



COMMONWEALTH OF AUSTRALIA

Proof Committee Hansard

PARLIAMENTARY JOINT COMMITTEE ON LAW ENFORCEMENT

Spectrum for public safety mobile broadband

(Public)

MONDAY, 17 JUNE 2013

CANBERRA

CONDITIONS OF DISTRIBUTION

This is an uncorrected proof of evidence taken before the committee.
It is made available under the condition that it is recognised as such.

BY AUTHORITY OF THE SENATE

[PROOF COPY]

INTERNET

Hansard transcripts of public hearings are made available on the internet when authorised by the committee.

The internet address is:

<http://www.aph.gov.au/hansard>

To search the parliamentary database, go to:

<http://parlinfo.aph.gov.au>

PARLIAMENTARY JOINT COMMITTEE ON LAW ENFORCEMENT

Monday, 17 June 2013

Members in attendance: Senators Nash, Parry, Polley and Mr Matheson, Mr McClelland.

Terms of Reference for the Inquiry:

To inquire into and report on:

- (a) how much broadband spectrum law enforcement agencies need to be able to communicate safely and effectively during mission-critical events such as natural disasters and potential terrorist incidents;
- (b) which of the 700 or 800 MHz bands is the most appropriate for law enforcement agencies given the current licensees occupying spectrum;
- (c) how the necessary spectrum for public safety should be secured in a timely manner;
- (d) what arrangements should be put in place to ensure that, in extreme circumstances, law enforcement agencies can effectively use spectrum of commercial carriers to protect public safety and maintain public order;
- (e) what applications dependent on broadband spectrum will contribute significantly to saving lives and property;
- (f) the impact on law enforcement agencies which utilise the available spectrum in relation to budgets, implementation strategies, current infrastructure and existing technology; and
- (g) any other related matters.

WITNESSES

BARRIE, Mr Peter, Assistant Commissioner, New South Wales Police Force..... 9
BLACK, Mr Christopher, Manager of High Tech Collections and Capabilities, Australian Federal Police 17
BURGESS, Mr Mark, Chief Executive Officer, Police Federation of Australia..... 1
KELLY, Mr Vince, President, Police Federation of Australia 1
**MORRIS, Assistant Commissioner Timothy, National Manager High Tech Crime Operations, Australian
Federal Police..... 17**
PHELAN, Deputy Commissioner Michael, Close Operations Support, Australian Federal Police..... 17
WAITES, Mr Robert, Consultant, Police Federation of Australia 1

BURGESS, Mr Mark, Chief Executive Officer, Police Federation of Australia

KELLY, Mr Vince, President, Police Federation of Australia

WAITES, Mr Robert, Consultant, Police Federation of Australia

Committee met at 09:02.

CHAIR (Mr McClelland): We will commence with the formal part of the proceedings. We have just passed a motion to authorise photographs. In the committee room, we have members of the PFA executive here today. Before I welcome our first witnesses, I remind members of the committee that the Senate has resolved that government officials should not be asked to give opinions on matters of policy and should be given a reasonable opportunity to refer questions asked of an officer to a superior officer or to a minister, if that is appropriate. This does not include questions asking for explanations of policy or factual questions about when or how policies are adopted. Firstly, can I welcome Mr Kelly, Mr Burgess and Mr Waites. Could I ask you, if you have an opening statement, to read your opening statement.

Mr Kelly: As you have indicated, we are joined today by our colleagues from every jurisdiction in Australia and New Zealand, and also representatives of the Police Federation of Australia's women's advisory committee. Mr Waites is a retired New South Wales police assistant commissioner, with 44 years' service—10 of which was at that rank. Mr Waites can, if the committee requires, outline his technical expertise further. I would also like to acknowledge Dianne Gayler, an employee of the Police Federation of Australia. Ms Gayler has done a large amount of work in relation to our submission. Outside the expert technical advice we got off Mr Waites, Ms Gayler's knowledge of this issue is quite extensive.

The federation welcomes your inquiries. We believe it is quite possibly the best chance of any success in what has been a long and complex investigation of the communication needs of modern law enforcement and emergency response organisations.

For us and all the nation's 57,000 police, this is a strategically important decision. Regrettably, our campaign for spectrum has been dragging on for exactly three years next week. Bob Waites rang Mark Burgess in June 2010 to alert the federation to the problem of police potentially missing out on spectrum for their vital, often mission-critical, work. The time and energy of many senior police in the Police Federation of Australia has been consumed in that three-year period as the ACMA and departments have examined and re-examined what to do about this problem. Hopefully the end is in sight, with your committee's inquiry destined to break the impasse.

