against the commercial radio stations for that licence in an auction.

It only says that that 'generally' needs to happen. We have made representations three times to try to get that overruled, and we cannot. We do not think that the community based radio station can compete fairly with other private sector providers of radio. We think that when it comes to the economic use of radio spectrum that it would cost a government a fair bit more to provide a free emergency service radio station like that and that it is a great benefit. Unfortunately, as I said, we have not managed to get that overturned. The mayor made representations to the Hon. Stephen Conroy, Minister for Broadband, Communications and the Digital Economy, but just got the standard letter back, telling us the same thing.

The third issue is an alert system much like a smoke alarm in houses. The energy authority can send a pulse down the line—we have spoken to Ergon Energy and they have said they can do this—and it sets it off inside a house. The current emergency systems rely upon telephone systems and, largely, on the mobile system, which is often jammed pack during an emergency and has a slow response time. People also turn off their mobile phones at night because they do not want disturbing text messages or other messages or they do not want to hear them.

The fourth issue is that during recent Cyclone Yasi the state messages that came out via text message often went to wrong locations, places that were not on the coast and not prone to storm tide. We are not sure how it is based, whether it is based on the phone bill address. I understand it is. Many people had their phone bill address as their main house and their beach house is in one of the coastal towns. So we had a lot of difficulty getting the message through. We ended up having to doorknock our coastal towns to evacuate two of them. We think there is considerable merit in something like the Meerkat system that goes through the electricity network and goes off like a fire alarm which would, at least, alert people that they need to find out more information, particularly where they are in communities that are prone to things like tsunamis, storm tide and flash flooding—things that require urgent notification to community members. Those are the three issues that are of importance to us.

ACTING CHAIR: Can I congratulate the Burdekin Shire Council for taking the time to bring these issues to the committee's attention. Could I also indicate for the record that the Local Government Association of Queensland are not available. They were supposed to be here in a panel with you.

I have just pulled up Burdekin Shire Council on the computer. Do you cover the coastal area of Ayr, Bowen and the Whitsundays?

Mr Holt: Not Bowen and the Whitsundays, but certainly Ayr and Home Hill. It is the council area between Whitsunday shire and Townsville. There are small towns on the coast, such as Alva—

ACTING CHAIR: It is not the most densely populated area of Queensland, is it?

Mr Holt: No. There are about 18,000 residents—8,500 are in Ayr and a bit over 2,000 in Home Hill—and the rest are distributed amongst small towns and of course we have a lot of people who live on their land. It is a big farming community with irrigation areas.

ACTING CHAIR: Do you go out to Charters Towers?

Mr Holt: No.

ACTING CHAIR: Can I just get an idea of where you are seeking to extend your coverage. Which areas—this is your local stations?

Mr Holt: Yes, it is. It is a community radio station. There is actually a map in the submission.

ACTING CHAIR: I saw that. Can you just take us through that map and indicate where your coverage is at the moment.

Mr Holt: The coverage is the inner circle that is in a different colour. It says 'existing licence.' It is a radius of 25 kilometres, but it does not take in all the towns that fall outside that circle.

ACTING CHAIR: You would be looking to increase to a 61-kilometre radius. Is that right?

Mr Holt: We would like to.

ACTING CHAIR: What is the population of Dalbeg?

Mr Holt: Not many. It is the surrounding areas—many farmers live on their properties. I would not call it a town but, if that gets back to Dalbeg, I will be in trouble.

ACTING CHAIR: Roughly, what is the population covered in the inner circle?

Mr Holt: I have not worked that out, but I can quickly.

ACTING CHAIR: This is the existing coverage?

Mr Holt: It would probably be 13,000 to 15,000. Most of the population would fall within that area.

ACTING CHAIR: You have about another 5,000 to cover through to Giru, Dalbeg et cetera?

Mr Holt: It is a best guess.

ACTING CHAIR: It is about 5,000. Is it a reasonable proposition that a commercial radio station would see this as a commercial proposition?

Mr Holt: I do not know, but the community based radio station does not want to risk it.

ACTING CHAIR: Is there commercial coverage within this area as well?

Mr Holt: Yes.

ACTING CHAIR: What are the commercial stations?

Mr Holt: They are based in Townsville, but you are asking the wrong person: I am an ABC listener.

ACTING CHAIR: Good on you!

Mr Holt: And Radio National of late.

ACTING CHAIR: So you are not polluted by Alan Jones, yet?

Mr Holt: No, I am not.

ACTING CHAIR: Okay, I was trying to get my head around that. It is very helpful.

Senator HUMPHRIES: While talking about the ABC, is there a local ABC radio station in that area?

Mr Holt: Yes, there is one based in Townsville, and that radio station does put across emergency bulletins. It is just that the community one will put across everything we give them, whenever we want and as often as we would like, so there is far more comprehensive coverage.

Senator HUMPHRIES: That is Townsville in the top-left-hand corner of the map in your submission, is it?

Mr Holt: Yes.

Senator HUMPHRIES: Presumably, you have tried to feed that sort of information to the ABC station in Townsville, but that they have not been quite as keen to broadcast everything that you want them to broadcast?

Mr Holt: They do broadcast a fair bit. The ABC is good to us, and the commercial stations broadcast our emergency things as well, but of course they broadcast all of the ones from around the region, and our region has many disasters. The beauty of the local community radio station is that they only do our disasters. As I said earlier, we would have more experience of disaster management than any other council in Australia—the town of Giru, for example, had something like 15 major floods in one season, one year; it is the most flooded town in Australia. We have what are categorised as major floods most years. I have been there five years and in that time we have not had a year without a major flood, and we have had several major floods every season I have been there in the last five years. Most of the shire is a river delta for the Burdekin River, which is Queensland's biggest river and has the biggest dam, in terms of water quantity. Giru also has the Haughton River going through it and it floods there. So the shire gets cut off from other areas several times each year.

Senator HUMPHRIES: During the flooding associated with the heavy rain in January in your area, and also with Yasi, roughly how often, let us say in January and February in total, was an emergency alert used to tell people about some danger or problem?

Mr Holt: Do you mean the emergency alert that came out through the telephone system?

Senator HUMPHRIES: Yes.

Mr Holt: The state government did that, not the local disaster management group, so I am not sure how often they went out. But I know, because members of the local disaster management group talked about it, we each had telephone calls three to five times each, between the home phone, the mobile phone and the office phone—it was just going through.

Senator HUMPHRIES: Do you know if any messages were sent out at night, between, say, midnight and 6 am, when people might reasonably be expected to be asleep?

Mr Holt: I am unaware of messages during that time, but if they go to mobile phones people won't get them.

Senator HUMPHRIES: That's right.

Mr Holt: Fortunately, most of our floods are not flash floods—we know they are coming. And because it happens all the time we have about 45 sensors in the river. We can give people hours, sometimes days, warning and tell them what the level will be. Locals are experienced enough to know exactly how high to put their furniture and the like.

Senator HUMPHRIES: I assume Burdekin Shire Council had quite a heavy load to carry in coordinating the responses to the floods—you have got a lot of experience in being able to do it. Have you given evidence to the Queensland inquiry into the floods?

Mr Holt: No, we have not. A lot of the focus of that inquiry is on the southern half of the state—up as far as Rockhampton. It has not dealt much with the floods in North Queensland.

Senator HUMPHRIES: Are there things you think could be improved about the way in which communications, in particular, around those disasters was handled in your region—that you want to tell us about?

Mr Holt: Disaster management is one of those things where you can always improve. Even though we do it several times a year, every time it happens we come up with small improvements during the debrief to the way it happens. The most noticeable difficulty this time was that the floods were so widespread there was greater involvement at the district and state level, particularly at the state level, which meant that we had less-experienced people getting involved. They did not stick to the communication plan set out in the disaster manual. Normally, when we have a disaster, because we manage it all the time and we do so quietly, everyone stays away from us. We just manage it; it is part of our everyday jobs. Everyone knows everyone else, the relationships are sorted and there are no power plays—it goes very smoothly. But when we get interest from other bodies it goes less smoothly. I probably do not have any tips other than that they really need to do more work between events and not wait until something is bearing down on them. But they are lessons in the obvious, aren't they.

ACTING CHAIR: As there are no further questions, thank you for coming down Mr Holt and giving us this insight into the issues for your region.

Proceedings suspended from 11:31 to 13:01

HILL, Mr Tony, President, Internet Society of Australia

LINDSAY, Mr John Sands, General Manager, Regulatory and Corporate Affairs, Internode

Evidence from Mr Lindsay was taken via teleconference—

ACTING CHAIR: I welcome our next witnesses. Thank you to talking to us today. I invite each of you to make a brief opening statement before we go to questions.

Mr Hill: Just a very brief one, Chair. The Internet Society of Australia is largely voluntary organisation that seeks to promote development of the internet in Australia. We are a chapter of the worldwide Internet Society, which has responsibility for the standards process that drives development of the internet worldwide. I hope to cover two topics in the course of my comments: one is in respect of how the internet currently operates and its interaction with emergency situations; and the second is where the development of internet technology is going and what influence that might have in the future—but I am happy to take questions on both of those points.

Mr Lindsay: Thanks for the opportunity to talk today. Most of you would probably be familiar with Internode. It is Australia's fifth largest retail internet service provider. While we are based in Adelaide in South Australia, we operate in all states and territories in Australia. We have around 200,000 broadband connected end users. We have been working with NBN Co. since the very beginning. Many of the first customers connected in each of the service areas have been our customers, so we have a lot of familiarity with how their network has been designed and will work. We have particular concerns around the 121 points of interconnect and what that means for resilience and redundancy and, hence, availability, particularly of voice services and particularly in emergency situations.

Senator HUMPHRIES: Mr Hill, I am not sure quite what area of expertise the Internet Society particularly wants to bring to this inquiry. We have been looking at the question of access to broadband via mobile devices for emergency service organisations and law enforcement. There is an issue about whether it is best to reserve the 700 megahertz or the 800 megahertz band for that. Do you have a view on that particular issue?

Mr Hill: I do not think we would claim particular expertise in relation to spectrum allocation, but in respect of that I would like to make some comments about how internet technology has performed in relation to emergency situations and what the implications of that might be for allocation of spectrum and the way in which those agencies get access to the spectrum. If I could, I will carry on with that subject.

Our view is that there has been a debate and perhaps concern expressed in some quarters that, unless you have a fixed line plain old telephone service, you are going to be struggling in an emergency situation. Our point of view is that the internet as it operates over multiple physical platforms has proved to be an enormously valuable tool in lots of emergency situation experiences around the world. That was what I was referring to in terms of the existing operation of the internet. Having access to the internet during an emergency type situation, whether you are a particular response agency or a citizen, is proving to be an enormously important factor. We have even seen that more recently, say, in relation to the floods in Queensland and those sort of situations.

Senator HUMPHRIES: I will now turn to Mr Lindsay with respect to the Internode submission. To be perfectly frank, Mr Lindsay, some of what you put in your submission seems to be pitched very much at people with a lot of technical familiarity with the issues with which you deal. To be quite frank, I did not understand a lot of what was in your submission. I just wondered if you could clarify a few things for me. The second paragraph on the second page of your submission says:

> When defining the Service Level Agreement (SLA) of telecommunications services the number of "9"s of availability is usually mentioned … Services which meet five "9"s availability are 99.999% available …
>
> You can hold your breath for thirty seconds but five minutes is long enough to drown.

Could you explain what you meant by all of that, please.

Mr Lindsay: Telecommunications services have a defined service level of availability. The public switch telephone network is often considered to be five '9s' available, whereas intranet services when they are delivered with a service level agreement beyond best efforts are often around 98 per cent to 99 per cent availability. You have to be very careful when planning to use networks to support emergency things like 000 calls and so forth to ensure that the availability of service to end users is actually meeting the requirements of those end users. There are concerns here around things like the availability of power to run the backbone infrastructure. There are concerns with the NBN with its fibre-to-the-premises network that up to 150,000 premises may be connected at one single point of interconnection and achieving the necessary level of availability at that physical point of interconnection to support emergency uses is probably not feasible because one single outage event that might be

caused by, for instance, a cyclone demolishing the building, an earthquake demolishing the building or a flood flooding the building could actually lead to huge numbers of people covering a very large geographic area having no access to any telecommunications at all or possibly only some legacy mobile telephone services, particularly in a world where the NBN is providing the back haul for most mobile telephone services in an area. It is of big concern in a regional area, too, because in fact it is more likely to impact a very large area for people in a regional area.

Senator HUMPHRIES: What you are saying should be done about that?

Mr Lindsay: We are saying that this model of 121 points of interconnect makes a lot of sense for the lawyers at the ACCC, but it does not make a lot of sense when you talk to network engineers, who actually design for building resilient telecommunications networks, because they look for a lot of physical redundancy. They want a function that can be performed at one location to be able to be performed at a second and, ideally, even a third location, so that if a physical location is unavailable that function can be performed somewhere else. They are also trying to make sure that when one location fails that it does not take out millions or hundreds of thousands of services. Ideally, it will have a fairly localised impact. Internode does not believe that any thought has been given to that in the model of having these 121 points of interconnect for the National Broadband Network.

Mr Hill: I think the question of redundancy has been raised and the point that Mr Lindsay was making was redundancy in respect of network design. But redundancy is also important from a user perspective, and these days users have access to multiple services. In an emergency situation where one of their services goes out, if they have access to more than one service then they can actually survive the emergency scenario better than in other circumstances. While what Mr Lindsay said is correct from a network design point of view—and obviously we would all be concerned that the NBN continues to operate as effectively as possible—it is also very important to look at the redundancy of services available to individual users and citizens.

Senator HUMPHRIES: Do you have a suggestion about what tangible recommendation or point of view the committee should express about that?

Mr Hill: I think it aligns very nicely with a structure of competitive supply of telecommunications services in Australia. If users have a choice to take one or more services, then they are likely to be more stable in a situation. If you take the example of a rural setting, the customer may take the option of a fixed-line service, but they may also recognise the limitations of that service, as outlined by Mr Lindsay, and decide to take some other wireless based services as well in order to gain the redundancy and the flexibility that they need.

Mr Lindsay: The issue I am trying to raise here is that those apparently redundant wireless services are highly likely to be dependent on the same underlying monopoly access network, the NBN. If the NBN itself is unable to provide service in a geographic region because its point of interconnect has become unserviceable, that may not only impact the fixed-line NBN services but it will also impact the wireless NBN services and it will impact any other service provider like a mobile operator who is using the NBN to provide its backhaul.

ACTING CHAIR: Mr Lindsay, have you raised these issues with NBN?

Mr Lindsay: Yes, we have raised these issues with NBN on a number of occasions.

ACTING CHAIR: What has been their response?

Mr Lindsay: That the 121 point of interconnection model is something that has been forced upon them by the ACCC.

ACTING CHAIR: That would be one part of the response, but what about the capacity to keep the NBN going? I am sure they have a view on that.

Mr Lindsay: They assure us that these points of interconnect will be built to the highest level of availability that they can achieve, but at the end of the day it does not matter how well you build it if the building has fallen down because there has been an earthquake.

ACTING CHAIR: Without the commentary, I am just trying to get what NBN said to you. So NBN are confident that they can provide a service that will meet the needs of the community and emergency service operators?

Mr Lindsay: They couch it in terms that indicate that they are dependent on the services that are provided to them specifically by Telstra for the locations of their points of interconnect, and have to take it largely on trust that the services will be adequate.

ACTING CHAIR: I am on the NBN committee. I have never heard that proposition, as you are putting it here, being put by the chief executive of NBN. Who told you this?

Mr Lindsay: These come from conversations that we have had with Jim Hassell and his staff. It is all centred on the issue of where the points of interconnect are located and how they will be operated.

ACTING CHAIR: Okay. I now move to another issue. I am not sure who can answer this—Mr Hill or Mr Lindsay. I have the *Guardian* report on the London riots. It says, 'London riots: Police communications system struggles to keep up'. The report contrasts the nerve centre approach of the British police against the rioters using text and BlackBerry messages. The argument is that the text and the BlackBerry messages were far more reliable than the nerve centre approach of the British police. Mr Lindsay: I notice that you have a POP in London. Do you have anything you can add to that?

Mr Lindsay: If the only connection here is that we have a POP in London—

ACTING CHAIR: I am just asking you. If you do not have a view on it, just tell me; that is fine.

Mr Lindsay: We do have a view, which is that it is an interesting exercise in asymmetric warfare when the goal of one side is to create chaos and the goal of the other side is try to maintain law and order. The chaotic people can use whatever means of communication are available to hand regardless of its reliability—the reliability of the information source and of the information that they are receiving—and take action as they attempt to spread chaos, whereas the people who are attempting to maintain law and order have a great deal of concern about ensuring that lines of command and control are actually maintained and that everybody who is working is working towards a coherent goal. Just because the forces of chaos can effectively use instant messaging to mobilise does not also indicate that the law enforcement community can just as readily use exactly the same technology to achieve their goals.