We have set out in our submission and attachments our reasoning for the portfolio proposals we put forward. Those proposals are: one, that a minimum of 20 megahertz of spectrum be reserved for a dedicated law enforcement PSMB network under a 15-year licence; two, that a minimum of 20 megahertz of spectrum in a 700 megahertz band be allocated for a law enforcement PSMB network; three, that the government, via the Minister for Broadband Communications and the Digital Economy, by ministerial direction direct the ACMA to reserve 20 megahertz of the 700 megahertz band of spectrum for law enforcement and emergency services under a 15-year licence; four, that the ACMA be required to report to the government on measures that need to be put in place so that in extreme circumstances, when the national interest is at stake, the networks of commercial carriers can be used or closed down by Australia's law enforcement, national security or defence community, to protect public safety and maintain law and order; and five, that the Australian government finance the necessary spectrum for Australia's law enforcement agencies from the sale of spectrum to commercial carriers.

It is our view that that set of recommendations would ensure that law enforcement and the emergency services personnel of Australia, all 400,000 of them, have the communication capabilities they need in the challenging work of keeping people safe in times of natural disaster, terrorism incidents and crime fighting situations where lives are at risk. One of the key lessons out of this matter, in our view, is that the governments and statutory authorities must be very careful not to disregard the operational requirements of our law enforcement agencies or dictate to them the capabilities they will or will not have for their essential functions. With respect, it is not appropriate for them to do so.

The committee also needs to be aware that the tactical and decision making process in operational policing is very different to the military operational environment. The PFA has relied for much of its intelligence on this topic on the wisdom and experience of very senior police communications experts, the many state and territory officials involved and their excellent submissions, and a number of companies which supply communication systems and devices to police services. Those sources of expert opinion on the question of spectrum for public safety agree with us that as a minimum 20 Megahertz of the 700 Megahertz band spectrum is essential for public safety. This technology will underpin the next generation of policing operations to well beyond the next decade.

The final decision of government in this matter will impact well into the future. It is a matter of community safety and the safety of our 57,000 members and 400,000 emergency services personnel. It is essential for the work, health and safety of Australia's police officers. Unlike many others in this debate, the Police Federation of Australia and Australia's police forces have no commercial interest in the outcome of your deliberations. We are united in the view that this spectrum for law enforcement is in the national interest and that making it available now at the levels we have recommended is the right thing to do. Thank you, Mr Chairman.

CHAIR: Thank you. Before questions are asked, I should also formally indicate to witnesses that they are protected by parliamentary privilege. It is unlawful for anyone to threaten or disadvantage a witness on account of evidence given to a committee and such action may be treated by the Senate as a contempt. It is also a contempt to give false or misleading evidence to a committee, of course. The committee prefers all evidence to be given in public but under the Senate's resolutions, witnesses have the right to request to be heard in private session and it is important that witnesses give the committee notice if they intend to ask to give evidence *in camera*, but I understand that is not the case in respect to the PFA. If a witness objects to answering a question, the witness should state the ground upon which the objection is taken and the committee will determine whether it will insist on an answer having regard to the ground which is claimed for the objection.

If the committee determines to insist on an answer a witness may request that the answer be given *in camera*. Such a request may of course also be made at any other time. Thank you Mr Kelly for that opening. I have a couple of questions at the outset. What will this technology mean for policing? What will it mean for policing capability?

Mr Burgess: As Vince Kelly said, we will rely on Bob Waites in particular for a lot of the technical information that we will supply to the committee. Certainly what it will do is enhance the capacity of police officers across Australia to utilise the technology appropriately. With things such as video streaming, you can imagine that in high speed pursuits safety is involved not only for officers but for the community. There is the issue of body-worn cameras in a whole range of scenarios, not the least of which is general policing but certainly in major incident events. Then there are cameras on vehicles and other features in vehicles such as facial recognition and automatic numberplate recognition systems. All of those things are going to add significant value to the ability of police to operate into the future. This is a generational opportunity for policing to get access to such technology.

CHAIR: Thank you. I have seen a photograph showing the difference between 10 megahertz and 20 megahertz. I think it is in a submission by Motorola. Have you seen it?

Mr Burgess: We have got copies of that for the committee which we would be happy to take you through now or at some other time in the hearing.

CHAIR: I was going to ask that as a question. What would the difference between access to 10 megahertz of broadband as opposed to 20 megahertz of broadband mean for policing?

Mr Burgess: We could hand out the diagrams and then ask Mr Waites if he might take you through and explain the differences. They are numbered one to four.

CHAIR: All right. Can we have a motion from the committee to formally receive these as tabled documents: one, two, three and four?

Senator POLLEY: I so move.

CHAIR: Thank you Senator Polley. Thanks Mr Burgess.

Mr Waites: What you have before you is a set of maps, schematics, that were the result of an actual exercise run in the suburb of Midland in Perth. This was conducted by the emergency services—police, ambulance and fire—in Perth in conjunction with Motorola. What they were doing was to establish just what value they would get from broadband. The map with Nos 1 and 2 on it, which are the first two, shows that they are 20 subscribers and 15 subscribers at 5 megahertz. That 5 megahertz is a channel in each direction, so that is the current recommended allocation to ten megahertz. It is five out and five back. To transmit you need two channels, one out and one back. You can see in front of you a very good visual display of what happens when you have that many people sucking the information and trying to send it at the same time.

In map No. 1 you have 20 subscribers—20 subscribers is not unheard of at any sort of major traffic accident. If you consider, for example, a petrol tanker or a chemical tanker may roll over in an accident, the number of police, fire and ambulance people who attend may be many more than 20, all trying to access data from their gazetteer relative to the information they need to do their job to treat people and control the accident scene. I use the term 'gazetteer' because all emergency services have a databank which is referred to as a gazetteer which contains all of

the information that they will need. It contains mapping, information about chemicals, information about vehicles and information about the utilities—electricity, fire, gas and all those sorts of things in the area.

If you look at those maps you will see that on the first one is in green colouring, which is what they would receive as individuals. If there 20 subscribers trying to get information at the same time, that is the sort of coverage you would get: green is what they would receive. If they were trying to send data back to their operation centres, which is the purple colour, you would see how poor the level of coverage is to send out. It takes more power and more broadband width to actually transmit than it does to receive. If you go to map 2, you can see the same scenario, but you have reduced the number of users from 20 to 15, and you can see the difference in just that five users in what you get.

What is really telling, though, is if you go to map 3, which is what the police federation is striving for, a 10 megahertz channel in either direction; a total of 20 megahertz. You can see with 20 subscribers in the same scenarios as just seen, the difference in both the area of download, which is the green, and the area of upload, which is the purple colour. Map 4 compares, when you reduce the 15 again, how much larger that area of coverage is and how much more robust the signals are in either direction, again the green being the download and the purple being the upload. This was a properly run exercise. It was properly managed and it was properly supervised so that there was a very good understanding of just what the effects were. If you very quickly take map 2 and compare it to map 4, which is what the police federation is seeking, you can see the massive difference that that extra 10 megahertz makes to those responding, both in the area of coverage for both, and the power of coverage.

CHAIR: Thank you very much. There is also a submission from Motorola which I am not sure whether the police federation has seen a copy of, as yet. The pages are not numbered here, but could I firstly ask the witnesses at the table to have a look at the photograph. It is of a resolution of a police officer holding what appears to be a victim. If I could ask the witnesses to have a look at that. The question I was going to ask when you see it, is whether that degree of additional clarity for a 20 megahertz capability as opposed to a 10 megahertz capability would be important to policing operations.

Mr Waites: Extremely important, for a number of reasons. One is that from that photograph you can actually start to recognise people. It is about facial technology and the ability to actually see the weapon and who has it and what they are doing with it. The same sort of detail does not exist in the left-hand side. In fact, the left-hand side could be somebody doing anything. Unless you are already aware of some other information, you would not really be able to recognise exactly what that was, whereas on the right, you certainly can.

CHAIR: And I suppose, if you take an example such as the Boston bombings, the identification of the people quickly was crucial to their apprehension.

Mr Waites: It is very, very crucial. In fact, it is also about an unnecessary overreaction in the wrong way, given that this could well be a scenario with that particular photo that might be quite innocent. Without that sort of detail, you would not be able to tell that. It also could be a scenario which would indicate a need for immediate action as opposed to 'contain and negotiate'—and the only way you can be able to tell is by the clarity of the photograph.

CHAIR: Perhaps I should have a motion receiving that photograph, although ultimately we will receive that submission. That will be document no. 5. I will hand over now to Senator Nash to ask some questions.

Senator NASH: Can I just take you back to this issue of the enhanced capacity that you get under the 20, I suppose, just from a lay-perspective. This to me is probably the key for it: if the 20 does not go ahead, what are the negative impacts? If the 20 does go ahead, what is that enhanced capacity on a day-to-day basis?

Mr Waites: Can I just say that if it stays at what is currently offered, one of the biggest impacts will be that police and other emergency services will have insufficient broadband spectrum to actually all conduct their day-to-day business at the same time. Already if you look at the major events in any capital city in Australia, and I talk personally because I was the commander of the city in Sydney for five years, on New Year's Eve data systems collapse currently. They collapse because of congestion.

If you have the same sort of scenario with the emergency services working on New Year's Eve, just in the inner city of Sydney, again, they will not be able to operate. This will be a game changer in the way they operate. It gives police officers, fire officers and ambulance officers a lot more information, and access to a lot more information, to do their jobs much more efficiently. And in being more efficient they will save lives, save money for the community, and look after their own members at the same time. And if you have been in Sydney on New Year's Eve you will know that places like Circular Quay railway station often have to be closed down because of crush, and those sorts of things.