Mr Hill: Our discussions with various agencies have found that those agencies—the response agencies, including the military—have been constrained by their purchasing arrangements. Those purchasing arrangements have been very carefully designed to end up with a certain structure, but the end result has been an unanticipated consequence where there has not been sufficient interoperability in the information environments for those agencies to respond effectively in a lot of these circumstances. We are now finding situations, whether they be national security or national emergency type situations, where multiple agencies have to work together. There was a prime example discussed in relation to the Queensland floods where even within the Queensland Police Service I think they found that one area of the service did not have an information system that could interoperate with other services, and when that one system was overloaded people were then routed to other areas of the Queensland police who were not able to communicate back into that area as well. So interoperability is becoming a key factor, and this speaks to my point about where the future of this technology is going. Certainly, in relation to military operations, the capacity for interoperation of multiple systems is becoming a key factor, and that applies not just within an agency but between agencies—and internet technology is the prime international technology for encouraging interoperability. In particular, new developments of the internet around the application of the new internet protocol version 6 increase the capacity for interoperability, and a number of services are currently looking at how they can build that into operations. But it has not been done yet; it needs to be encouraged. That is a direction that needs to be taken in order to make effective responses. If you do that interoperation, it will allow the services to build information structures that possibly maintain some information as secure and not communicated to the outside world but also incorporate information from the outside world which is possibly more up to date or more reliable than the information at the control centre type structure.

So I think we would be advising the committee that looking at the capacity of these future developments of the internet in relation to response agencies, and their interaction with the public, is a crucial issue for the future of Australia.

ACTING CHAIR: Thanks. We will go to Senator Boyce. I have another commitment at 1.30 pm, so it might be good if I hand over the chair to Senator Humphries now. Thanks, Mr Lindsay. Thanks, Mr Hill.

Senator BOYCE: Mr Lindsay, in your submission you say:

Disaster survivability and recoverability—

which I am just pleased I managed to say—

has started to fade from designer's minds in the decade since … September 11…

Could you tell us how you would propose that we keep it top of mind for the people planning for disaster and recovery.

Mr Lindsay: I think at this point it needs to be something which is explicitly stated—that organisations who are bidding to provide these sorts of services need to be able to demonstrate how their solution survives and continues to function after the loss of key single points of failure. One of the things that happened after September

11 was that disaster survivability became the single most important factor when anybody was designing anything, and it overrode cost, it—

Senator BOYCE: By 'designing anything', do you mean designing any sort of communication system?

Mr Lindsay: Certainly, anything technical—to a large degree as well, I think, in terms of the design—

Senator BOYCE: So hardware as well, so to speak.

Mr Lindsay: of buildings and so forth. So, in designing telecommunications services, we have had a slow and steady shift of focus. I cannot understand how we have let ourselves get to the point where we are prepared to let 150,000 end users' telephone services be concentrated in a single point of failure, because a decade ago no-one would ever dream of doing that, of not being able to clearly say, 'In the event that this building becomes unusable,' for whatever reason, 'these services will continue to be able to be supplied through some backup.' When we first started talking to NBN Co., before the ACCC imposed the 121 points of interconnect requirement, NBN Co. were offering us a pair of interconnect sites in capital cities, and in some cases, like Sydney and Melbourne, they were talking about two or three pairs of those interconnect sites. The idea was that we would take half of the services at each site, but in the event of adversity, of some sort of large failure, it would be possible to reroute the traffic over to only one site so that as many end users as possible were able to remain connected.

Senator BOYCE: You talk here about the fixed-line services of around 80,000 premises being now dependent on one single building. This is a direct result of the changes proposed by the NBN system.

Mr Lindsay: These are actually a requirement that was imposed on NBN Co. by the ACCC. I do not believe that this is NBN Co.'s desired mode of operation. They would in fact much rather have many fewer points of interconnect and build a much more resilient mesh behind those points of interconnect out to all of the fibre-serving areas, but there is a requirement that the ACCC has imposed that any given end-user be connected via the one and only point of interconnect. There is an option of adding a second point of interconnect, which would mean, instead of there being 121, there would be 242 points of interconnect, but that second point of interconnect can only be constructed if one of the retail service providers requests it and, essentially, funds it. You would imagine that the only retail service provider who would really be in a position to do that would be Telstra.

Senator BOYCE: Because of the cost involved. I just want to be perfectly clear. What you are saying is that, instead of having the situation where perhaps 8,000 people or so could go offline if a building could not operate because of a disaster, we are now looking at the situation where up to 200,000 people at a time could be completely offline?

Mr Lindsay: Certainly around 150,000 to 180,000. I do not want to overstate this, but the largest service area downstream of a point of interconnect is around 180,000. Most of them are around 80,000.

Senator BOYCE: And there would be no way of resolving that short of getting that building back online? Is that what you are telling us?

Mr Lindsay: That is my understanding, yes.

Senator BOYCE: You also mentioned in your submission the use of fuel for generators. Both the ABC and SBS were quite keen that perhaps they would be seen as priority customers in this situation, in the same way that emergency services are during a disaster. What would your view be on keeping the internet service providers provided with fuel?

Mr Lindsay: In the case of Internode, because we are the service provider to the South Australian government, we have priority access in South Australia for fuel in disaster situations. But our network is international and certainly national, and we could find ourselves in the peculiar situation where a major disaster in Sydney left the sites that we operate our backbone in without fuel, although I must also say that we have chosen those sites very carefully to make sure that they are used by as many government agencies and emergency service organisations as possible, in order to maximise the chance that they will gain access to fuel in disasters.

In the NBN world, retail service providers will have the responsibility of providing the telephony service to their end users, and so they have to take a step up in terms of the availability and reliability of their services compared to when they were just an internet service provider and where the internet is seen as being a kind of best efforts thing. In the NBN world, the retail service providers are actually the providers of that so-called lifeline fixed-line service, the one that ought to have the best level of availability.

Senator BOYCE: Could the end result of that be that internet services will stay connected because telephony services have to stay connected?

Mr Lindsay: That is very likely, yes.

Senator BOYCE: I guess the other question that arises here is about the priorities between emergency use of the internet and social use, for want of a better word, where people are informing each other of things that are happening through the disaster. Do you see that there should be a hierarchical system there at all?

Mr Lindsay: It is desirable, although it is not trivial to engineer. In our international network we have some prioritisation in place so that, if we were to lose, say, one of our legs between Sydney and the United States, certain more critical traffic would come to the head of the queue. So some of the more recreational uses of the internet would perform much less well. The more real-time uses, and things like email, the infrastructure services of the internet and services like Twitter and Facebook, would be a higher priority for us than the bulk transfer of files and so forth.

Senator BOYCE: Perhaps you could tell me what the criteria are for that sort of prioritisation at the moment—is it based on commercial contracts?

Mr Lindsay: We give our commercial clients who have contracts the priority that they purchase. We also arbitrarily prioritise traffic such that in adversity the services that our users would consider to be urgent remain functioning. Email is something that we will move heaven and earth to ensure is accessible for our customers. Even in the event of a really large disaster—for instance, if we lost all of our connectivity out of Sydney—we would use connections that we have out of Perth up to Singapore to bring email in and out of Australia for our customers in Australia.

Senator BOYCE: I will ask Mr Lindsay a couple of questions and then get you to comment, Mr Hill. Mr Lindsay, could all internet service providers prioritise their traffic in that way? Do they do that currently, to your knowledge?

Mr Lindsay: They do not, to my knowledge. I think you need to be at a certain scale and have a certain level of sophistication to be able to do that. It also helps if you operate your own network. One of the reasons that we built an international network was that we were buying access to the internet from other large service providers and, when things went wrong, they made the choice as to who won and who lost. We, as a mere wholesale customer, were losing out to, for instance, their corporate retail customers.

Senator BOYCE: That sounds like a perfectly reasonable commercial decision to make, but I guess disasters are another situation entirely. Is the prioritisation system that you are talking about built into your service or is it something that you would put in place if a disaster occurred?

Mr Lindsay: A little bit of both. The infrastructure to support it is permanently in circuit. The configuration of the equipment that does this is alterable. The way that we use it normally envisages a relatively minor disruption, perhaps with a single circuit. For instance, if we lost a small amount of connectivity, like five gigabits of out of 27 gigabits, that would be within the bounds of the equipment we use to survive that, so our customers would not really notice anything going wrong. If we were to lose a much larger amount of capacity, like 20 gigabits out of 27 gigabits, that would be the point where a human being would reconfigure that equipment to bring in some preorganised configuration—and this is part of our disaster recovery plan—that would implement those much more fine grained controls as to what wins and what loses.

Senator BOYCE: Thanks, Mr Lindsay. Mr Hill, did you want to comment?

Mr Hill: Just in terms of prioritisation of traffic. I think the traditional view has been that voice has more priority than data for general-purpose users. I think it is very important that the nation move on from that concept. We are finding that average citizen use of data is easily as important as their access to voice services, particularly in emergency services.

Senator BOYCE: Could you give me an example of what you mean by that?

Mr Hill: As the internet becomes more popular for all sorts of purposes in terms of recovery from an emergency situation, it is very important that information about where you get this and where you get that is provided by data. I think the government has been engaged in some consideration of the universal service obligation that has previously applied in the voice world, and we have been very concerned for some time to see a data element entering into that discussion more effectively. With respect to people's general use of the internet, I am not sure that I would necessarily go along with the set of priorities. Obviously the emergency services agencies need access to their communications and that takes precedence, but to then ask if there is a class of communications for ordinary citizens which is emergency related versus non-emergency related, it is very hard to draw a line between those. Ordinary citizens want to have information about their relatives, for instance, in an emergency situation. If they can find that out directly, it hugely reduces the load on emergency response agencies.

Senator BOYCE: That is where Twitter, Facebook and general email can be helpful. It seems to me that the way people are using the internet in emergency situations is becoming not as important as emergency services use of it but an increasingly important way of people operating post-disaster.

Mr Hill: I think we have to move to a community review of the response, which includes all elements of the community. Even if you go back to the Canberra fire situation, where there were emergency services set up for responding to fire, a lot of citizens found that the red truck was not in their street at the right time and community response was a key factor. I think we have to start thinking about community response very strongly.

Senator BOYCE: With respect to the use of the internet by people with disabilities during disasters, we had some evidence earlier from the communications consumer network. Are there sufficient tools available and do they function as well as possible during disasters for people with disabilities? Have you got any suggestions on how to make it better?

Mr Hill: I think that is one of the reasons why we are talking about including data in the universal service obligation. Not everybody can use all features of a particular service. If you declare voice to be the pre-eminent service, what do you do with people who cannot use voice for some reason? It is a very high priority of ours to make sure that a range of services are available to people during these situations, not just regarding one service as being sufficient for everybody.

Senator BOYCE: Mr Lindsay, do you have a comment on that one?

Mr Lindsay: Only a very brief one. Years ago I was involved very heavily with the Royal Society for the Blind and the production of aids for visually-impaired people—particularly how they use computers. I am fascinated and heartened these days to see how people with various media disabilities have actually grabbed the internet and made it their own. They need and expect it to work and they have kind of left behind the clunky things where they had to mess about with telephones in order to communicate with others. The internet just opens everything up for them. When that becomes unavailable, it does leave them quite profoundly isolated. I completely agree with Tony's sentiments that the internet and the data services need to be a very integral part of the universal service. In an NBN world, voice is just another data application.

Senator BOYCE: Thanks, Mr Lindsay.

ACTING CHAIR (Senator Humphries): I think that is all the questions we have.

Mr Hill: Could I make one more comment, coming back to your spectrum question? I do not think I quite covered that off fully when you raised it. That is: in terms of agencies being able to have access to the spectrum, those agencies being able to implement their own new systems based on internet technology will be very important to their response in the future. I mentioned the importance of internet protocol version 6. What we have found in Australia is that a range of service providers—not Internode—have been quite slow to come to the party to get adoption of that more widespread. I do not understand fully the mechanisms behind that but, if we see the effect as a capacity not to respond to innovative developments, we are going to find that anybody who relies on those service providers and whatever their offerings are at the time may well be left behind in terms of what needs to be done for future responses. The general view that the rate of technology change is going to continue at least at this pace or possibly increase is very important in that equation. So quick responses in terms of designing capabilities and purchasing arrangements are very, very important.

ACTING CHAIR: Thank you very much for adding that, Mr Hill. I thank you both for appearing before the committee.

BARNICOAT, Dr Andrew, Acting Chief, Geospatial and Earth Monitoring Division, Geoscience Australia

CHEYNE, Mr Gordon, Director, Operations, National Earth Observation Group, Geoscience Australia

FARRELL, Ms Ann Maree, Head, Marine and Agricultural Weather Services, Bureau of Meteorology

HAINSWORTH, Mr Alasdair Horace William, Assistant Director, Weather and Ocean Services Branch, Bureau of Meteorology

[13:41]

ACTING CHAIR: Welcome. We have your submissions—submission No. 3 from Geoscience Australia and submission No. 42 from the Bureau of Meteorology—and we have read them. I invite you to make a brief opening statement before we go to questions about those submissions.

Dr Barnicoat: Thank you for the opportunity to appear before the inquiry. Geoscience Australia is a Commonwealth government agency in the Resources, Energy and Tourism portfolio. We study Earth processes and are the government's technical adviser on all aspects of geoscience and we are also the custodian of the geographical and geological data and knowledge of the nation.

One of our key priorities is supporting more resilient and sustainable communities able to deal with the impact of climate change and hazards. Our work under this priority includes the timely provision of data and information about a natural hazard event and emergency. This information and data falls into two broad categories—firstly, supporting emergency warnings, we provide information on the identification of earthquakes that have the potential to cause tsunamis. This supports the issuing of tsunami alerts or warnings by the Bureau of Meteorology, who are our partner agency in the Joint Australian Tsunami Warning Centre. Secondly, we provide information to improve situational awareness, such as the identification of other earthquakes of interest to Australia, the Sentinel bushfire hotspots system, satellite imagery and what we call features—such as flood footprints extracted from satellite imagery.

Both of these two broad categories of information and data are underpinned by communication technologies that support the acquisition of data for analysis and the dissemination of that data information to stakeholders. Geoscience Australia does not issue warnings directly to the community. Our role is in providing information that informs the decision making of others. We do, however, have available a common alerting protocol—that is, a CAP—compliant service delivering earthquake data. That is accessible from or website.

Some aspects of the communication that we require can be problematic, particularly where large volumes of data need to be moved quickly to allow timely analysis. This applies particularly to satellite imagery. The main bottleneck we currently experience is the two megabit per second communication link between Geoscience Australia's data acquisition facility in Alice Springs and in Canberra, where the data analysis and dissemination are undertaken.

ACTING CHAIR: Thank you very much. Is there a statement from the bureau?

Mr Hainsworth: Yes, thank you very much. Thank you to the committee for allowing us to appear before you. The Bureau of Meteorology operates in accordance with section 6 of the Meteorology Act, and the bureau is obliged to warn the community, emergency services and other stakeholders of impending or current severe weather events and provide current weather information. We provide warning information through a large range of communication channels in an endeavour to reach the widest audience in the minimum possible time.

Automatic delivery of warning information is considered the most effective method to alert the community, emergency services and response agencies to bureau warnings. As personal contact can be very time consuming during severe weather events, it is best limited to primary contacts who can convey the alert information through the emergency response agency networks. The bureau communicates directly with all tiers of government as well as emergency services and counter disaster organisations to ensure that messages are received and understood. We also conduct education campaigns to highlight what information is promulgated by the bureau and how that information can be obtained.

We also have a series of ongoing projects. One of those is the next generation forecast and warning system. That is providing us with opportunities for improved delivery of location-specific warning information, which will be released over the next few years. That will include, as Geoscience Australia have commented on, the use of the common alerting protocol, or CAP, for bureau warnings as well. There are ongoing contentions for access to the radiofrequency spectrum used for operational observation systems and also for the communications systems used to relay the data which underpins the bureau's warning system. That is of significant concern to us.

We work with the states. We are obviously a Commonwealth organisation but we work directly with state stakeholders. As such, we are endeavouring to provide a nationally consistent set of weather information services and warning information services. But this is sometimes extremely difficult to deliver when we are dealing with individual state organisations. We have to respond to those state organisations and be responsive to their requirements while endeavouring to maintain an underlying nationally consistent set of information.

ACTING CHAIR: Thank you both for those opening statements.

Senator BILYK: I have some questions for Geoscience Australia firstly but if the bureau feel that they have something to contribute then they should please do so. In the Geoscience Australia submission, a key point seems to be the difficulty that you have in getting your satellite observation from the receiver of Alice Springs to Canberra for processing into high-quality images. There is a delay in doing that which obviously means that there is a delay in passing information on to emergency services and emergency response organisations. Have you actually spoken to Australia's Academic and Research Network to investigate what has prevented you from connecting? Are you connected with them?

Dr Barnicoat: We are in the process of negotiating access to Australia's Academic and Research Network. That has been progressing significantly over the last several months. We have not yet reached a final agreement, but I think it is perhaps best to say that we are optimistic that we will reach an agreement soon.

Senator BILYK: Can I presume from that that once that happens you will be able to get the information out more quickly?

Dr Barnicoat: It is in particular getting the information in to Geoscience Australia in Canberra more rapidly. Currently we have a reasonably substantial mitigation for the issue there because the most time critical system we have is the Sentinel bushfire hotspots system and what we do is we process a substantial amount of the data in Alice Springs so that what has to be transmitted with urgency down to Canberra is a much smaller volume of data than a full image. If we do get access to the academic research network, we will be able to transfer images much, much more rapidly down to Canberra. That will expedite the delivery of information. There is still a processing time required, but it will certainly cut the time delay substantially. It will speed up the transfer of data by a factor of perhaps 10, at least.

Senator BILYK: Have you had any discussions with the Department of Broadband, Communications and the Digital Economy or NBN Co. about connecting to the NBN? I understand it passes through Alice Springs, right past your door.

Dr Barnicoat: To my knowledge we have not had any discussions, certainly of any detail, with NBN people. Gordon, do you know any different?

Mr Cheyne: I am not sure we have had any discussions, but my understanding is that the NBN bandwidth was not quite big enough to cater for the images that we need to move. The Academic Research Network was much more suitable to the task.

Senator BILYK: This goes back to the issue of the size of the information you are trying to transmit. How do you ensure that we get timely and effective dissemination of the information with regard to natural disasters?

Dr Barnicoat: I am not quite sure what you are driving at. When we get the information back to Canberra, we process it and make it available normally through the Attorney-General's Department, which has formal carriage at the Commonwealth government level for handling emergency situations.

Senator BILYK: So you give it straight to the Attorney-General's Department?

Dr Barnicoat: We give it to the Attorney-General's Department and they deal with it. We also make it available for FTP and other means of acquisition by others through our own internet facilities. There is no major time delay associated with that, I think.

Senator BILYK: Do you give information directly to the media or anything like that?

Dr Barnicoat: No.

Senator BILYK: It is all done through the department?

Dr Barnicoat: We do nothing directly with the media, other than information on earthquakes, which appears on our website.

Senator BILYK: And the media would just access the website. You do not actively seek them out?

Dr Barnicoat: Yes. They will either access the website or ring our comms people. No, we do not seek them out.

Senator BILYK: I have a couple of questions for the Bureau of Meteorology. In your submission, I was very pleased to notice that your Next Generation Forecast and Warning System project is being progressively rolled out and you are currently operating in three states, including my home state of Tasmania. Could you explain to us what the Next Generation Forecast and Warning System project is?

Mr Hainsworth: Certainly. I will go right back to the very beginning as to how it operates. The way forecasters have traditionally worked over the last 100 years is that they took all of the information that was available to them—and that has varied over the years but, generally speaking, it has increased, and it has increased massively in recent times—they collated it, formulated a policy in their minds, in discussion with other members of the team, and then physically typed up the forecasts. In the old days it was a question of writing the forecasts and then handing it to the communicators who typed it up and sent it out.

The Next Generation Forecast and Warning System allows the forecasters to access all the information that is provided to them—a lot of it, anyway—via layers of information within a new interface. Instead of thinking about the broad scale weather across a state—for instance, Tasmania—the forecasters would split it down by components. They would look at what the wind is doing. There would be a layer of information across Tasmania which is the wind information. That is split into time segments. We look at wind on an hourly basis, in fact, for around 72 hours and then three-hourly time steps from 72 hours out to seven days. That is the wind information. Then they will look at, for instance, something like rainfall information or cloud information. That is another layer of information that they will operate on, on a time basis—starting from now and moving forward into the future for about seven days. They can take the underlying information which is provided to them, which is, generally speaking, numerical weather guidance—numerical weather forecasting models. That is placed at the forecaster's disposal. They can edit it and add value to the information where they think the model has not got it right. We know that forecasters can add value to numerical weather forecast outputs and provide significant benefits to end users and stakeholders by providing that additional level of information.

Gradually, the forecasters build up these levels and layers of information. Once they are happy with the meteorology of what they have put together in a graphical manner, the system, which has some very sophisticated software in it, then takes all that guidance information and generates the forecast for any particular location that we chose to name. That is how come we can expand the number of forecast locations we have done. This particular project is funded by the government for $30.5 million. We will expand the number of forecast locations within Australia to 650 locations with seven-day forecasts. That contrasts with the seven locations for which we provided seven-day forecasts pre the next gen system. So it has allowed us to vastly extend our scope and our range of locations. We will even be providing a point and click facility for people outside those 650 locations so that they can still get a seven-day forecast for their particular location. There is an interface for that. We will be providing this in Tasmania towards the end of the year. Anybody will be able to direct their mouse pointer to a particular location and click on it to get a seven-day forecast of temperature and rainfall for that particular location.

So, it really does provide us with the opportunity to get a lot of point-specific information into the forecasts for the end users, be they farmers, fishermen, people wanting to know whether to hang their clothes out or people making a very critical weather decision as to whether they are going to be able to fish in a particular location. Tasmania is a classic example because information about swells is absolutely critical to the fishermen on the west coast for deciding whether or not to go. We will be able to provide that information and they will have access to it. So it enhances the safety of the community.

Senator BILYK: Presumably, emergency services such as police will be able to use it.

Mr Hainsworth: Yes, indeed.

Senator BILYK: Is there a process in there that if there is a need for an alert you can automatically tell the emergency services?

Mr Hainsworth: Yes. With the underlying data that is provided we will run a particular process that looks at it and indicates to the forecasters when there is an area—it will highlight where this area is—that potentially requires some kind of warning or alert. The forecaster then makes a judgment as to whether they feel that that is correct or whether they think, 'No, maybe I have overstated this or it has been overstated.' But if they are confident and happy with that particular information the system will then generate a particular type of warning depending on what particular threshold has been exceeded; it may be a wind warning, or a fire weather warning or a variety of agricultural type warnings. So, yes, it is extremely specific in its areas and its ability to outline areas under particular threats.

This is particularly useful for fire authorities to highlight and see areas that are subject to particular threats. Given that we have provided them with that information around about seven days in advance, they can see areas in periods that may be potentially threatening or that put particular areas of the community at risk of particular events. So it is extremely useful for the fire authorities. We have already rolled it out in Victoria and New South Wales and the fire authorities are very pleased with the output.

Senator BILYK: You also mentioned that you work closely with all forms of media and have a particularly close relationship with the ABC. Do you work with commercial broadcasters and community broadcasters?

Mr Hainsworth: Yes, we do. We certainly work closely with the community broadcasters in quite a number of states and, yes, we do talk with commercial broadcasters. The ABC has fashioned itself, I guess, on being the emergency broadcaster. We have always had a very strong relationship with the ABC and that has just been strengthened. But, yes, we do certainly talk with commercial radio stations, but we just do not seem to have the same kind of relationship with them as we do with the ABC.

Senator BILYK: Do you note any problems with trying to relate to other broadcasters beside the ABC? We have heard evidence that there needs to be a database of people so people need to know who to go to in both situations—so someone would know who to talk to at the bureau in case of, say, a natural disaster, in order to get information, and they would also know who to go to in the radio stations to help with alerts and things.

Mr Hainsworth: Certainly that is one area in which we have concerns. We often find that commercial radio stations network, and it is not always clear to us where the hub of that network is.

Senator BILYK: Because of the relays and things?

Mr Hainsworth: Yes, that is right, whereas with the ABC we do have that very close relationship. We understand where the control rooms are in each state—and they tend to be located in each capital city—so we can always reach them. One issue is that, if there were a peak body of commercial broadcasters and they indicated that they wanted to work more closely with us, we would be happy to receive those kinds of representations. But we have not had that to this point. I cannot speculate as to why that would be.

Senator BILYK: Thank you.

Senator McKENZIE: Thank you both for your submissions. I have a question apiece. On page 12 of the bureau's submission you talk about your radar networks being at the 5,600-5,650 level and the issues around wind farms. I do not know whether other members of the committee have heard about this particular issue; I have not, and in Victoria we have a lot of issues about wind farms. We have found parrots and goodness knows what but we did not know that the wind farms played with the Bureau of Meteorology's radar.

Senator BILYK: Part of the work did not come up.

Senator McKENZIE: If you could expand on that, I would really appreciate it.

Mr Hainsworth: Certainly. One of the best examples of how it impacts on us is the radar just south of Adelaide which picks up the wind farm on the southern South Australian coast very, very well indeed. It shows up as a line—what we would term a permanent echo. It does not obscure the weather beyond that, the rain returns beyond that, but it just makes it a little difficult for the forecasters to identify whether or not it is a real echo or part of the wind farm echo. As I understand it, it is simply due to the fact that the blades of the turbines pick up salt spray, a little bit of moisture, because our radars are at that particular wavelength and that is the best wavelength to detect raindrops and water droplets. That is why we operate on that wavelength and that particular frequency. So, when the turbine blades get just a little bit of a covering of moisture on them, they show up as being sort of giant raindrops, if you like.

Senator BOYCE: So basically every night!

Mr Hainsworth: In essence, yes, that is right. So we get these lines showing up. What we are saying is that, as wind farms become more popular and expand in extent, we might start to have some of these issues.

Senator McKENZIE: Can I just ask another question on that. Obviously you know it is happening because there is a giant raindrop there in the same spot every night.

Mr Hainsworth: We see it, yes.

Senator McKENZIE: Does it mask what is really happening with the weather in that area?

Mr Hainsworth: Like I say, it does not tend to, because it only occupies a very, very small component of the radar beam, given that the radar beam—

Senator McKENZIE: So it is just that minute in time.

Mr Hainsworth: That is right. It is there. But it does show, because it is moist and it provides a return echo. The radar seizes on that and says, 'I've got something here,' and it will show it. But, if there is weather behind that, if there is some kind of rain behind that, yes, it is still visible, because it is not actually blocking the beam from getting through. It is simply showing up.

Senator McKENZIE: It does not play with your ability to forecast, once you know that this is happening.

Mr Hainsworth: No, it does not. Our concern would be, however, if there were a wind farm put right next door to our radar. That could be a different story. Our radar operates on a progressive tilt regime, so it tilts up to around 55 or 60 degrees, I think, from memory, and it uses that to scan the nearby area and then gradually it works progressively further out. If we had a situation where a wind farm was right next to us and the last radar scan was trying to scan straight through it, that would be a different story, but generally speaking, as long as they are some distance away, the curvature of the earth is such that it starts to drop away and the radar beam starts to move over the top of it.

Senator McKENZIE: I think you have got a good argument to make sure there is going to be nothing next door.

Mr Hainsworth: Right next door.

Senator McKENZIE: Finally, I was wondering about the images that you are relaying to other government and, I assume, private agencies about the status of our earth—demography, geography et cetera—and your comments about the NBN not being big enough for the images. Could you expand on that? You said it just earlier.

Dr Barnicoat: That is really an issue around getting the data down from a satellite pass. As the satellite passes over the receiving station, we download the data for the entire swathe that it has covered across Australia. That is not just one scene, one little bit; it is a lot. In terms of disseminating the information once it has been processed and so on, that becomes less of an issue because—

Senator McKENZIE: Because you would carve it up.

Dr Barnicoat: Exactly. You are providing people with a targeted return. So, in terms of disseminating information out to either emergency services or other people, that is not where the problem is; it is simply ingesting the data into the agency for the initial processing.

Senator McKENZIE: How do you do it now?

Dr Barnicoat: We have a slow link from Alice Springs and from another satellite-receiving antenna in Tasmania. Otherwise, the material comes down on tape, through courier, over the longer term. That is why, for instance, for the bushfire watch system we do a substantial amount of preprocessing in Alice Springs so that we are sending down preprocessed information which is much, much smaller in volume than the full scene.

Senator McKENZIE: So you can get it out quickly.

Dr Barnicoat: And then the full scene follows on subsequently.

Senator BOYCE: I might just follow up on the questions around wind farms. Have you communicated this to the wind farm organisations or to the planning authorities such as the local government authorities?

Mr Hainsworth: I am not aware of that. I might have to take that question on notice. I am in the weather services area. We say, 'A radar would be really good around here,' and then it is up to the observation and engineering branch to go away and deliver that outcome. They are the ones who—

Senator BOYCE: You need planning approval to put a radar wherever you want to?

Mr Hainsworth: Yes.

Senator BOYCE: But it would be good if you were one of the bodies that got to have some input into where wind farms went as well, presumably.

Mr Hainsworth: It would be nice, yes.

Senator BOYCE: Just in general, I was interested also in the comments Dr Barnicoat made around capacity out of Alice Springs. You have also said you have got some concerns about your radar bandwidth and basically protecting it. Could you tell us more about what you perceive as the threats and what needs to be done there? I am talking now about the bureau also commenting on capacity.

Dr Barnicoat: I can also make a response to that question after Alasdair.

Senator BOYCE: You have commented on competition for, and interference with, the existing meteorological radar bandwidth. Wind farms was one of those but it seems that there were perhaps more pressing competitive issues.

Mr Hainsworth: Yes. Wireless LAN out of passenger aircraft, and there is a variety of household implements. Garage door openers I believe is another one.

Senator BOYCE: One could ask how that ever came to be in the same bandwidth.

Mr Hainsworth: Those are the kinds of things where there is competition for bandwidth and particular areas of the spectrum. Some of these are supposed to be protected but what we are seeing is increasingly things being brought in from overseas which do not necessarily comply with those directives. We communicate with the Australian Communications and Media Authority and we are part of this, and we certainly make our views known to that body. Every so often we do get things that come into the country that interfere with our radar. During the Formula One Grand Prix, for instance, they brought their own radar in and we discover that it was interfering with Melbourne's—

Senator BOYCE: Melbourne did not have any weather that week!

Mr Hainsworth: It was starting to interfere with Melbourne's radar and Melbourne's radar is a very big Doppler radar, a very powerful machine. It was providing interference. We were able to talk with ACMA and they got the Formula One radar shut down. They did not need it; the Melbourne radar was more than adequate for their requirements, so they simply used our information. That is an example of what can happen.

Senator BOYCE: When you say they got it shut down, did they have the authority to shut it down or was it just please shut it down?

Mr Hainsworth: I believe ACMA has the capacity to be able to shut things down.

Senator BOYCE: Perhaps finalising that particular topic, is there an Australian standard that garage door openers and radars et cetera are supposed to meet? If so, are we just see a failure to meet standards?

Mr Hainsworth: That is one I might take notice. I am not the expert in that area.

Dr Barnicoat: There is an additional facet to the spectrum competition issue that I think should be highlighted here. That is that the satellite downlink stations receive very weak radio signals from satellites and as there is increasing competition for bandwidth there is increasing pressure from other users to get closer and closer to the frequencies that are used by the satellites. The satellite down stations have been located in places, for example south of Alice Springs, away from normal or expected sources of interference, but with increasing development of technology there is additional pressure. So we certainly have to retain vigilance around potential developments and we also remain in frequent communication with the Australian Communications and Media Authority to ensure that the appropriate parts of the spectrum are protected to protect those downlinks. The bureau will certainly have the same sort of concerns around satellite downlinks that we do. Indeed, we use many of the same down stations.

Senator BOYCE: Are you able to give us some examples why you have had to be vigilant?

Dr Barnicoat: There are proposed developments, for instance, indeed of some mobile telephony towers that people want to put in, and there is at least the risk that there will be interference from those. If you want more detail I need to take that on notice.

Senator BOYCE: That would be useful to have on notice. The other thing is that there has been a lot of talk about interoperability of emergency services communications. Have you any concerns or any involvement in that area—that they would all, presumably, be able to flip into each other's spectrums or bandwidth or services or whatever you want to call them?

Mr Hainsworth: We would certainly have great concerns if that were the case. You are talking here of—

Senator BOYCE: Communications systems, irrespective of what they are—that they would not all have siloised communications in the event of a disaster but could operate, theoretically, seamlessly?

Mr Hainsworth: I am not entirely certain I understand your question.

Senator BOYCE: Perhaps you would like to review the evidence from some of the emergency services people and then comment, on notice, if there is something you would like to say.

Mr Hainsworth: Okay. One thing I can say is that we are increasingly delivering our information in geospatial/geographic information system formats, which enable interoperability. That means that they can use our information on any particular type of platform. I am not sure whether that is the area you are interested in.

Senator BOYCE: I am imagining that would be part of what they are perceiving to be the answer, but you might like to have a look at other evidence and see if you think there is anything to add there.

Mr Hainsworth: Okay.

Senator BOYCE: You do an excellent job, in my view, of disseminating information to the public and to other services et cetera. We had evidence yesterday from the Australian Psychological Society suggesting that terms such as 'false alarm' should not be used if you are preparing people to behave in an emergency; you should say that it was a 'close call' or a 'near miss' and not use terminology like 'false alarm'. Do you discuss at all with the media how they might couch information that you have given them?

Mr Hainsworth: We do. We certainly would not use the term 'false alarm' at any time.

Senator BOYCE: No, but the media might.

Mr Hainsworth: Yes, and they do on occasions where we have warned of a certain event which may not have come to pass. But we certainly do try and discuss our terminology and we try to use the most effective terminology. You will note in our submission that we have done surveys to try and assess the impact of the warnings and to use the most appropriate language in our warnings that ensure that the message gets through as unambiguously as possible. That is what we transmit. How the media then tends to interpret that is another story altogether. So, yes, we do have issues as far as that is concerned. We do have a set of terminology that we use in this new forecast system that we have got. It generates the text forecast automatically. We have been extremely careful in the kinds of terminology that we actually put into these automated worded text forecasts—extremely careful. But that does not stop the media interpreting it and second-guessing it, which does happen.

Senator BOYCE: No. And also you have mentioned that you do educational sessions with the media around what weather is.

Mr Hainsworth: Yes.

Senator BOYCE: Again, another thing that was suggested was that there might well be workshops for people who live in areas particularly vulnerable to natural disaster. Do you do any of that sort of training at all?