This sort of data—everybody working with 10 megahertz, full stop—will mean that many of them will not be able to get the sort of data they need to predict that happening. If you go to the next step, of 20 megahertz, everybody will get the same sort of data level at all times. Technology that is coming is changing the way that they all do business. For example, body cameras are now common practice in the military and they are getting into policing. The advantage of body cameras is their ability to take information as an officer is doing something. In the background the information is being processed by way of photo recognition of faces, numberplates, building locations.

At the same time there is now the capacity, which the military use and the police are moving into, of biometrics. So if an officer is under stress or in trouble, their body biometrics will be fed back to the broadband system. The same will apply for fire officers under stress in fires—particularly in bushfires, where large numbers of volunteers are now getting into the 50-to-60-year age bracket because of change in society. And without this sort of data they will not be able to tell the difficulties that people are undergoing.

As I said, this is a major game changer. From the police perspective—the law enforcement perspective—without that sort of broadband width they will not be able to get the streaming video they need to do their job into the future, at the level that the community will expect.

Senator NASH: So what you are saying is that it is a significant opportunity for progression and to do your job better?

Mr Waites: Very much so. It is really going to be a generational change in the whole emergency services world when this starts to happen.

Senator NASH: Okay. Obviously we have got these maps of Midland—thank you—as the example. How does it currently work in regional areas? I understand that in the cities there is a significant load on the capacity of the network. How does it work in the regional areas? Is it a different delivery system?

Mr Waites: No, because what currently happens is that emergency services and police use narrowband radio. And most of them have networks that cover just about their whole states. Where they have that infrastructure in place they will be able to provide this infrastructure by using the same towers and locations. So other than the really remote rural areas, where the police and other services are relying upon HF radio—in other words, anywhere they currently have UHF radio, which covers all the major cities and all the country towns—this system will be able to operate, including down all the highways.

Senator NASH: Okay.

Mr Burgess: In fact our argument—based on the five by five scenario—is that the biggest losers in this will be regional areas.

Senator NASH: Okay. And why is that?

Mr Burgess: Because of the coverage issue. There would be a view that we would be relying on the public carriers for access.

Senator NASH: Yes.

Mr Burgess: I live 30 minutes out of Canberra, and we all know how difficult it is at times to get data on the telephone 30 minutes away from the nation's capital.

Senator NASH: Absolutely. So what you are saying is that using those carriers is not going to allow you to operate effectively.

Mr Waites: Carriers do not build their networks with the same level of resilience. In other words, they make business decisions about where they put their towers by what money they make from them. They also make business decisions about what they repair and in what order and sequence. Emergency services—particularly the police—build their networks so they have a double redundancy. In other words, if one source of power falls over in flood or bushfire or whatever there is a backup system in place that runs it. Commercial carriers, for obvious reasons, cost wise, do not do that.

Senator NASH: Doing this at 20 megahertz is a cost to government of providing a public good, really.

Mr Waites: That is right. But there is no other cost at the other end. The equipment costs the same whichever way; this is really about the cost to government of looking after the community the best they can. America went through a scenario where they did five plus five—ten megahertz—and very quickly discovered it did not work. So they have now gone to 20 megahertz.

Mr Kelly: Senator, our submission in relation to the ACMA recommendation is that 10 megahertz is based on business-as-usual projections for only a five-year period. That does not take into account critical incidents, either

regionally or in urban centres, and that is the crux of our submission to a large extent, that it is simply not enough. The projections that have been made do not even take into account the likely growth in business as usual operations for police forces as the population grows. So the fact is that we think the recommendation by ACMA is incorrect and needs to be reviewed.

CHAIR: Just on that, they said that they did not think that it was feasible to plan for a once in a generation scenario. From what you are saying, the demand for more than 10 is prominent.

Mr Kelly: Clearly from our submission a once in a generation scenario has happened about six times in the last four years.

Mr Burgess: The other issue for ACMA is that, when you read the actual act, it says that they are required to make adequate provisions of spectrum for agencies involved in the defence or national security of Australian, law enforcement and the provision of emergency services. Our argument is that they are not actually meeting their requirements under the act.

Senator NASH: So what, in your view, are the main arguments against this going forward? Obviously you are stating a very clear case that this is a once in a generational opportunity to improve how you do business and to improve the effectiveness of the services that you provide. What is the argument against?

Mr Kelly: To be very blunt about it, we think commercial interest and considerations are being put ahead of community and public safety.

Senator NASH: Thank you.

CHAIR: Senator Parry.

Senator PARRY: Thank you very much, Chair. A nice blue tie you have got on today as well. There are a couple in the audience. Could I commence by commending the PFA on their submission, and I note that you have acknowledged the secretariat assistance, Mr Kelly. It was a very good submission and enabled us to really get to grips very quickly in this complex area. You indicate in your opening remarks that the PFA has no commercial interest, or no police jurisdiction does, which I accept. If we go to the crux of the matter, there appears to be in the 700 megahertz bandwidth 30 megahertz available. Ten have been allocated in the 800 sector for the police and emergency services, but there are 30 available in the 700 area, and you only want 20, which leaves the government 10 to play with. So following on from Senator Nash's question, there seems to be, apart from the commercial interest in that 30 that is available, space now waiting to be allocated to police and emergency services.