Mr Hainsworth: Yes. At the start of the severe weather season, the cyclone season in particular, we have a program within the tropical regions, in Queensland, the Northern Territory and Western Australia, where we send people into the regional areas of those states and we have seminars where we explain what the bureau's warning system is, what we deliver and how that information should be interpreted.

Senator BOYCE: These are almost like public meetings, are they?

Mr Hainsworth: Yes, they are. Ann may want to comment because she has been on these seminars.

Ms Farrell: It varies from time to time. Generally speaking, the pre-season education campaigns we have are in coordination with the emergency service agencies in each state. They will largely be for clarity of message and how the system works with the emergency services operatives, but because we go about the states and into not the real remote areas but the regional centres then often the opportunity is taken to have some public education meetings as well. In terms of trying to get into the real remote areas, I think they do that a fair bit in the Northern Territory. It can be a very expensive and time-consuming undertaking so going into the real remote communities is not something we do on a regular basis, but we certainly go into the regional centres.

Senator BOYCE: Thank you. I was going to ask Geoscience why you had to have your service located in Alice Springs, but am I correct in thinking the answer is that there is less interference out there?

Dr Barnicoat: That is part of the issue, but the other part of the issue is that it is right in the middle of Australia and so satellites that are passing over essentially the whole continent are visible from there and data can be downloaded. It gives us the maximum footprint on the Australian landmass.

Senator BOYCE: You have commented in your submission that you do not have a role in the formal warning system. Should you have?

Dr Barnicoat: No, I do not think we should. I think other people are far better equipped to do that than we are. We do not see that as our role. We are not equipped for that role and we are not staffed for that sort of role, whereas other people are and can take the information we provide and, indeed, do and provide appropriate warnings—for example, the bureau with respect to the tsunami warning system.

Senator BOYCE: I was interested to read the things you had to say about the hot spots and transmitting the information around hot spots. I am particularly interested in especially vulnerable people—people with disabilities, people who cannot move themselves et cetera. If there were a system identifying households that were considered particularly vulnerable in Australia, would you be able to identify those households within the particular area of concern to emergency services?

Dr Barnicoat: I think that is certainly technically possible.

Mr Cheyne: In terms of fire warning, do you mean, Senator?

Senator BOYCE: Any sort of disaster. I am presuming you are also looking at flood situations—are you? Can you identify floods?

Dr Barnicoat: Yes, we do. We use satellite information, as I mentioned in the opening statement, to generate what we would call a footprint—in other words, the area that is affected by the water.

Senator BOYCE: Perhaps I should not be using the term hot spot; I should be using the term footprint. If there were a database of households that were considered to house particularly vulnerable people, would you be able to identify those households on your footprint that was sent on to other emergency services?

Mr Cheyne: Theoretically, yes.

Dr Barnicoat: Technically that is certainly possible. I am not entirely convinced—and this is a purely personal viewpoint, I would stress—that that would be a huge advantage over what someone on the ground could do. But it is certainly technically possible because, as Alasdair was talking about with geographic information systems, it is a very simple exercise to overlay the footprint of anything on information in a GIS system that tells you about where properties are and then the information comes out instantly on that basis. So it is certainly technically possible to do.

Senator BOYCE: Thank you.

Senator HUMPHRIES: In terms of predicting the behaviour or likelihood of earthquakes, it is my impression—and you can disabuse me if I have this wrong—that essentially bodies like Geoscience Australia can monitor the behaviour of earthquakes when they happen and possibly do some predictive work based on some abnormal activity in the ground that can lead to earthquakes in limited circumstances, but essentially your work begins when the earthquakes occur in terms of giving people a picture of what is going to happen in terms of tsunamis and whatever. Is that the case?

Dr Barnicoat: That is entirely correct.

Senator HUMPHRIES: Is there any chance that technology is going to improve the capacity to forecast in the future—that we will have better technology or better analysis tools to help us forecast earthquakes?

Dr Barnicoat: I think I can safely say there is no immediate prospect of improved prediction of earthquakes. In the very long term something might change, but at the moment I do not think there is any prospect of improved earthquake prediction.

Senator HUMPHRIES: I am not sure who I would ask this to, but has the Joint Australian Tsunami Warning Centre been established yet?

Mr Hainsworth: Absolutely.

Senator HUMPHRIES: And how far down the track is that—what exactly has happened so far?

Mr Hainsworth: It has been in operation for probably two years now.

Mr Cheyne: At least. It came into operation probably in 2006-07, and into full operation a couple of years ago.

ACTING CHAIR (Senator Cameron): Have we been more interested in political tsunamis? We missed the real ones!

Mr Cheyne: I cannot possibly comment on anything of that nature, Senators!

Senator HUMPHRIES: Has the centre got a physical location?

Mr Cheyne: It has a dual location. The earthquake analysis is done in Canberra at Geoscience Australia and the modelling of the propagation of the waves and the message switching is done by the bureau. That is in Melbourne.

Senator HUMPHRIES: On whose website would I find more information about that?

Mr Cheyne: The bureau's, primarily. Earthquake information specifically is on Geoscience Australia's site but the bureau hosts the primary website for the Joint Australian Tsunami Warning Centre.

Senator HUMPHRIES: I will have a look at that.

Mr Hainsworth: You will find it on the left-hand side. There is a menu bar. It talks about tsunami services.

Senator HUMPHRIES: Excellent. I will have a look at that. Finally, can you advise us as to the nature and progress of the Common Alerting Protocol system, which is being developed at the moment?

Dr Barnicoat: Geoscience Australia now have available a Common Alerting Protocol on earthquakes, which is obviously, as you rightly pointed out just now, Senator, after the event. Rather than a warning service, it is a notification service, if you like, through the Common Alerting Protocol. It is now available through our website.

Senator HUMPHRIES: Is it fully developed as far as you are concerned, or is there more work to be done on it?

Mr Cheyne: The short answer is I would have to take that on notice but we have been working closely with the Attorney-General's Department, who have been running a pilot on the development and implementation of the Common Alerting Protocol. We have used that pilot to develop the earthquake related component of that. We have developed that to the extent where we can provide that as a service on our website, as Dr Barnicoat said.

Senator HUMPHRIES: Let's take a disaster movie scenario for a moment. Say there is a big undersea earthquake in the Coral Sea and you guys at Geoscience Australia say that we have an hour before—

ACTING CHAIR: Is this another Tony Abbott scenario?

Senator HUMPHRIES: Now, now! I might spice it up with putting some Labor Party people on shore, so be careful! Say that you guys say we have an hour before the tsunami created by hits to the North Queensland coast—Sorry, Senator Boyce, I did not necessarily just choose—

Senator BOYCE: No, no.

Senator HUMPHRIES: It is a bit hard to drag Canberra into this scenario.

Senator BOYCE: Poor old Queensland coast!

Senator HUMPHRIES: From your point of view—either organisation—how long before that information and your prediction of the impact of that tsunami gets to the point where it is usefully in the hands of authorities that can alert about it? Also, do you have a comment to make on what you think could usefully be done with providing information to people living in the affected areas?

Mr Cheyne: I will start out with that. The timeliness and reliability criteria that we use in the identification of earthquakes that have the potential to cause a tsunami is to aim to do it within 15 minutes of the event actually occurring. Within that 15 minutes we acquire sufficient data to make a preliminary determination of the magnitude and location of the event. We do that with what we hope is about 99.9 per cent reliability. We will immediately transmit that data through a very closely coupled system that we have with the bureau, which will ingest it, and it has another 15 minutes in our performance criteria to basically issue the message out the other end to their emergency managers. Maybe you want to take up from there, Alasdair.

Mr Hainsworth: At that stage, having been passed the information that the earthquake is tsunamogenic, we would then issue a bulletin of information. If we had been passed information that it is tsunamogenic, we would say that a tsunami is possible on the Australian coast. We would have done modelling at that stage to give us an idea about how long it would take for the first waves to reach the Australian coastline. That would then be refined subsequently, once we were passed more data from GA, to the time of arrival and the potential height once it reached the 20-metre depth line on the Australian coast. We would make that call and we would publish the warning.

If there is going to be a tsunami and it has been confirmed that it will occur, we would issue one of two types of warnings. We would issue a marine threat, which is a wave which we do not expect to exceed 50 centimetres. That is alerting people to stay clear of beaches and to advise boaters that there could be abnormal currents and movement of water through estuaries and that kind of thing. If we expect the wave to exceed 50 centimetres, then we would issue a land threat for particular segments of the coast. Our modelling would identify those particular sections of the coastline. That warning would then be sent to the appropriate state emergency authorities.

Senator HUMPHRIES: Have you got a list of the appropriate ones to target, based on where you think it is going to make land—

Mr Hainsworth: Indeed. That is all contained within the standard operating procedures.

Senator HUMPHRIES: Is that done by phone or email?

Mr Hainsworth: It is done through a variety of means. First of all, it would be sent by the system through our normal system, which would include sending them an email, so they would get it by email. They would also get it through fax.

Senator HUMPHRIES: Is there also a method of putting it up in big red letters so they look at this immediately it comes to them?

Mr Hainsworth: Yes. I direct you to the page 7 response where we do discuss some of those. In the case of the warning that is received by fax, it is in big letters. In the case of SMS, it is very difficult because that is simply a message that is received by a particular telephone. Because it is delivered in a particular format—it is delivered in XML as well—people can then set it up so it flashes on their systems too. So there is capacity for that kind of

thing to occur. It also appears on our website. We would follow that up with a phone call to the state emergency coordination centres in any one particular state or in the states that are likely to be affected. Our regional offices would also be advised that this has occurred, and they would then take over the coordination of the warning within their particular state, once the initial phone calls have been made.

Senator HUMPHRIES: All right. So, from the moment that you know that an earthquake has occurred that is tsunamogenic—a new word I have learnt—to the point where you are sending these messages to the various emergency operators, typically what sort of time lag are we talking about?

Mr Hainsworth: We have to have the warning out within 30 minutes; that is our performance criterion. They should have it at that time. They should receive that warning no more than one or two minutes after we have issued the warning; it should be in the hands of the state emergency services in that particular state by then. A follow-up phone call would be made as well—and then the regional office would continue that coordination—to ensure that they were aware of the situation. So it should all take place in less than three-quarters of an hour.

Mr Cheyne: And the reason we picked those timeliness criteria is that the minimum amount of travel time for a wave to get from the source of the earthquake to the nearest part of the Australian shoreline that would be affected is two hours. That means that we aim to give emergency managers at least 90 minutes in which to do something meaningful.

Mr Hainsworth: We also have the deep ocean buoys located in the major basins. We have them off the southern part of New Zealand, in the Coral Sea and to the north-west. They are located so that they mesh with the wave travel time of around 90 minutes to the Australian coastline, so that we can confirm that there is a tsunami and also then have a better handle on the size of the tsunami and tweak the warnings as required.

Senator HUMPHRIES: Right. That is useful. Thank you for that.

ACTING CHAIR: Mr Hainsworth, there is a difference between weather and climate, isn't there?

Mr Hainsworth: Correct.

ACTING CHAIR: You do not get much criticism of the science that you use for your weather predictions, do you?

Mr Hainsworth: We do sometimes—

Senator BOYCE: That is the national hobby!

Mr Hainsworth: but it is an inexact science and, therefore, we operate within the bounds of what we are able to produce statistically. So we operate within an accuracy rate, for most components of the forecast, in the order of 80 to 85 per cent for the next 24 hours. But, certainly, if things that we have forecast do not transpire then, yes, we do receive criticism sometimes.

ACTING CHAIR: Yes. In relation to climate change and global warming, some of the analysis I have seen from the IPCC, from the BoM and from CSIRO is that, on the east coast of Australia, there will be increasingly strong cyclones in the north, of greater severity. Is that the view?

Mr Hainsworth: I am not really in a position to be able to comment on that. I am the weather services branch head, and as such I am dealing with the period between now and around seven days from now. I am not—

ACTING CHAIR: So you do the short-term analysis?

Mr Hainsworth: I do; yes, that is right. I focus on the warning situation and the forecast over the next seven days.

ACTING CHAIR: But surely you talk to other people in the bureau about the implications of global warming for your short-term analysis?

Mr Hainsworth: Yes, we certainly do. We speak with our climate colleagues all the time.

ACTING CHAIR: What is the analysis from those discussions?

Mr Hainsworth: There is an indication that cyclones could become more intense but not necessarily more frequent.

ACTING CHAIR: More intense cyclones means, I suppose, they will be more destructive if they hit land.

Mr Hainsworth: Yes.

ACTING CHAIR: So getting a warning out is even more important.

Mr Hainsworth: Yes.

ACTING CHAIR: Is BoM actually discussing these issues internally?

Mr Hainsworth: We are constantly discussing how we can better transmit the warnings to emergency services. We deal with the state authorities. While we do deal directly with the media, it is the state authorities that have the responsibility to provide the localised action to be taken to be taken by the community. So we tend to deal with them. We are trying to ensure the efficacy of our warnings to those authorities. So, yes, we are always trying to ensure that our warnings reach them as quickly as possible. We establish direct links with them, and the regional offices talk directly with the state coordination centres and state emergency authorities. They will do that directly by phone or, in the case of New South Wales and Victoria, we have forecasters embedded in the emergency centres to ensure that the forecasts are interpreted in the correct manner and reach the appropriate people as quickly as possible.

ACTING CHAIR: Thanks for that. Geoscience Australia, I am not sure what the difference is between the geospatial monitoring division and the national observation group. I do not really need a dissertation on that today, but one of the first inquiries I was involved in was to do with the space industry in Australia. An issue that came up consistently was our reliance on overseas satellite capability. Is that still an issue?

Dr Barnicoat: Obviously all of the satellite data that we get is from satellites which are not Australian. But around the world the availability of what we would term 'public good information', which is typically medium resolution, is widespread. We have to regularly negotiate new deals with providers, but our location in the southern hemisphere and our ability to receive information on the ground puts us in a reasonably strong position for getting that data. Yes, we are reliant on information from other countries' satellites, but that is not currently a major pressure point in our activities.

ACTING CHAIR: When you say that it is not currently a major pressure point, has there been any analysis done to say that it could be a major pressure point and, if so, what are the implications for your capacity to send the satellite based telemetry back to rescue services?

Dr Barnicoat: There are no indications that it will become an issue. But if—and I stress the word 'if'—it did become an issue, we would then have to seek other means of acquiring data. That may well mean using commercial satellite providers, which then obviously comes with a budgetary requirement to pay the information providers.

ACTING CHAIR: The NBN are putting a couple of satellites up. Telstra have got satellites. I think most of our big telecommunications players have got satellites. Are they of any use to you or are they too specialised?

Dr Barnicoat: Firstly, they are too specialised and, secondly, their location will typically be in geostationary orbit, which is a substantial distance out. That means that the resolution on the ground is too coarse for our requirements. So the satellites that we rely on are those in relatively low earth orbit, less than 1,000 kilometres, which then circulate past on a regular basis, but the telecom satellites are geostationary and much, much further out than that. Both because they are not equipped and because they are too far away they are not suitable for our purposes.

ACTING CHAIR: Optus was the other big user of satellites. Would it be a proposition, if Optus, Telstra and Sky are putting satellites up, that there should be a public-good responsibility on them to piggyback some of your equipment? Is that technically or commercially possible, or is it just pie in the sky?

Dr Barnicoat: It simply would not be useful because they are in geostationary orbit. The laws of physics effectively define the ground resolution you can acquire from that. You simply would not be able to see enough fine detail from those satellites. It is not a proposition at all worth considering, unfortunately.

ACTING CHAIR: In the context of your valuable information, are you comfortable that the warning systems are robust in terms of our satellite capacity?

Dr Barnicoat: We are currently reliant on Landsat from the USGS, the US Geological Survey, and the two current Landsats in operation are both substantially past their initially estimated lifespan. So we are relying on their continuity, which is a bonus. There is a new Landsat mission due to go up in the next 18 months or so and we are currently negotiating to acquire data from there. If that does not transpire, there are other providers from a range of nations that we can get public-good data from. Negotiations are required, but there is every prospect that we could get that data. So there are complexities in our reliance on certain satellite providers, but they do not appear at this stage to provide insuperable barriers to continuity of data access.

Senator BOYCE: The ABC were talking about the use of Auslan and other ways of communicating with people with disabilities. They suggested that from their perspective they would prefer to buy sourced packages of information about emergencies that included the Auslan in it, not add Auslan themselves. Has the bureau considered this at all? If so, what was the outcome?

Mr Hainsworth: Not that I am aware of. We have not provided information in Auslan—

Senator BOYCE: Or with captions?

Mr Hainsworth: That is not really our call, because we provide the information to the broadcaster. If the broadcaster chooses to put those captions on, that is their call—it is not our call. We put the information there.

Senator BOYCE: People, quite understandably, are hoping that the expense of providing this would be met elsewhere.

Ms Farrell: I am not really sure what is being sought, but for something like Auslan I am considering the types of information we provide. We provide text forecasts and graphical forecasts and warnings for some products. Text intrinsically could be a caption. When you talk about a caption, I would imagine that being something that would go with some imagery, like a television presentation. But we do not really generate video—

Senator BOYCE: Voice?

Ms Farrell: We do automatically generate voice files as well, but anything—

Senator BOYCE: So you do provide that already for people with sight impairment?

Ms Farrell: We do provide text to speech automated. If there were to be some Auslan, I cannot imagine how we would do it manually—with an interpreter or something signing and us recording. It would be hard to imagine us doing it within the existing budget. I think there may be some technology emerging that might start to enable text to be turned into Auslan or something like that, and I think you would really need to see those sorts of technologies emerging before I could imagine us being able to do something like that.

ACTING CHAIR: On behalf of the committee, I thank both Geoscience Australia and the Bureau of Meteorology for the very important work that you do. It is essential to safety and to the capacity to warn people of problems.

Proceedings suspended from 14:50 to 15:05

CAHILL, Ms Maureen, General Manager, Communications Infrastructure Division, Australian Communications and Media Authority

KERANS, Dr Andrew, Executive Manager, Spectrum Infrastructure Branch, Australian Communications and Media Authority

MAURER, Mr Andrew Peter, Assistant Secretary, Spectrum and Wireless Services, Department of Broadband, Communications and the Digital Economy

ACTING CHAIR: I welcome representatives of the Department of Broadband, Communications and the Digital Economy and of the Australian Communications and Media Authority. Thank you for talking to us today. As Commonwealth officers you will not be asked to give opinions on matters of policy, though this does not preclude questions asking for explanations of policy or factual questions about when and how policies were adopted. The committee has received your submission as submission No. 34. Do you wish to make any amendments or alterations to your submission?

Mr Maurer: No, thank you.

ACTING CHAIR: I invite you to make a brief opening statement before we go to questions.

Mr Maurer: Thank you for the opportunity to appear before the committee. As outlined in our written submission, the department's role relates to providing advice to the Australian government on policy and regulatory matters concerning communications. Matters that particularly relate to emergency communications include: the emergency call service, which encompasses 000; the National Relay Service; critical infrastructure protection; broadcasting; the National Broadband Network; the Integrated Public Number Database, which is referred to as IPND; and spectrum policy.

The department also administers programs which can facilitate communications in emergencies, such as the Digital Regions Initiative, the Satellite Phone Subsidy Scheme and the Indigenous Communications Program. During emergencies the department is not in the front line in terms of responding to emergencies and natural disasters; however, the department does keep track of communication providers' responses to emergency situations and at other times works with communication providers to ensure that there are plans in place to respond during an emergency situation and enhance the restoration of communication services.

At present the department, together with the ACMA and the Attorney-General's Department, is also working with state and territory public safety agencies through the Public Safety Mobile Broadband Steering Committee on approaches to develop a new nationally interoperable mobile broadband capability for public safety agencies. The steering committee's work includes delivering options for the funding, build, maintenance and operation of the infrastructure necessary to deliver this capability, as well as working with the ACMA to enable the ACMA to identify a suitable amount of spectrum necessary to employ this capability.

The ACMA is conducting a review of the 800 megahertz spectrum, which will draw on the steering committee's work and be the vehicle for earmarking spectrum in the 800 megahertz range for potential use by public safety agencies to build their mobile broadband capability. Support from the states and territories for the implementation plan being developed by the steering committee will be key to achieving a national interoperable mobile broadband capability for public safety agencies. It is a major undertaking. Both the department and the ACMA remain committed to working with the public safety agencies to achieve a positive outcome.

The committee has requested that the department and the ACMA provide a preliminary response to the points in the Police Federation of Australia's supplementary submission comparing 700 megahertz and 800 megahertz spectrum. The department and the ACMA have met with representatives of the PFA on occasions to address the points raised. We do not think that the PFA's submission reflects our advice. At this point, depending on your preference, I can address the PFA's submission as part of my opening statement or take questions.

ACTING CHAIR: We will come to that after we have had the opening statement from ACMA. Do you have one?

Ms Cahill: No, we do not. Thank you.

ACTING CHAIR: That makes it easier, then. Senator Bilyk has flight commitments. I am not sure whether she wants to open with the issue you are raising, so I will hand it over to Senator Bilyk for questions.

Senator BILYK: I note in your submission that you deal briefly with section e. of the terms of reference which, in itself, deals in part with digital spectrum. Given that the government is planning to auction the 700 megahertz spectrum and that the sale of the spectrum will be out of the capacity for the state governments to

purchase part of it for their state emergency services, have you given any consideration to setting aside part of this spectrum for this use? If so, what stakeholder consultation has been conducted with regard to the process?

Mr Maurer: Our main focus is on the reality of a mobile broadband capability for the public safety agencies and the best way of achieving it. That is why the steering committee was set up with public safety agency representation and state representation to investigate both spectrum issues and infrastructure issues involved in setting up that capability. We took advice from the independent regulator and that advice was that spectrum in the 800 megahertz would be most suitable for such a functionality.

Senator BILYK: Was that advice based solely on cost or was it based on other issues?

Mr Maurer: At this point I will hand over to my colleague in the ACMA so that she can run you through what they relied on.

ACTING CHAIR: Ms Cahill, is this one of the points that you are addressing in your broad response?

Mr Maurer: There has been a lot of conversation about the different merits of 700 megahertz and 800 megahertz. That is one thing that we would go into in more detail, but we are happy to address—

ACTING CHAIR: Senator Bilyk might want to go to other issues.

Senator BILYK: I do. I am sorry, but I have to catch a plane.

ACTING CHAIR: We will come back to this and deal with it in a comprehensive manner.

Senator BILYK: That would be good. Thank you. I want to mention the submission by the Tasmanian government. I am a senator for Tasmania. Their submission mentions that Tasmania has a number of contrasting analog radio networks that operate in part of the 700 megahertz spectrum. The organisations that use these networks include the Tasmanian Fire Service, Ambulance Tasmania, Forestry Tasmania, the Parks and Wildlife Service and the State Emergency Service. Firstly, will the selling of that spectrum affect those radio networks? Secondly, has there been any discussion with the Tasmanian government and their emergency service organisations about what would occur to those radio networks when the spectrum is sold?

Ms Cahill: Those questions go to a body of work that the ACMA commenced in 2008 which revolves around our planning for interoperability in the 400 megahertz spectrum. I will hand over to my colleague Dr Kerans to go through that process with you and explain how we propose transition in relation to the 700 and 800 to 400.

Dr Kerans: Ms Cahill has handed over to me to talk to you about your question on 800 meg, but it links to the question of 400 megahertz. In 2005—following but not necessarily triggered by, although it was certainly something that was close to our attention, the Canberra bushfires—we had a look at interoperability of emergency services throughout Australia and found that some of the states were operating in the same spectrum and some were not. Some of the New South Wales fire brigade people, for instance, coming to the ACT and vice versa were not able to communicate. This had been a problem for a while. We watched it during various cyclones. Dating back to the 1970s in Darwin, we had a block of spectrum set aside known as the 64 channel block. This block was ostensibly for use in emergencies, but only some states and territories were using it for that and some are using it for other purposes and some did not use it at all.

We instigated a review of the 400 megahertz band, which is generally used by emergency services for narrowband communications. As a result of this, we now have an agreement between all the states and territories to move towards interoperability for narrowband communications in accordance with a COAG plan. That plan will come into being around mid-2020. That is its final date. The reason it is so far out is that some states, such as Tasmania, have bought equipment and are operating in other bands. Tasmania operates in part of the 800 megahertz band, not the 700. The 700 is purely full of television broadcasting at the moment. So they are a bit higher up—they are actually in the 800 megahertz band—and they use narrowband. Western Australia is in the 500 megahertz band.

We want all of the states eventually to be in the 400 megahertz band, but we understand that they are all in different places in their procurement cycles and it would be unreasonable for us to expect them to shut off equipment that still has a reasonable life. The plan is flexible, but we would expect that sometime between 2015 and 2020 all of those states and territories come into the 400 megahertz band for their narrowband communications and operate within the parameters of the COAG agreement. This has been agreed at COAG but it has also been agreed by the NCCGR, the National Coordination Committee for Government Radiocommunications.

Both Tasmania and Western Australia operate in different bands but they will come back into the 400 megahertz band, which means that eventually Tasmania's concerns about the 800 megahertz band will go away. The direct answer to your question, Senator, is no—the sale of the digital dividend will not impact on Tasmania

but the replanning of the 800 megahertz band, which is the next band up, will, and we have taken its concerns into account.

Senator BILYK: My advice is that the organisations I mentioned operate in part of the 700 megahertz spectrum.

Dr Kerans: The 700 megahertz band is allocated to broadcasting in accordance with the Broadcasting Services Act 1992. There may be a few small licences here and there but the general operation is in the 800 megahertz band.

Senator BILYK: I need to be clear here. Are you telling me that the Tasmania Fire Service, Ambulance Tasmania, Forestry Tasmania, Parks and Wildlife Service Tasmania and the state emergency services I mentioned are not working in the 700 megahertz band? Would you take that on notice?

Dr Kerans: Yes.

Senator BILYK: I can check from my source as well, but that is certainly the information I was given.

Dr Kerans: Our belief is 800 megahertz.

Ms Cahill: I think the point to make is that the review of the 400 megahertz band as a means to provide interoperability is a process which kicked off in 2008 and was subject to extensive consultation with all states and emergency service organisations. We have commitment that all services will move to the 400 megahertz band and provide the interoperability, which was a key process of that review.

Senator BILYK: I do have some more questions but if it is all right I will put them on notice.

ACTING CHAIR: Mr Maurer, I think this would be the appropriate time for you to give us your considered response to the federation's submission.

Mr Maurer: Very well. I would note that this is a preliminary response and we are happy to follow up.

ACTING CHAIR: Is it a joint response from ACMA and your organisation?

Mr Maurer: Yes. They may provide some extra detail if you ask as we go along. We are happy to provide a written response to follow up on this. We saw the PFA's supplementary submission today so we have got some talking points to it.

We are primarily looking through the dot points in the summary that the PFA has provided to the committee. I begin by saying that spectrum in the 800 megahertz band is a highly suitable mobile broadband spectrum and has practically identical technical propagation characteristics to the spectrum in the 700 megahertz band. The first point raised by the PFA is that the 800 band is narrowband, not broadband, and narrowband and broadband communications cannot be carried by the same spectrum.

ACTING CHAIR: Mr Maurer, where are you exactly, because we have been scrambling to get the submission.

Mr Maurer: It was the supplementary submission. There was a set of short dot points that we were working through.

ACTING CHAIR: Thanks. Yes, we have got it.

Mr Maurer: So the first point was that 800 band is narrowband, not broadband. From a technical perspective, the frequency location of the spectrum band does not limit whether it can be used for narrowband or broadband services. The key determining factor is the applicable band plan, that is, how the spectrum is divided into different segments and the size of each chunk of spectrum. The ACMA's intention through its current review of the 800 megahertz band is to enable use of the spectrum for mobile broadband and the spectrum needs of public safety agencies are being factored into the ACMA's review. Moving on, 88 per cent of the 800 to 900 bands are already occupied by the three major telecommunications companies, and a number of police and emergency services also occupy the 800 band for narrowband voice communications. The PFA's supplementary submission comments on the spectrum currently being occupied by the three major telco carriers. The 825 to 845 megahertz paired with the 870 and 890 megahertz segments of the 800 band are currently allocated for cellular mobile telephone services under spectrum licensing. Arrangements for this part of the spectrum are not within the scope of the ACMA's 800 band review. I understand that I am trotting out a lot of megahertz here, but if you want any clarification as I go through please pull me up.

Senator HUMPHRIES: Is that a document you can table at the moment?

Mr Maurer: I would prefer to do a written response which would encompass this. If you would like me to table this document, I can, but I would rather have a longer and slightly more considered response.

Senator HUMPHRIES: Okay.

ACTING CHAIR: Maybe you should table it. It will be a preliminary response. I think it would help us to have this in front of us.

Senator HUMPHRIES: I think it would help to read along as well.

Mr Maurer: Okay.

Senator HUMPHRIES: While we are waiting for copies of the document, I will ask a question. Sorry to be so ignorant, but what is the difference between broadband and narrowband in the sense that you are using those phrases?

Dr Kerans: Narrowband communications generally just means something that carries a voice channel. You can carry that in a very small slither of spectrum. Broadband telecommunications, such as you would get on your iPad from the Telstra, Optus or Vodafone 3G systems are usually between five and 20 megahertz wide and they carry an awful lot of data. It takes many times more data, thus much more spectrum, to carry a video signal than a voice signal. That is the difference between narrowband and broadband.

Ms Cahill: In layman's terms, voice, video and data is basically a broadband field; narrowband is just voice.

ACTING CHAIR: Can you run both narrowband and broadband on, say, the 700 or 800?

Ms Cahill: Yes.

ACTING CHAIR: So you just take a slither out?

Dr Kerans: With a third or fourth-generation broadband system, such as Telstra's Next G, it just uses some of the data within a broadband network to carry the voice, as opposed to older systems. You probably remember CB radios. All they do is carry voice. They use the whole channel, but a very small channel, to carry voice. The more modern systems just use some data from that system to carry the voice. So you can carry data and voice in the same block of spectrum.

ACTING CHAIR: Some of the submissions are saying that there is no difference between 700 and 800. I must say, Mr Maurer, I am a bit confused with your submission on it and that is why I would like to get it in front of me. What some of the submissions have been putting to us is that there is almost no difference between 700 and 800, and you are nodding your head. When people are pressed on what the difference is, they say that there is no difference. What is the situation?

Ms Cahill: The propagation characteristics in 700 and 800 are identical. In building penetration issues they are exactly the same. The slight difference between them comes to issues around network design. It goes to the issue of how close you can have some of your infrastructure issues. I think that is the main difference.

Senator HUMPHRIES: How close you can get to what, sorry?

Ms Cahill: The infrastructure deployment issue. It is about network design rather than the characteristics per se of the bands. They are both very suitable for mobile broadband technologies. It is a minuscule difference that would be negated by network design or the rollout plan rather than in any technical sense.

ACTING CHAIR: I am still not clear. There is a difference but network design will fix it?

Ms Cahill: Yes.

ACTING CHAIR: What is network design fixing?

Dr Kerans: Propagation is the distance that a radio wave will travel through stuff—trees, buildings or whatever. The mathematics say that whatever the lower the frequency the further it will go, but the difference between 700 and 800 is such a small difference mathematically that you can ignore that for real purposes because you can design an antenna to overcome it. That is the network design part of it that Ms Cahill was talking about. So you can design the system to overcome that tiny mathematical difference in propagation.

The other thing that people may be looking at is standards. There is something interesting about the 700: once the digital dividend is realised the 700 band will be empty. But that said, so will the band up to 820 because broadcasters are currently there. People then look at standards and say, 'Do standards exist for the 700 megahertz band?' The answer is yes, and they also exist for the 800 megahertz band. Those of you who have a Telstra Next G or a Voda-Hutch phone are using that band day to day. That standard is already there.

In the 700 and parts of the 800 that have not been released yet the standards are still being developed. Just above 805, which is where we are looking at part of what we call the 800, those standards are currently in development overseas. Those standards are important because to get equipment cheaply and easily it needs to be standardised at least within a region. That is probably the difference.

We are in region 3, which is the Asia-Pacific and, really, we are looking to standardise probably with China, India, Japan and Korea—countries like those which are large manufacturing countries—so that there is an

economy of scale to buy equipment. That is happening in both the 700 and those portions of the 800 that are not yet allocated. Interestingly, those portions of the 800 that we are talking about are immediately adjacent to that Telstra-Voda Next G band and so we would expect those standards just to grow into that band, just as we would expect new standards to come in for the 700 band as well.

So, mathematically, there are miniscule differences; for network design, there are miniscule differences that you can overcome with the network; and standards, again, are marching forward together for the two parts of the spectrum that have not yet been allocated.

ACTING CHAIR: The argument that has been put to us is that the 800 megahertz band has got limitations to add-ons and bolt-ons as they were described. Some of the developing processes and uses of the communications approach cannot be done under 800. Is there anything—

Dr Kerans: I do not believe that that is the case.

ACTING CHAIR: So you can do everything with 800 that you can do with 700?

Dr Kerans: Yes. At the moment the standards are still in development but those standards are quite well advanced in the 800. In fact there is a standardisation body called 3GPP, and we can provide more information on that if the committee would like. It is looking at what is called the 850 expansion bands. Those bands go from 805 to 825—actually, from 806, but in Australia we are a little bit offset so everything has a difference. They are looking at making those bands available at the same sorts of services we see from 3G and 4G systems today.

ACTING CHAIR: I want to come back to Mr Maurer very quickly, but if the commercial people take the 700 and then the 800 is used by the emergency services is there a proposition that the 700 would get different standards, would it develop differently, would it mean that you could bolt things on and would it mean that you could get better technology into the future? We do not want to build in obsolescence to the 800. That is one of the concerns, I think—that the 800 would end up being obsolete in technical capacity to do things in the future. Is that an issue?

Dr Kerans: I do not believe it is. Both the 700 and the 800 are under development in the 3GPP now for what is called LTE, or long-term evolution systems. Those systems will be identical in their characteristics: their ability to carry data, the sorts of services they can carry and the sorts of standards that they meet. Both of those bands are marching down the same path towards standardisation, along with, I must say, a number of other bands, which are 2.5 gigahertz and 1.8 gigahertz. So there are an awful lot of bands that are moving forward into this long-term evolution sort of system.

This phone, for instance, has five bands in it. The chip set will come out and allow roaming between the 700, the 800 and even further up—the 900. Then they will allow you to pop up to other bands, such as 1.8 and 2.5, as you move into more populated areas. The phones do this automatically. That is part of the standardisation process, to make sure that everything within that phone can work together with everything else to bring the sorts of services that we see today from the sorts of phones that we have.