Mr Kelly: Senator, without trying to get myself too technical or in trouble—that is why Bob is here, of course—my understanding is the recommendation around the 800 megahertz involves other people having to be moved out of the way in that bandwidth. You are quite correct that at 700 megahertz, there are 30 available and ready to go that no-one has to be moved out of.

Senator PARRY: That particular frequency of bandwidth suits emergency services better than 800?

Mr Kelly: Over to you, Mr Waites.

Mr Waites: 700 megahertz is often called the sweet spot by radio technicians because it is the perfect spectrum for this type of carriage. In other words, it passes through structures, it is not affected by atmospheric conditions. It is the best available for broadband telecommunication.

Senator PARRY: The allocation in the 800 bandwidth, if we are being cynical about this, does that attract a lesser price than the 700 megahertz bandwidth? Is it a cheaper end of the spectrum?

Mr Waites: It is cheaper in some respects but that is not the main reason. The 700 was available and my belief is that there was a commercial opportunity here for government if they wanted to sell that off. To my understanding, they were given a lot of advice from some of their people that they would make many billions of dollars out of selling it off, and that did not come through. In the same process, once the previous Senate inquiry indicated there was a need to provide, the easier option, or the cheaper option, was to then move other people out of currently used 800 megahertz and put emergency services in that. The reason for the 10 as opposed to the 20 was you had to move a lot more people with a lot more pain and a lot more time. The 800 spectrum is not available at the moment. It could take, if you needed to clear out 20 megahertz, five to 10 years to do that, depending on the current licences that exist there.

Senator PARRY: But why has the government recommended you move into the 800 section when there is nothing available? There is 30 available in the 700 bandwidth and you still have not really answered the question whether it is because it is a less expensive. Yet there is still no logical reason as to why you want to move people around when there is 30 already sitting in a bandwidth that suits the application much better.

Mr Burgess: At the time that they made the decision on the 800 there was probably an expectation that they would sell all the 700. I think that has now proven not to be the case and even the Public Safety Mobile Broadband Steering Committee, which is set up between the department of broadband and the Attorney-General's Department, was set up on the basis of reviewing the 800 because there was an expectation there would be no 700 available.

Senator PARRY: That makes sense and we can follow that up further when we speak to other agencies. Therefore, have you then had discussion with ACMA since the auction process concluded and the 30 was left vacant?

Mr Kelly: I think it is fair to say the ACMA has not been overly keen to discuss any of these issues with the police federation.

Senator PARRY: I read with concern in your submission about ACMA, and I think it is fair to say you were very critical of ACMA, that three letters by registered mail were sent to ACMA with no response.

Mr Kelly: Correct.

Senator PARRY: What were the contents of those letters. What were you requesting in those letters?

Mr Burgess: The first letter was an invitation to address the PFA, and the other two related to matters around our view that they had potentially breached the act and we wanted dialogue in respect to those issues.

Senator PARRY: That is not a matter for discussion at this particular inquiry but I am sure it is something we might make reference to somewhere else at a future date.

You have highlighted the advantages on the 700 megahertz spectrum in relation to penetration of buildings, quality and capability. On maps 2 and 4 that you showed us earlier and explained the difference with the megahertz bandwidth or the 20 rather than 10, what would happen if in a neighbouring suburb there was a similar incident of 15 or 20 subscribers involved? What would happen if there was something in a neighbouring suburb? Does that affect that or not?

Mr Waites: If you look at map 1 and something happening in a neighbouring suburb, that would diminish to less than half of what you currently see in front of you.

Senator PARRY: So are we talking about coming from a single tower transmitter, or are we talking about the whole use in that particular region? How does the coverage work?

Mr Waites: Towers form a net, and they link between one another. In other words, you set your infrastructure up so that you form a net over the area you wish to cover. If you are talking about an adjacent suburb where they were reliant upon that localised net, you would dramatically reduce what you currently have. If you were talking a distance of more than 30 to 40 kilometres away then you would be starting again. The level of coverage covers that sort of 20 to 30 kilometres depending on the atmospheric conditions at that time. Anything in that area would be using the same spectrum.

CHAIR: Your submission indicated you represent around 57,000 police officers. What does having this technology operate effectively mean for occupational health and safety for your members?