ACTING CHAIR: I would have hoped you would have the best technology. Senator Humphries.

Senator HUMPHRIES: Just picking up on a couple of points you just made about the capacity of radio waves to penetrate buildings: police have pointed out, emergency services have pointed out, that it is important that they have communications which can penetrate into difficult places. So, even if there is only a small difference, isn't it possible that that difference might be critical in some circumstances—in a hostage situation or if a building needs to be evacuated—if you need to have accurate communications with the outside?

Dr Kerans: In my view, no. The actual mathematical difference between the 700 band and the 800 band is so small that when you look at penetration losses—through concrete or glass, even through the metal films that people put on their windows—the difference would be absolutely negligible and would be offset by the system. Where you would find problems like that is in a system that was only on the 2.5 gigahertz band, which is a lot higher. So 700 and 800—the difference is so miniscule that it would not make the difference. In a lot of cases, with big buildings with metal film on the windows and stuff like that, the actual base stations that provide that communication are inside the buildings; they are called micro, pico and femto cells. They are generally inside buildings such as airports and very large shopping centres. Those cells are usually inside the building. To get around things like that—when you are in deep car parks, going through tunnels, when you drive to Sydney for instance—there are base stations along that tunnel. People engineer the networks around it, but the difference between those two bands is, in my view, absolutely negligible in that case.

Senator HUMPHRIES: You say that the standards for the 800 band range are still being determined; what is there to stop those standards being determined principally for commercial users in a way which does not address the needs of emergency services users of that range?

Ms Cahill: The standards per se are not necessarily specified for commercial or other use. They are a standard for a piece of equipment that has its characteristics. So you do not get commercial development of standards; you get development of standards. So the standards that will be developed for 800 LTE and 700 or any other band for LTE will be the standard that equipment will be manufactured against.

Senator HUMPHRIES: Right. But there will still be requirements of users, and that will influence the way the standards are developed, won't it?

Ms Cahill: It will, because it uses a part of the development process, the standardisation process. But in terms of—

Senator HUMPHRIES: Most of the users will be commercial users not government agencies.

Ms Cahill: The special needs—and normally the proprietary networks that people talk about—in terms of emergency services or public safety agencies now, in some ways have developed because they are proprietary networks. So there has been an influence of a particular supplier who then manufactures particular equipment. But what we are talking about and where we see the growth and the ability for a range of suppliers and equipment is in the fact that these bands will be internationally harmonised for the next generation of mobile technology. We feel that that would provide some great economies of scale for public safety agencies—still with the requirements they have for hardening, which is normally network hardening rather than standards for the handsets—so we do not see that that would be an area that is problematic.

ACTING CHAIR: Senator Humphries, maybe we can go back to Mr Maurer on that, because I think we may be making it pretty difficult for Mr Maurer to have a clean sweep through what he wants to tell us. If that has been answered already, Mr Maurer, just tell us and we will move on.

Mr Maurer: I think we were up to the multiple licensees, the thousands of licensees, in the 800 band and their many users, and the contention that it would be difficult to clear spectrum in that band and would take decades. The supplementary submission comments on the issues associated with the clearance of spectrum and the frequency ranges 820 to 825 megahertz and 865 to 870 megahertz for public safety use. These portions of spectrum are currently allocated for trunked land mobile services. The ACMA's review discussion paper sought comment on the migration of land mobile services out of these bands. The comment period closed on 1 July. The ACMA is currently reviewing those submissions. The spectrum in the 820 to 825 megahertz range is not in the Asia-Pacific region's accepted designated frequency ranges for public safety use and would therefore not be part of the portion that has been identified for potential allocation to public safety agencies. So I think the current incumbency should not be a problem in those areas.

Senator HUMPHRIES: Let me ask a question about that. We heard evidence that there was some debate going on in Asia, I think we were told, about whether these allocations were the appropriate ones, and there was a suggestion that in fact some of the Asian telecommunications companies were arguing for a redistribution or reallocation of where those frequencies went. They actually preferred to be in the 800 band and we were told they preferred for other uses, such as emergency uses, to be in the 700 band. Are those ranges now completely settled, or is there still debate about where those ranges should be for emergency service users?

Ms Cahill: The work that is occurring in the Asia-Pacific Telecommunity, which basically is where Australia participates in ensuring its views are taken into account, has looked at a range of, I suppose, approaches for the planning of what is notionally called the digital dividend. Part of that discussion has taken into account whether or not an allocation would be appropriate for public safety agencies. That discussion really came about because the USA had the first band plan around 700 and it made a notional allocation for public protection and disaster relief matters.

Senator HUMPHRIES: In 700?

Ms Cahill: In 700. But it has a very different band plan to what is being considered in 700 in the Asia-Pacific Telecommunity. So I just need to put that on record. On the issue about public protection and disaster recovery spectrum allocation in 700, there was some discussion. It did not gain traction in the region. The traction that has been gained in the region has been about looking at spectrum allocations in the 800 spectrum and looking at enhancing those allocations to make them broadband rather than a narrowband service. There are still ongoing discussions. There is the next meeting of the Asia-Pacific Telecommunity Wireless Group in September—there are submissions coming from Vietnam and India which go to mobile broadband capability in 800 for public safety agencies—and that will be when there is further discussion on it. So, in relation to the PPDR issue and public safety agency spectrum, there is still a discussion about how that will play out in 800. We expect to finalise the 700 band plan, which basically says there will be two by 45 megahertz of spectrum available in the digital dividend across the region.

Senator HUMPHRIES: So you are saying to us that there is still discussion going on about this.

Ms Cahill: In the 800 specifically.

Senator HUMPHRIES: Are you saying there is no possibility that the national interests—I suppose that is what they are; they are principally governments that are driving this discussion about band allocation—

Ms Cahill: The APT Wireless Group has national representation, so national governments are participating in that discussion. I was not aware of pushes by national governments in relation to an allocation necessarily in the 700 band over the last four or five meetings.

Senator HUMPHRIES: You are saying that there is no possibility that other processes might lead to a reconsideration of that allocation of the 800 band to emergency service users—that they might not reverse that position and decide to go with 700 megahertz.

Ms Cahill: I would say that would be highly unlikely. I cannot speak for what might happen in a future meeting but, given our knowledge and the participation in that forum to date, I believe it would be highly unlikely.

Senator HUMPHRIES: I put to some of the police witnesses that they need to be interoperable with services around our region, such as in Singapore, the Philippines and places like that. Their point to us was: 'No, actually we're more likely to be dealing with people like the Americans and the Britons.' We had communications issues, for example, in Timor when those nations were together in Timor. What assumptions have been made with respect to interoperability by Australian emergency service operators about which nations or which region they need to work with? Have you assumed that our principal areas of interest would be in fact with Asia; or have you explored the question of how much interoperability there will need to be with places like the United States and Britain?

Ms Cahill: We certainly are aware and have had discussions about the need to have interoperability at a regional level but also, in cases of more global disasters, the general issue of interoperability with other players. We also believe issues around public safety agencies' interoperability in the region were ones that needed to be explored and represented in possible allocations more fully. We are also aware that, regardless of where bands may be allocated, there are a range of bands that enable interoperability or at least roaming on networks, so we felt that with an allocation, potentially an 800, with the roaming that is going to be available for LTE technology in other bands—2.5, 700—that there would be a range of interoperability that would be there anyway. We thought in terms of the region in economies of scale for equipment for manufacturing that that was a better proposition than us being an isolated perhaps taker of technology in Australia from the rest of the region. We thought that would be a much more costly option and not an effective one in ensuring regional interoperability.

ACTING CHAIR: Maybe we will let Mr Maurer finish his submission then we can go into the general area, so you will not be interrupted again.

Mr Maurer: Feel free to make winding-up noises as well.

ACTING CHAIR: Don't invite an interruption when I am saying you will not be interrupted.

Mr Maurer: The next point raised by PFA is the one we have in fact just addressed about spectrum allocation in the 800 potentially isolating Australia from the Asia-Pacific region. The 800 megahertz band is accepted in the Asia-Pacific region as the band designated for public safety use, known in the band plan as public protection and disaster relief. It is already used for voice services and there is support in the region for it being used by broadband. There is discussion within the APT, the Asia-Pacific Telecommunity, to use this spectrum for broadband, including a detailed contribution on the matter to a meeting of the Asia-Pacific Telecommunity Wireless Group from Ericsson Vietnam—and that is the one Ms Cahill mentioned is supported by India as well. Australia intends to submit a contribution to the next meeting of the Asia-Pacific Telecommunity Wireless Group in September 2011 detailing its intentions for public safety broadband networks in this band as well.

Moving to the next point: industry suppliers are advising there will be a limited supply of public safety broadband devices in the 800 megahertz band. All development is currently planned for 700 megahertz bands and can be more easily adapted say the PFA. Standardisation via international standard setting bodies such as the 3rd Generation Partnership Project mentioned by Dr Kerans is a key step in establishing a market for technology and equipment that can be used in the 800 megahertz band. The standards are used by manufacturers when developing and deploying equipment to ensure that equipment complies within relevant technical safety and legal parameters. The 3GPP has included examination of long-term evolution services in the 806 to 824 and 851 to 869 megahertz bands in its work plan. If you have got a copy of my document, you will see a note from Dr Kerans saying it is further advanced than the 700 band work. The department and the ACMA believe that these factors will pave the way for similar networks to be deployed by regional partners in this portion of the 800 megahertz band.

Another point raised by the PFA is that the implementation schedule for that 800 megahertz public safety broadband will be extended significantly and that the future plans for the 800 megahertz band are uncertain and will need to have time to clear the spectrum and minimise disruption to other users. Our response is that it is a normal part of any spectrum band review process that existing users of the band may need to be relocated. The ACMA is empowered to review incumbent spectrum holdings and to make this happen. For example, as mentioned earlier, the ACMA has relocated incumbents as an outcome of the 400 megahertz band review in order to allocate spectrum to public safety agencies for voice services. It is also worth bearing in mind that the 700 megahertz spectrum is currently encumbered and users will need to be relocated to make the spectrum available. So although the spectrum will be taken to auction at the end of 2012 it is currently being used by broadcasters. They will be restacked out of that band to make it available. It is expected that any allocation of spectrum from the 800 megahertz band to the public safety agencies would be available by 2015—that is, in the same time frame that the 700 megahertz spectrum would be cleared and made available for its holders.

ACTING CHAIR: Thank you. Senator Humphries have you questions?

Senator HUMPHRIES: Yes. Just coming back to—

ACTING CHAIR: If you are going to a different issue, I have some issues that go to the Police Federation submission.

Senator HUMPHRIES: I am still on that as well. I am just going to go back through some of the things that Mr Maurer said in his presentation. I have mentioned already that we were told there is still debate going on about what is an appropriate settled use of the 700 and 800 megahertz bands. Ms Cahill, you said that, although they have dedicated the 700 band to PSA, the Americans have a very different band plan. Does that mean that, if they were based on the Solomon Islands, an Australian policeman and an American policeman would not be able to talk to each other with their communication systems?

Ms Cahill: They would if the equipment that was provided in Australia in 700 was retuned for our band plan. If they currently just imported the equipment that would be available in the US it would not.

Senator HUMPHRIES: When you say retuned, does that mean just adjusting a dial?

Ms Cahill: Retuned for our band plan, which could be that an antenna needs changing or a handset needs some sort of reconfiguration. It would still require some modification for it to work within the Australian band plan.

Dr Kerans: We would expect most of the police equipment to be similar to the iPhone 4 that a lot of kids and adults carry around today—I have one. That phone senses its environment and decides which band it will operate in. Just as when you travel with your Australian phone to the US, which has a very different telephone system from Australia's, your phone senses that environment and switches to that plan. That works just about everywhere around the world in the three regions, and each region has very different plans. There are some common bands, but there are a lot of different ones. The police services have told us that they want to move towards LTE, long-term evolution, as a technology. So providing that the system meets the LTE standard it will merely sense the environment it is in and, if it is an Australian base station that has been deployed in the Solomons, tune to that. If it is a Solomon Islands one, which we would hope would be region 3 compliant, because they are in region 3, it would tune to that. If Australian police or agents went somewhere else, in region 2 or region 1, and were carrying that sort of equipment we would expect it to be able to sense that environment also and retune accordingly. It is all automatic—the police do not have to do anything providing they are carrying equipment that meets the LTE standard.

Senator HUMPHRIES: You are saying, Ms Cahill, that is not the case right at the moment, but it will be the case by the time this spectrum is allocated and they start to use it. Is that right?

Ms Cahill: If all of this equipment is manufactured for the standards there should be a level of interoperability, regardless of bands. If, at the moment, the equipment, which may be proprietary equipment in the 700 band for America, was to come over to Australia for use and it did not meet an international standard, it was a proprietary standard, it would not interoperate.

Senator HUMPHRIES: How can we know that it will be built to that international standard or whether we will be effectively requiring significant modifications of communications systems every time we engage in an international operation with forces that use the 700 band?

Ms Cahill: My answer to that would be: it would depend on the nature of what in the end is deployed by whom, to be perfectly frank. If users want to go for proprietary equipment that does not meet international standards that is their choice. However, I would imagine that most countries would see the economies of scale in adopting the open standards and sourcing from international manufacturers.

Senator HUMPHRIES: Can any of you tell the committee what you would expect to be the kind of cost for any emergency service organisation in Australia at the moment to have to buy or build equipment to meet either the 700 or 800 band requirements?

I assume that they cannot just use what they are using now; there will need to be an upgrade of equipment for those purposes. If so, can you give us an idea of how relatively expensive it will be for those emergency organisations?

Dr Kerans: I believe they do not have their own equipment at the moment for what is called broadband—face recognition, numberplate recognition and that sort of thing. My understanding is that they are generally hiring systems that work on the Telstra NextG network or similar ones such as the Optus network. There is no actual conversion. However, if they were working on Telstra NextG or Voda-Hutch, which work in that 800 spectrum, and they were to buy their own equipment, I would issue that it would be LTE standard or that it would at least be 3G standard, depending on how soon they bought it and that that the system would automatically be able to roam to and from the Telstra system because it would be the same standard. At the moment, no, there is no equipment. There is no broadband data equipment being deployed by the public safety agencies, so they would not have to change anything. Assuming they bought commercial equipment or slightly different commercial equipment—slightly harder handsets—as long as the costs were standardised they would be minimised. The costs would not be great.

Senator HUMPHRIES: If you are talking about specialised equipment like numberplate recognition software and so on, are you talking about off-the-shelf commercial products or do they have to buy specialist products which may not have that capacity?

Dr Kerans: To recognise faces and numberplates, all you are doing is taking a picture from a camera and transmitting that data to a computer somewhere else—a police station or police headquarters somewhere. You are just moving data from A to B. What the emergency service people are talking about is nothing other than moving data. It is what plugs into the end that is different and that is always going to be different. Whether a commercial network is used to transmit the data or their own network is used to transmit the data and how that data is transmitted and on which band does not matter; it is merely taking the data, putting it into the system, getting it out the other end, identifying the numberplate and sending information back to the person in the field. The actual system that it works over does not matter. I believe these agencies are all very committed to interoperability Australia wide, so I do not think that that is going to be an issue. There are always going to be the slight issues of operating overseas, as you have pointed out. As long as they are using some sort of close-to-commercial data system—and at the moment I am using an iPhone 4 as an example—they should be able to roam just like you and I can.

Senator HUMPHRIES: Have you or the department spent time with representatives of the emergency services to inquire as to what their technical requirements will be. You say that you assume they could basically use off-the-shelf commercial products. Is that actually the case? Have you ascertained that, in all cases, they will be able to use what is commercially available or whether they expect to have to have specialised equipment?

Mr Maurer: At this point, I would mention again the Public Safety Mobile Broadband Steering Committee, which has been set up to clearly identify what services and capabilities the public safety agencies are hoping to attain using mobile broadband capability. That does not involve things like identifying whether they want face recognition or numberplate scanners and the sorts of circumstances that they will want to transfer maps, videos, GPS locations that can be fitted into an overall situational awareness of the system. We are still working our way through that.

Part of the work of the ACMA is to identify if that infrastructure and equipment is acquired how much spectrum will be needed to deliver that capability. The very first step is to identify exactly what the public safety agencies need and what they want to do, and then what the engineering requirements from that. We have seen that Telstra, for instance, has spent billions of dollars building its network into regional Australia. So a really important consideration is how much is going to be spent on getting that reach outside the cities into regional Australia, what sorts of services or capabilities our public safety agencies want out there, what they would need within the cities and what they would need to be able to convey between, say, arms of fire and ambulance and police. That is the work of the steering committee. It is chaired by a deputy secretary from my department and one from the Attorney-General's Department and has a good level of representation from the public safety agencies. The work now is to identify exactly what they do need.

Senator HUMPHRIES: One more question: you tell us that the capacities of the 700 band and the 800 band are virtually identical. Putting aside the commitments that have already been made, if it was decided politically in Australia that it would be better to simply swap around those sets of users, why could we not do that?

Mr Maurer: I think we would be passing up on the regional standardisation. We would need to really look at the path of purchasing equipment and infrastructure for our public safety agencies in years to come. At the moment the United States has a plan that encompasses public safety use in the 700 MHz range and it seems to be fairly well bound up with a proprietary system.

Senator HUMPHRIES: But could we not purchase equipment from the United States to overcome that problem?

Mr Maurer: We could and we could purchase proprietary equipment from the United States and we would be bound to a single manufacturer and the price of their offering. We would not be operating in a competitive market in terms of equipment purchase and, because we were using a proprietary system, we would basically be cutting ourselves off from our neighbours with the interoperability of the systems there.

Senator HUMPHRIES: Except the roaming capacity you mentioned presumably would work equally well the other way. We are on 700 and they are on 800 and they can roam into our space, can't they?

Mr Maurer: This comes to the standards that Ms Cahill was referring to later on. I might ask her to go through the open international standards versus proprietary standards to draw that out.

Ms Cahill: If we did get equipment that was based on a proprietary system, it does not follow international harmonisation bands and there would be a cost to have that modified to have harmonisation and interoperability within our region. So it is an additional cost on top of what already might be a very high cost because you have a proprietary system and proprietary equipment. One of the other issues of swapping 800 with 700 is that people are looking for contiguous spectrum for LTE development. The planning of the 700 would provide potentially 2x45MHz of spectrum—90 MHz of spectrum—so you might potentially have two, perhaps more, networks. In the 800, we have some networks which are currently in place with the current technologies. We are looking at the bit which is underutilised or vacant to provide another network which would meet the public safety agencies' need and we would not have to replan the whole band to do that. We would do that within the space that is now either underutilised or vacant. It would not be just a case of swapping and then therefore assuming that you would get the same return to the Australian economy overall. It is not as simple as doing that.

ACTING CHAIR: There are reports coming out of the UK, on the *Guardian* website, saying that the police communications have been overwhelmed in the riots in London and in other cities. There are problems with the centralised nature of the communications for the British police and they are not reacting as quickly as the rioters who are using *Twitter*, emails, texting and the like. I do not need an answer from you now but—and I will ask Attorney-General's the same question—could this be an issue that should be looked at by the Public Safety Mobile Broadband Steering Committee? If not, why not.

Mr Maurer: Could we take that on notice?

ACTING CHAIR: Yes, that is what I am saying. Take it on notice. I think it is an important question because we are talking here about centralised response systems and the UK press are saying that are limitations and problems. I am not saying that you should not have a centralised response system. You absolutely need one. But, what are the lessons from what is happening in the UK?

Obviously, it is too early for you to respond to that, but should that be an issue for the mobile broadband steering committee?

Mr Maurer: Certainly.

ACTING CHAIR: You must have done a lot of work to respond to the Police Federation. You certainly have worked hard to give responses to that. I have congratulated the federation on their concern about this issue. I have raised some relevant questions, but they say there are essential questions that need to be answered. I want to get a quick response from you on the essential questions. Is it agreed that PSAs need high-speed mobile broadband communications? Do both departments agree that we do?

Ms Cahill: Yes.

Mr Maurer: Yes.

ACTING CHAIR: Do you believe that the 800 band will provide the high-speed mobile broadband communication?

Ms Cahill: Yes.

Mr Maurer: Yes.

ACTING CHAIR: Should that broadband be a dedicated network for PSAs—that is, separate from the network of commercial communications carriers?

Mr Maurer: That is a tricky one. It could be. The public safety agencies recognise that the cost of overlaying, for instance, our mobile networks that cover 99 per cent of the population might be prohibitive and that it would involve a level of investment beyond what they would need to do in order to achieve their main functions. There have been a number of options put forward about having some areas of Australia covered by a dedicated network, and the spectrum to support that, and about other parts of Australia being able to make use of commercial networks that are out there as well and using their capability. Certainly, the telecommunications providers have talked about being very open to that sort of approach.

ACTING CHAIR: Is that an issue that the steering committee will address?

Mr Maurer: Yes, it is.

ACTING CHAIR: They then ask: 'How much spectrum do the PSAs need for mobile broadband for the foreseeable future?' Is that something that the steering committee is addressing?

Ms Cahill: Yes.

Mr Maurer: That is an explicit part of its terms of reference. That comes back to looking at what the PSAs are hoping to achieve—what operational capabilities and what equipment and infrastructure are they looking to deploy—and identifying the spectrum that you need to make sure it works really well.

ACTING CHAIR: Then they go on to say, 'Where is spectrum of that kind available?' You would say at the 800 megahertz band, I would assume.

Mr Maurer: Yes.

ACTING CHAIR: Will the PSAs still need to roam using commercial carriers and are spectrum conditions needed to make sure this can happen?

Mr Maurer: I expect in practical terms they will need some sort of roaming arrangement, but again the details of that will come out of what operational and equipment requirements they identify and we come to through the steering committee process.

ACTING CHAIR: We have only got a couple minutes left. I want to come to the issue you raised, Mr Maurer, in your submission about funding, build, maintenance and operation. We have had submissions that for the public safety authorities to build their own system would be financially unachievable. Is that the department's view?

Mr Maurer: Again, it depends how they decide to configure it. If they want to go to 99 per cent of the population they are not going to do it in a short period of time and they are not going to do it cheaply. They would have to look seriously at their expenditure: do they want to replicate an existing communication network that in a lot of areas would meet their needs when they could put those funds elsewhere to increase their capability? I would not say it is impossible, but I would say that it seems to me very likely that they would have higher priorities than replicating that existing buildout. It is within their reach to build in particular high-need areas, but again they will have to be quite well defined in the utility that they would get from that and the return they would get from that.

ACTING CHAIR: Because the PSAs were saying that, in terms of operation, it is not Telstra that are on the ground whenever there are emergencies. They are the experts on what communications are needed and they have the expertise in terms of not only the equipment that is required but the technical expertise in the whole system. Do you disagree with that?

Mr Maurer: I do not disagree that they have technical expertise but I would say that companies like Telstra, Optus and Vodafone are on the ground in emergencies as well. We saw that during Cyclone Yasi, and I think that a big part of the response to that was actually the protection, to the extent possible, of the commercial networks before the cyclone came in and the reinstitution of those networks very rapidly afterwards. So I think the telcos have an expertise there as well, which is very valuable.

ACTING CHAIR: Yes, they have valuable expertise but it comes at a cost to the emergency services, doesn't it?

Mr Maurer: the emergency services expertise also comes at a cost to them.

ACTING CHAIR: But if they are reliant on, say, Telstra or the other telecommunication companies, and if it becomes an 800 megahertz band, they have to enter commercial arrangements, don't they?

Mr Maurer: If the PSA has an allocation and built their own infrastructure—

ACTING CHAIR: I am saying that if they get an allocation they will get a number of options with that allocation. Their option is to build something that Telstra is saying is not financially feasible. Telstra are also

saying that they are the ones with the expertise in it. They are obviously making a bid from a vested interest approach that they want the business. So they want the business; that comes at a cost. What analysis are you and the authority doing to make sure the public interest is paramount and not the commercial interest if there has to be public-private partnership, if you like?

Mr Maurer: I point again to the steering committee. Our guiding light there is the capability that the public safety agencies want to build them and want to deliver. Once you start from that capability then you actually do start making some cost and practicality choices about how best to deliver that capability. As I was saying, I can strongly envisage that there will be areas where the public safety agencies will want to build their own infrastructure and it will be dedicated to them alone. But it is a really big ask to cover all of Australia and to plan that network and build it in areas that you might only get to, in an emergency sense, once every 10 years or once every quarter of a century. So having a partnership with the commercial networks will, I think, be very important so they do not go outside of the reach of their own networks and not have the data capability.

ACTING CHAIR: I think Senator Humphries would agree with me that there are divergent views about technical capacity, about interoperability, about costings—about a whole range of issues. What processes are you going to continue to put in place to try to deal with the concerns that the Police Federation, the police commissioners have raised? What is the process for ongoing communication consultation with them? It is very important that we get some agreement on this.

Mr Maurer: To conclude and to give you some reading material, we can provide the terms of reference for the steering committee, because it is really clear that we are being directed to make the plans to build a public safety mobile broadband capability. That is going to involve the police commissioners who are represented at the steering committee and also the other public safety agencies. It is going to be an ongoing process to identify what the network should look like, what the capability should look like, what the build should be, how it will be funded and how it will be done.

ACTING CHAIR: You missed out one important group and that is the federation.

Mr Maurer: The federation are not represented on the steering committee directly, but I would say that they are being very well represented by the police commissioners, and both the department and the ACMA are—

ACTING CHAIR: It is unusual for a union to be represented by the boss.

Mr Maurer: It is interesting, isn't it?

ACTING CHAIR: Could you take on notice what improved communication process can take place with the Police Federation on this important issue to them? Thank you very much. There may be other questions that we may place on notice. Thank you for your submissions today.

Ms Cahill: We took a question on notice from Senator Bilyk in relation to licences in the 700 band for some Tasmanian instrumentalities. We have had advice that their licences are actually in the 800 band so there are no licences for those utilities that were mentioned to us in the 700. We thought that we would close that one out today.

ACTING CHAIR: Thank you.

ANDERSON, Mr James Stuart, Director, National Security Coordination and Communications Section, Attorney-General's Department

CHANNELLS, Mr Peter, Assistant Secretary, Emergency Management Capability Development, Attorney-General's Department

DUGGAN, Mr Kym Francis, First Assistant Secretary, National Security Capability Development, Attorney-General's Department

PAHLOW, Mr Michael John, Assistant Secretary, Counter-Terrorism Capability Development, Attorney-General's Department

PODLICH, Ms Diane Margaret, Director, Emergency Management Policy, Attorney-General's Department

ROTHERY, Mr Michael, First Assistant Secretary, National Security Resilience Policy, Attorney-General's Department

[16:11]

ACTING CHAIR: I welcome representatives of the Attorney-General's Department. As Commonwealth officers you will not be asked to give opinions on matters of policy though this does not preclude questions asking for explanations of policy or factual questions about when and how policies were adopted. The committee has received your submission and numbered it as submission 24. Do you wish to make any amendments or alterations to your submission?

Mr Duggan: No.

ACTING CHAIR: Do you wish to make a brief opening statement before we go to questions?

Mr Duggan: We do, if that is possible. The Attorney-General's Department has undertaken a great deal of work in cooperation with the states and territories on emergency warning and communications initiatives over the past few years. As we set out in our submission the success of emergency warnings is not only about the efficacy of the warning systems themselves but intrinsically linked to individual and community preparedness, decision making by warning agencies and the response of individuals to those warnings. I will briefly highlight two significant areas of focus for the Attorney-General's Department. The first is the issue that you have just been discussing. A key issue for us and for public safety agencies is that they have at their disposal interoperable, robust and reliable systems for their mission critical voice and data communications during emergencies, including actual disasters. The Attorney-General's Department has been working with our colleagues in the Department of Broadband, Communications and the Digital Economy and in the Australian Communications and Media Authority to assist Australian public safety agencies to improve their mission critical communications capability at a national level.

Also following COAG's decision in April 2009 to develop a telephone based emergency warning capability to improve our disaster arrangements, the Commonwealth provided $26.3 million for the establishment costs of such a system. The capabilities that resulted from that funding were the national telephone based emergency warning system and Emergency Alert and the Location Based Number Store. Emergency Alert is now operated by all states and territories except for Western Australia who use their own state alert system. Emergency Alert sends voice messages to fixed lines and text messages to mobiles. The location based number store is the data source for Emergency Alert and for Western Australia's state alert system.

It is important, however, to note that state and territory governments have primary responsibility for the protection of life, property and the environment in their role as first responders in an emergency. It is therefore a matter for state and territory emergency management agencies to actually issue emergency warnings. They decide if and when an emergency warning will be issued including rapid onset emergency warnings, the mechanisms to be used to distribute those warnings and the content of those warnings. Thank you again for inviting my colleagues and me to appear before you and for the opportunity to make this short opening statement. We are of course happy to take any questions.

ACTING CHAIR: Before I go to questions from Senator Humphries, you heard my question about the riots in London and the implications for warning systems and police communications?

Mr Duggan: Yes.

ACTING CHAIR: Would you be in a position to provide an answer on notice as to what would be done here? Would it be a matter that would be discussed by the broadband steering committee?

Mr Duggan: I would certainly expect that such an experience would be taken into account as part of the steering committee's considerations. You heard from our colleagues earlier that whilst there might be a particular need for dedicated spectrum in a particular area there might also be a need for public safety agencies to roam more broadly over spectrum in circumstances where there is a high demand such as you are talking about in the UK. That is clearly an issue that we are currently considering in how best to respond to the needs of public safety agencies. So, in answer to your question: yes, it would be a matter that the steering committee could consider. I cannot predict the outcome of that at this stage, but yes, it would be something we would consider.

ACTING CHAIR: There is one other issue. I may have to put it on notice to previous departments. It has been raised that during an emergency such as a cyclone radio stations and other communications organisations do not have any priority for access to diesel to keep their communications systems operating. Is that a matter that the Attorney-General would be concerned about? I am wondering whether that is under your remit.

Mr Rothery: That is a matter that falls within the remit of the Critical Infrastructure Protection program. The issue about prioritisation of refill diesel for backup generators has been raised by many, many sectors. It is an issue with food distribution, telecommunications, banking and radio broadcasting. We have had a number of conversations with the federal Department of Resources, Energy and Tourism to look at what the Commonwealth's powers are when a fuel emergency is declared.

Below that there is a set of state based plans, and effectively the Commonwealth powers give action to the state based plans. On a number of occasions we have taken the opportunity to ask the states, when they do revise those plans, to take into account refill diesel for backup generators. Most of the state plans relate only to motor vehicle fuel distribution. There is, to my knowledge, no state plan that actually includes how they would prioritise or ration diesel for static generation. We have brought that to the attention of the states, but it is within the state plans that that would actually be reflected.

So the Commonwealth powers are to give power and effect to the state powers for prioritisation of liquid fuels. It is then up to the states to come up with some sort of scheme or rationing. You probably are familiar with the old number plate odds and evens schemes. Those schemes are all done at a state level, but we have brought to their attention that there is a gap in those plans relating to static generation and diesel fuel refill.

ACTING CHAIR: You said it has been raised by both the public broadcasters—ABC, SBS—and the commercial broadcasters that this is a problem?

Mr Rothery: It has been raised by the sector group for communications within our Critical Infrastructure Program. That group includes the private sector broadcasters, the public sector broadcasters and the telecommunications carriers. They have all participated in those discussions, and it has been the subject of a number of discussion exercises with the states and territories to raise their awareness and to raise the profile of the issue with them.

ACTING CHAIR: On the serious side, I think maybe our committee needs to have another look at it, given that it has been raised with us. We may have to make an issue of that. I would hate to think that we were keeping Alan Jones on air during an emergency that he may have created. So there are issues, but I think the serious issue that has been raised is a very, very important need for communications warnings during emergencies.

Senator HUMPHRIES: I just want to cover a few things. I understand that in 2009 COAG determined that the various emergency service organisations of Australia should achieve interoperability of their communications systems. We are told by some of the witnesses to the inquiry that some progress has been made on this but we are not there yet. I assume that there is a supervising role for that exercise in this department. How far down the track are we towards that, and how far have we yet got to go?

Mr Duggan: I might defer to Mr Anderson to answer in detail, because he has had a lot of involvement in that process.

Mr Anderson: The oversight for the interoperability framework, which you discussed, was a matter that was referred to a committee known as the National Coordinating Committee for Government Radiocommunications. That committee has been given responsibility on behalf of all the public safety agencies around Australia to work together under a COAG oversight. The progress of that work is to meet various deadlines. Progress is going on. The 2020 deadline is obviously a long way away, but there is movement towards it. So the idea of interoperability, as our colleagues indicated in the previous briefing, is progressing but it is ongoing.

Senator HUMPHRIES: So we are down the path, and we will get there by 2020—is that what you are telling us?

Mr Anderson: All of the jurisdictional leaders signed up to the plan, and all of the jurisdictional members of the NCCGR are now working to deliver to that plan.

Senator HUMPHRIES: That is not an answer to my question, with respect. They are all saying they are going to do it, but are we making enough progress to get there by 2020? There are a lot of technical issues. We have already heard extensively in this committee about some of the technical challenges. We have also heard about some problems that have arisen in recent disasters by virtue of not having communications interoperability. I would not want to just make it over the line in 2020 and leave another seven or eight years of Australians dealing with these complications. Are we able to move that forward? Are we going to get there before 2020, do you think?

Mr Anderson: There are some jurisdictions that have achieved the interoperability of voice communications—although that is not across the country, obviously. There are only a small number that can provide direct interoperability right now using voice communications. That is in relation to public safety agencies. Can I tell you with certainty that we will definitely, as a country, achieve full interoperability and harmonisation by 2020? As I am sitting here, no, I cannot. However, there is every sign that there is goodwill amongst all the jurisdictions to achieve that: the technical characteristics that pertain to the arrangements in Tasmania, as we heard previously, and the fact that the Western Australian government has moved to a different portion of the spectrum to achieve its voice arrangements. Those are challenges to achieving harmonisation by 2020, but they are challenges that are known to each jurisdiction, and there are plans in place to allow the transition from existing arrangements into a harmonised arrangement by 2020. So the indications are that we will achieve it by that date, but everyone knows it is still a long road to walk down to get there.

Senator HUMPHRIES: The Australian mobile and telecommunications network people—the AMTA or whatever they are—

ACTING CHAIR: There are some acronyms in this game!