Mr Burgess: We think it means everything. It is an expectation that officers are given every bit of available information before they attend a location or an incident and the ability to send them appropriate data and vision, or for them to be able to relay that sort of vision back, is paramount. Many of the committee may have seen in the court matter in Sydney over the death of Senior Constable David Rixon that audio and visual information is being used in that hearing at the moment. That officer had in-car video in his car and was wearing an audio device. The future would mean that not only would the police cars have one camera for video, they could perhaps have several cameras around the car so that they would be a position to clearly identify what is happening in and around a particular scene at any given time, which is paramount for their safety. In our submission there are a couple a quotes we give, one of which comes from Joe Biden. There were a couple of others say that in many instances as being attributed to an article in the *American Police Beat* where it says: 'For a cop, being able to communicate is all about survival. Not even an officer's service weapon is more critical when it comes to safety. This is why the fight to secure the section of broadband spectrum exclusively to first responders is so important.' That was the sort of argument that was taking place in the United States and the sort of argument that swayed both the Democrats and the Republicans in the US in a bipartisan stance to allocate 20 megahertz of broadband spectrum.

CHAIR: What is happening in countries such as Canada and Europe?

Mr Waites: We have the same situation. Canada is now going for 10 plus 10. In Europe they have gone one step further and allowed 15 megahertz uplink because uplink takes more power. For Europe and the UK they have

gone again in the 700 megahertz band, and they have gone for 15 up and 10 back, so they have got 25 megahertz there.

CHAIR: In terms of the proposition of ACMA, as I understand it it is to allocate 10 megahertz and then saying that it is inevitable at some stage that you will need to supplement, therefore that supplementation should occur through contractual arrangements or licensing arrangements with private providers. What is the experience of law enforcement agencies in times of crisis to the public usage of those private providers, in other words people phoning to find out if someone is all right, people phoning emergency services to obtain assistance and so forth. What is the experience of those public providers in those circumstances?

Mr Waites: In almost every case the public system has collapsed. In many cases it is through congestion. As recently as the Boston bombings during the marathon, there were initially reports that law enforcement had turned off the system. That was not the case; the local data messaging system actually collapsed through congestion caused by members of the public trying to send messages to and from. We have had the same situation occur in Australia during the floods in Queensland where their infrastructure came down. The commercial infrastructure came down and it was weeks before it was repaired. The same thing happened with the Newcastle flood in 2009 where the west of Newcastle through Wallsend and that area was all flooded and their towers were isolated and collapsed in some cases. It took weeks for them to bring it back online. The same thing happened in the Victorian bushfires.

Commercial carriers make decisions about what they repair and why they repair it. They also have a process where they tend to give their strengths to where they make the most money. If you drive around in major cities of Australia on a Friday afternoon at peak hour and send a text message, you can often not get it delivered until the early hours of Saturday morning simply because their systems are overloaded and the data is held and sent when the systems become free. The next step is a recommendation to use mobile infrastructure, what we call COWs, which is simply an acronym for communications on wheels. They are trailered systems you use to bulk up the network. Commercial carriers have those now and in planned operations police currently use them around New South Wales, Victoria, and Queensland. But there is a limited number and they are trailerised. Given that in just about every emergency circumstance the first one to two hours are critical for the safety of police officers and certainly for the safety of the community, it will take in almost all cases longer than that to deploy COWs and set them up.

CHAIR: And how effective would they be in a fast moving situation such as a bushfire?

Mr Waites: Virtually totally ineffective because they are a stationary system—they rely on generators, power, electricity, those sorts of things.

Mr Kelly: The attachment 9 to our submission provides some detail in relation to communication failures that are on the official record in Victoria, Tasmania, and New South Wales. In our submission itself we point to a long-term failure of public communications in Queensland during their most recent flood situation.

CHAIR: If the emergency services in any circumstances find it necessary to commandeer some of the private sector technology, what would be the consequences for private users, someone in Senator Nash's situation living with already questionable coverage trying to make contact while calling for assistance and so forth? Would the public be pushed out of access there?

Mr Waites: Yes. That is the way they currently do their prioritisation. Many of the carriers currently give prioritisation to some of their subscribers, and they get first priority. In other words, if you are already on the line—and you would have all experienced this at some time—and it gets congested, you drop out. In other words, they kick you off.

Mr Burgess: In the initial auction of the spectrum in the United States, they put caveats on the purchase of the spectrum at auction about having to make it available for public safety. In this sort of scenario you are talking about, you would need to have some legislative basis that forced the carriers to hand over sections of their spectrum in cases of emergencies. When they tried to put that on as a caveat for the auctions in the United States, it failed to sell. The carriers were not interested. That is why, in the end, they went to the 20 megahertz of spectrum as opposed to the 10 megahertz—to make sure they had a dedicated public safety mobile broadband system.

CHAIR: I have seen in the submissions that there is a reference to the new phenomena of emergency service agencies, police and emergency services, tapping into the social networks to get feed from the community and obtain that information but also to ensure accurate information is out there in the community. Would that be impeded if the public were driven out of the existing public service?

Mr Waites: Very much so. In fact, Queensland were very successful through the major floods up there two years ago, where they actually used the social network to advise the community. It was the first time it had been used in this country and it turned out to be terribly successful because people could get up-to-date information from an authority on exactly what their circumstances were. If you then close down the public network for the use of emergency services, you cannot use that social network space.

CHAIR: On the analogy of Mr Kelly's evidence that, for ordinary operational requirements and the expectation of ordinary operational requirements—let alone emergency situations—someone has used the analogy that we would effectively, if we confine ourselves to 10, be building a two-lane highway whereas we know in a decade we are going to need a four- or a six-lane highway. This is irrespective of the fact that, as Mr Kelly also said, in the last four years there have been about six times those so-called one-in-a-generation events have occurred. If we restricted ourselves to the allocation of 10 megahertz, would we be effectively confining ourselves to a very limited capability that would very quickly find redundancy?

Mr Waites: I would go one step further and suggest, as my experience tells me, that, if we stick with the five plus five at 10 megahertz, we will have a two-lane highway with a number of one-way bridges on it. What effectively happens is that, when it gets busy just in day-to-day emergency services, it will clog, it will fall out. It will not even be two-lane all the way; it will have one-way bridges on it.

CHAIR: Thanks. From my point of view, you have answered the questions I have.

Senator PARRY: Mr Waites, why not seek 30 megahertz now? Would it ever be needed in the future, or is 20 going to see us well into the future? You indicated the Canadian, I think, model of 15 upload and 10 download.

Mr Waites: Yes, that is the European model. What will, we believe, take care of that will be the development in technology. With narrowband, over the last 20 years—narrowband is two-way radio—we have gone from 25 kilohertz channels down to 6.25. So we are actually using four channels now, where, 20 or 30 years ago, we only had one. The same will appear here, but it will take two or three decades to get to that point where the technology is able to utilise that spectrum in a much more economical way.

Senator PARRY: You indicated in your submission that ACMA want to give you a five-year lease for the current 10 in the 800 spectrum, and you are seeking 15 in the 700 spectrum of 20 megahertz.

Mr Waites: The standard now is for 15-year licences.

Senator PARRY: So you would have been discriminated against. Everyone else is getting 15 and you would have been given five, with no guarantee to move forward.

Mr Waites: Yes.

Senator NASH: What was the reasoning behind ACMA only giving you a five-year licence?

Mr Waites: ACMA have not explained their reasons to us at all. They refuse to meet with us.

Mr MATHESON: In relation to public safety and national interest, and the 10 megahertz that has been set aside, we have to be able to act very quickly in relation to some things that happen around the globe, such as terrorist incidents. Do you think the 10 megahertz is substandard in relation to what your requirements are?

Mr Waites: Very much so. One of the advantages of policing in this country is that we are very innovative because we have vast areas to cover with limited resources. And one of the things that we have here is a very good use and understand of technology. If you stick with what you have, the rest of the world see it as an impediment, from the point of view of operating in Australia.

You were talking about a terrorist incident. You would then involve the military as well. You would be putting an even greater load on it. There was an exercise conducted in Sydney last year at Homebush—a counterterrorism exercise—which suggested that ten plus ten would not have met requirements. Really, you start to get into massive amounts of data in those sorts of exercises.

Mr MATHESON: So it does not meet your operational requirements in terms of public safety or the national interest.

Mr Waites: Very much so.

Mr Burgess: I would argue that as a committee in the federal parliament your paramount concern should be a safety of all Australians, not commercial interests.

CHAIR: We need to adjourn now, in any event, but I think that has concluded the evidence. I should indicate that you were first off the block. Thanks very much for coming along. If you feel it is necessary to respond to any of the other submissions that you have read, as they have come in since you have prepared yours, the committee would welcome any contribution that you would like to make.

I thank all the witnesses for coming along and for the contributions you have made.

Proceedings suspended from 09:46 until 10:12

BARRIE, Mr Peter, Assistant Commissioner, New South Wales Police Force

CHAIR: I welcome Assistant Commissioner Peter Barrie from the New South Wales Police Force. I should declare a conflict of interest, insofar as the Assistant Commissioner was the local area commander of the Hurstville area command when my electoral office was beside it, so I have met the Assistant Commissioner before.

Mr Barrie: I am the Assistant Commissioner Operational Communications and Information Command for the New South Wales Police Force. I also have a number of other related roles. One is the co-chair of the Law Enforcement and Security Radio Spectrum Committee. The other is I am the deputy chair of the New South Wales Telco Authority. I am also a member of the Public Safety Mobile Broadband Steering Committee which you, Chair, and Minister Conroy established some years ago now.

CHAIR: Would you like to make a short opening statement?