Senator HUMPHRIES: There certainly are. The AMTA asserted—and they did not quite use these words—that Australian communications infrastructure was more or less the world's best practice at the present time. Again, those were not the words they used, but they implied that we had a very high standard compared with the rest of the world. Would you agree that we are leading the pack in that? After the experience of so much infrastructure being knocked out in some places, for example, in the floods earlier this year, do you think we should reconsider the standards we set for the resilience of our communications infrastructure, given how important it is in dealing with crises?

Mr Duggan: There are two parts to your question. In terms of the first part of the question, we believe that would be a matter perhaps for our colleagues in DBCDE to comment on as opposed to us. We have no particular view about the overall quality of our communications networks as opposed to those in the rest of the world; it is not a matter on which we have expertise. The second part of your question, however, relates to resilience of communications networks in disaster situations, and clearly those are issues that we have considered and we have ongoing discussions on. Part of the steering committee's work will be to look at how to, if you like—and excuse the expression—'harden' networks in times of disaster so that down times are as limited as is possible. Clearly we are aware of that issue my colleague mentioned before, that simply making available diesel in certain circumstances is enough to keep communications up because the towers themselves will not necessarily be damaged but will simply have run out of diesel. That is a significant issue which my colleague has already indicated to you we are having regular consultations and discussions with the states and territories about. So it is not necessarily that the towers have fallen over, just that they have run out of power.

Senator HUMPHRIES: True, although sometimes they do fall over because of flooding or fires.

Mr Duggan: Of course.

Senator HUMPHRIES: Some have said to us we should be urging for hardening of the infrastructure. Can you give us a good reason why we should not recommend that in the findings of this committee?

Mr Duggan: I do not feel technically able to make a comment on that. Clearly, from a resilience point of view and from an emergency management communication point of view, as hardened as is possible within a reasonable financial environment is something we would support. There is always a question of priorities for resources. There is a lot that can be done. No doubt you have spoken to Telstra about the work that they do in these circumstances. There is a lot that can be done within existing frameworks that might do that. New Zealanders, for example, have some very creative ways of providing for diesel on the ground through local farmers and things of that nature. It does not necessarily require a massive infrastructure input. A lot will depend on how we approach these matters and some of the issues that Mike was referring to previously.

Mr Rothery: One of the principles in the government's approach to the critical infrastructure issue is about ensuring that the different actors in the relationship are fully aware of the degree of vulnerability that exists in systems. You have got multiple parties, so you have got a provider but you have got customers, whether it is for electrical power or telecommunications. If the customer is ignorant or not aware of the degree of vulnerability in the network then they may make blind assumptions that that system will be available in a crisis when it may not be. One of the outcomes that we think we have made significant progress on since the arrangements were launched in their current form back in 2003 is to establish a series of conversations that are happening on a regular basis across the sectors. So that means that the banking sector now has a much greater understanding of the power grid, that the telecommunications system has a much better understanding of the power grid and that the banks understand how the telecommunications system is configured. That has led to examples I am aware of where particular banks have gone out and actually bought more services—they have asked for additional cables to be put in and they have asked to have redundant paths into power grids because they then have a greater understanding of where the vulnerabilities lie.

The care that we take is to not assume that the service provider has to bear the full responsibility of maintaining the continuity of supply for every customer, because that is a huge financial burden and it would significantly increase the costs of infrastructure in the country. But if there is a dialogue where we are helped to identify the most critical customers and we actually encourage a discourse between the provider and customer where that customer has been identified as critical, then quite often a commercial solution is found. It becomes part of the business continuity planning of the customer and they then go and buy services. It might be that they buy their own generator, it might be that they go and buy satellite phone or it might be that they go to the telecommunications company and ask for a redundant cable to be put into their building that connects to a different exchange.

Senator HUMPHRIES: I take the point you are making, that in a sense the recent disasters are helping educate people about their need, as individuals or families or institutions, to be more resilient about how they participate and deal with crisis. It concerns me that we do not seem to have an audit of where the key weaknesses were demonstrated in the recent crises. Where were the places where the system as a whole failed? We are told we had 262 Telstra exchanges that were inaccessible due to floodwater in Queensland, for example. Should a high priority be giving more protection around those exchanges if they deemed to be a highly critical bit of infrastructure, or should there be other priorities? Can you enlighten the committee on what you would see as the key weak points in our response to these crises?

Mr Rothery: Today I cannot say that we have done an audit or a stocktake of the particular assets that were damaged or isolated. What I can say is that if you take the number of exchanges, once the NBN is rolled out most of those exchanges will not exist because the NBN will actually aggregate and have a much smaller number of control nodes. Some of those exchanges are those little white caravans that you see on the side of the road sitting on piles that might service 100 or 150 properties. They might still be an exchange but they might have a very small footprint. A lot of those will be aggregated up when the NBN is rolled out. So one of the risks is in going back and trying to re-engineer infrastructure that is actually going through a regeneration process right now with the rollout of the NBN. That is why we have been very active in working with NBN Co. to make sure that their business plan includes a recognition of the need to have that degree of resilience and continuity, to have the appropriate levels of redundancy and backup and also to think about the physical security and business continuity of their facilities, because we are seeing that that is going to return the best outcome in terms of telecommunications redundancy, by making sure that is inside the consideration of the business planning for NBN rather than to go back and try and re-engineer the copper-based network.

Senator HUMPHRIES: Okay. You have spoken about the success of the Emergency Alert system during the recent crises. I think it would be fair to say that within the design parameters of Emergency Alert it appeared to work pretty well. We have also had lots of evidence before this committee and I know that the inquiries in Victoria and Queensland have also had lots of evidence about the design limitations of Emergency Alert, such as the phone goes off at the billing address, not at the place where the phone actually is and does not work when it is turned off, does not work when the power has been out for three days and the phone cannot be recharged et cetera. During estimates hearings I have pressed the department to look at some of the alternatives being developed like YellowBird. Can anyone tell me where that stands at the moment?

Mr Rothery: Subsequent to hearing some new information about YellowBird we did seek a meeting with those responsible. That meeting has been deferred at their request until 15 August. It has not actually occurred at this time but we have been seeking that for a number of weeks.

Senator HUMPHRIES: That is fine. I will follow that in estimates later on. You mention in your submission the publication *Emergency warnings: choosing your words*. We have had some evidence before the committee about confusing messages or unclear messaging coming out of some emergency organisations about what is going on, such that broadcasters and others know exactly how to describe what is occurring. Is it possible for us to get a hold of this publication?

Mr Rothery: That can be released to the committee.

Senator HUMPHRIES: Great; thank you. Have there been complaints or issues raised with you about the need to make clear messaging about what is going on in a crisis since the publication of the *Choosing your words* guide? I grant that these might be issues raised with state emergency services rather than with the Attorney-General's Department.

Mr Rothery: We are not aware of any referrals to us of complaints relating to the guidelines. We are aware that the Queensland commission of inquiry has made some observations about some of the messaging. But we do not believe that that poses a criticism of the guidelines themselves rather than how they have been used or not been used.

Senator HUMPHRIES: I am sure it does not, but I suppose when there are concerns it might mean some refinement possibly of the guidelines to make messaging clearer.

Mr Rothery: We are always open with the terms of the ongoing work of the National Emergency Management Committee to continually improve those products. Should there be that there is a suggestion that there is a deficiency, we would be happy to suggest to the committee that it be revisited. But at this stage I think it might be an issue about the application or the distribution of those guidelines rather than the guidelines themselves.

Senator HUMPHRIES: I read the announcement by the Attorney-General on Friday about new emergency management initiatives, including the $1 million for the National Registration and Inquiry System, which is a national electronic system designed to reunite disaster affected people and answer inquiries about their whereabouts. Could you describe to us how that system will work?

Mr Duggan: It works now. It is a system that is run by the Red Cross on behalf of the Commonwealth and, indeed, one state. I think there are two jurisdictions that contribute. The system has been operating for some time. It requires significant updating. We are in consistent and regular communication with the Red Cross to see precisely the best way of doing that. There has now been a commitment by the Commonwealth to fund that work and by the states and territories to assist. We are currently engaged with the Red Cross to ensure that that system is available for the upcoming disaster season and then indeed to look to its longer term future.

Senator HUMPHRIES: So that relies on bodies like the Red Cross and others to input data about people who have been dislocated in a disaster and matching up with other data people looking for those people basically?

Mr Duggan: In essence, that is right.

Senator HUMPHRIES: There was also an announcement about $250,000 towards the development of an electronic tracking system which will enable more accurate information about people's movements during a disaster. How will that work?

Mr Channells: That is a system driven from the medical side of the house. In particularly a mass casualty event it is very hard to translate the information of a particular patient back to the hospital that is going to receive that patient. This is a system that is going to, in the field, record vital information about a patient and transfer that to the receiving hospital so that they can maximise care and outcomes.

Senator HUMPHRIES: That is the sort of thing that is being foreshadowed with the e-health initiatives anyway, is it not?

Mr Channells: It is not directly related to e-health but obviously in its technology, yes, it is.

Senator HUMPHRIES: I see that the department operates as the secretariat for the Communications Sector Group. I assume that that group is principally about cross-border sharing of critical information that affects a number of governments in a more or less proactive way. Is that correct?

Mr Rothery: Can I just clarify, Senator: is that the group that is under the Trusted Information Sharing Network for critical infrastructure?

Senator HUMPHRIES: I will just find it, somewhere in your submission.

Mr Rothery: Is it part of section 3.3?

Senator HUMPHRIES: I have got notes that are not attached to the text.

Mr Rothery: If I can, Senator, the Communications Sector Group is one of the groups that forms the Trusted Information Sharing Network, and the Attorney-General's Department coordinates the whole of the network on behalf of the Attorney. The secretariat for the Communications Sector Group is provided by the Department of Broadband, Communications and the Digital Economy as the portfolio department for that sector, but we have reasonable visibility of what they do. The other function that we perform is to facilitate the crossovers between the various groups, as I described before. We run from the Attorney-General's Department a number of activities to draw in the different sector groups—be it food, health, communications, energy—to explore with them information sharing and better understanding of each other's vulnerabilities and capabilities. During January's events the individual sectors activated their self-help arrangements. For example, in the water sector, because of the national work, when they needed pumps, pipes and specialists they were able to talk to their counterparts interstate and to borrow that equipment and that expertise. There were other examples from January, where there were regular teleconferences between the telecommunications sector and the banks so they understood where the telecommunications disruptions were so that the banks knew then where to deploy their portable cell phone based automatic teller machines.

Some of the examples that were seen from the work that we did there is a more precise or better deployment of the spare capacity or the redundant capacity that the sectors have because they are getting better information from the sectors they are dependent upon about where the disruptions are and what the recovery times are likely to be and then that information can be fed into the government agencies so that they then know what the business sector is going to do and where the business sector has run up against a hard problem. An example of that in the water sector was that some of the Queensland utilities had identified some pumps that they required. Those pumps were identified in New South Wales, and transport was arranged to get them into Queensland, but then there were problems about choosing the right roads and knowing which roads were going to be open. So the Queensland authorities were then given a relatively simple problem to solve—which is how can we get these trucks through to this town—as opposed to being given a problem like having no sewerage for 10,000 houses, which is a much more difficult problem for government to solve.

We have taken some comfort and some satisfaction from the way that these arrangements are now working. Now that they have been going for so long, they are better harnessing and accessing the capabilities within the private sector and giving the first responders on the ground much more simple, straightforward problems rather than open-ended problems to resolve.. We are looking at it with some satisfaction.

ACTING CHAIR: Mr Duggan, the Attorney-General wrote to the Minister for Police and Emergency Services in New South Wales on what looks like 11 March—it has 11/16673-03 on it. Is that March? Is that how it works?

Mr Duggan: I do not have a copy of that letter with me, I am afraid. To our recollection, there would be a letter of about that date.

ACTING CHAIR: In that correspondence—and I assume there would have been similar correspondence going to other ministers for police and emergency services—

Mr Duggan: All ministers, that is right.

ACTING CHAIR: the A-G says:

In order for any allocation of spectrum to be agreed, it will be necessary for all jurisdictions to agree on funding arrangements for both the spectrum and the network. It will also be necessary for all jurisdictions to collaborate on a nationally agreed business model and implementation plan to demonstrate that an allocation of spectrum would be used efficiently and be operational within a reasonable time frame of the spectrum becoming available.

It goes on to say that, to ensure there is an appropriate fallback position available, you would like discussions on the option of public safety agencies reaching appropriate commercial arrangements with carriers to fulfil their communication needs. Does that sound familiar?

Mr Duggan: Yes.

ACTING CHAIR: I assume the area in which this is being dealt with is the mobile broadband steering committee?

Mr Duggan: That is right.

ACTING CHAIR: Can you give us an update on these tests that have been laid out in terms of the Attorney-General and what progress has been made in those discussions?

Mr Duggan: The issues that you have raised will be dealt with as part of the steering committee's considerations. There will very shortly be a consultant appointed who will work with the members of the committee to come up with a range of options on the issues that you have pointed out in that letter for further

consideration by the steering committee itself. There is an ongoing process which will take into account all of those issues. I am not in a position to say any more than that until the work has actually been started. At the moment we are at the beginning part of that phase, but clearly from the Commonwealth's point of view there is a need to ensure that the spectrum, if allocated, would be used. As you can appreciate, there are different issues depending on the jurisdiction. Some of the larger jurisdictions are probably in a better position to be able to make bigger contributions to how this might be used in the future, while for smaller jurisdictions it will be a bigger challenge. Indeed, as our colleagues mentioned previously, for some of the bigger states geographically it is a significant issue how broad the services would be, for example. Those are all issues that are being considered by the steering committee.

ACTING CHAIR: Has there been any initial estimate of cost?

Mr Duggan: Not by us. That is exactly the work that is about to get underway. The steering committee will be informed of that by the work of this consultant.

ACTING CHAIR: So you could not comment on Telstra's estimate of a billion dollars plus?

Mr Duggan: I would prefer not to. It is something we are seeking expert advice upon.

ACTING CHAIR: You might prefer not to, but can you?

Mr Duggan: I mean I cannot give you any more advice than what I have given you that would be of any use. The work is about to commence to look at these issues in detail. The states and territories did not seriously consider the matter until it was clear the Commonwealth was interested in potential allocation of spectrum. So we do not have a business case from the states and territories on this issue at the moment. That is one of the issues that we are now exploring with each of the states and territories as part of the work of the steering committee.

ACTING CHAIR: The Attorney-General says that he and Senator Conroy aim to report early in 2012.

Mr Duggan: That is right.

ACTING CHAIR: Given the scope of what is involved in this, is that practical?

Mr Duggan: It is certainly our present intention. The steering committee is aiming for the COAG meeting early in March 2012, and obviously there will need to be a Commonwealth process before then, so certainly the timetable that the Commonwealth has set for the steering committee makes that possible. There would obviously be a need for a cabinet process for each state and territory as part of that exercise as well.

ACTING CHAIR: Is this a bit like the United Nations? Is this going to be a veto option for any individual states—and I am not saying that this is the position—with Tasmania saying, 'Nah, we are not in this.' Does that then automatically default to the fallback option?

Mr Duggan: Not necessarily. It would be a matter for government. It may well be that there is a phased implementation of the capability, that is, that some states are ready earlier than others, for example. That is something that we are currently looking at. It might be that New South Wales and Victoria start early and smaller jurisdictions come on board later. That is sheer speculation on my part, but it is certainly an issue that we have discussed with them and there would be a range of options that they might choose to undertake in this process. We really are at the start of that process now.

ACTING CHAIR: What process is available within A-G to consult with the union that represents the various police organisations around the country. Is there a process to have discussions with the Police Federation, because this is vitally important to them?

Mr Duggan: The Police Federation has been involved in a number of meetings with the department and with the Attorney. They were involved in the roundtable in May that set up the steering committee. We are in regular consultation and discussion with the Police Federation about a number of issues and, indeed, are more than happy to meet with them on a regular basis, as the Attorney has done in the past. So we are very open to further discussion and consultation with them.

ACTING CHAIR: I am not sure whether A-G is across some of the technical aspects of this. You are involved in this—

Mr Duggan: We will do our best, Senator.

ACTING CHAIR: and maybe I should have asked the department. Motorola have made submissions—are you familiar with those submissions?

Mr Duggan: We have seen them, yes, Senator.

ACTING CHAIR: I think that if I were receiving advice from Motorola, I would have thought that Motorola's advice would be pretty good technical advice and something that I would place some credit on. But all

the evidence that we have had here late this afternoon basically demolishes Motorola's arguments. How come Motorola could get it so wrong?

Mr Duggan: That is probably a question that you could have asked the previous witnesses, as you said. We have taken our advice from the department of broadband and ACMA about what the best technical solutions are in this case, as has the government. The government has decided that it will move in the direction that you are aware of based upon the technical advice that it has received both from ACMA and DBCDE. Indeed, you probably would have heard a different view from Telstra in relation to this exercise than that given by Motorola. The government has taken the view that, if you like, the objective advice it believes it has received from ACMA and DBCDE is the advice it will rely on and that is the basis upon which the steering committee is going forward.

ACTING CHAIR: Thank you and your department very much. This concludes today's proceedings. I thank all witnesses for their informative presentations. Thanks also to Hansard and Broadcasting and the secretariat. The committee has resolved that answers to questions on notice be returned by Monday, 29 August. Thank you very much.

Committee adjourned at 16:53