Mr Barrie: Thank you. I will point out in the main my submission to you will be in representation of the New South Wales Police perspective. I apologise that the New South Wales government submission has yet to be received by the secretariat. That is a difficulty in terms of access to the Premier who has been overseas of late, but I understand that submission will be forthcoming. I have just received correspondence to say that I am free to talk to that, so I hope I can assist the committee in that regard.

Certainly the last three years that the New South Wales Police and particularly LESRSC, as the representative law enforcement and security have been pursuing this issue, have been very complex, at times frustrating, in terms of trying to get an outcome to a particular issue. By way of context, our original submission, which remains as it is today, called for access to 20 megahertz of spectrum in the 700 band. After various meetings and negotiations we understood that that was a difficult position for ACMA to accede to, given that there was a view towards auctioning the dividend of the harmonised spectrum in the 700. I understood that at that time the revenue that was expected from that may have been in the Treasury forecast.

Following various meetings there were submissions that were made that perhaps the requirements of public safety could be accommodated in the 800 band. The public safety and mobile broadband steering committee was established to examine the likelihood of that. The terms of reference at that time were agreed to by the Attorney-General and Minister for Department of Broadband Communication and Digital Economy. Since that time the steering committee has been co-chaired from senior representatives from each of those agencies and membership has been quite wide, initially in the main practitioners in that field, senior officers in the field of communications across the public safety agencies of the country and also representatives from Commonwealth agencies. It has since been expanded to include first ministers' representation. So the committee is quite broad in terms of its representation as it occurs today, and there have been a number of working parties, or working groups, established to examine various pieces of work, in the initial stages to examine what the requirements of public safety look like in terms of the capacity and the requirement for access to spectrum. Since that time they have also been looking at the likelihood of successful government structures, but also in terms of possibilities and in terms of network design and architecture. So that work is ongoing and has reached a point where we are actively seeking the views of industry in terms of the carriers and telecommunications providers.

CHAIR: Thank you. I have just a couple of questions before passing on to other members of the committee. From the point of view of police commissioners, can you describe two things: what is happening with technology generally and its use by police forces, and what does access to this broadband technology mean? I suppose as a related topic to that, what would be the difference in benefit between the allocation of 10 megahertz of this technology as opposed to 20 megahertz?

Mr Barrie: I guess the question highlights one of the frustrations with the process to date that we have really spent a considerable time examining just one aspect of this, and that is what spectrum would be required to enable mobile broadband for public safety. Realistically that is just part of a wider digital solution, if you like, or a full ICT solution that public safety requires, to provide the services in the future and look after our workforce and provide a better response in terms of community and public safety. I say that because mobile broadband in itself has the capacity to provide information in real time to officers in the field, not just rely on voice but also the capacity to provide the picture that supports the voice so that it supports the description, whether that be in terms of a still digital image or whether it be in terms of video footage. The simple example, if you like, and I like to keep these things basic in some respects, to give you an understanding of why I say it is much broader than just

the mobile capacity, is that the public at large has the capacity to take film through their smart phones and devices that they are carrying with them all the time and they have the capacity to take still digital images.

Across the world there is exploration of what we called next generation TZ, or triple zero, services—looking at the move from simply call-taking, if you like, through fixed handsets and mobile phones, to looking at capacity where we can also receive an image that supports that. So the difference might be, in responding to a bank robbery, looking for a male dressed in dark clothing who is perhaps 188 centimetres tall and of 92 kilos, or average build as opposed to having an image of the chap that you are looking for. That is powerful stuff in terms of looking after the interests of the people that are responding, enhancing public safety and our ability to, if we encounter that individual, confine the situation. But that is an end-to-end solution. We are looking at one part, and this argument over two or three years now has been, in just one little segue, if you like, in terms of providing a mobile broadband capability to public safety officers in the field.

CHAIR: In that context, what would be the difference between the capabilities of the allocation of 10 megahertz and 20 megahertz, given the convergences you have described of these various technologies?

Mr Barrie: One of the difficulties that I always have in terms of explaining the requirements of public safety as opposed to the commercial requirements in terms of mobile broadband or narrowband voice networks is that we always have to maintain sufficient capacity to respond to not just the business-as-usual events but the events that occur perhaps once a day, once a week or once a month. In our network design, even in our current narrowband voice networks, we always have to maintain an overhead. We see large fluctuations in terms of the activity and capacity of our networks at any one particular period of time.

Currently, at perhaps four o'clock or five o'clock on a weekday morning there might be a low level of activity and capacity is not so much of an issue for us, although we maintain coverage. As we make our way through the day, that capacity will lift. We experience busy periods, generally, from, say, three in the afternoon to the late hours of the evening, and then it tails off quite significantly again. That is your business-as-usual activity, and I expect that in terms of use of mobile broadband you would see similar business-as-usual activity based on the types of deployments that you would use in response to your normal activities.

But, similarly, there are always incidents that occur—not necessarily unusual in nature—where the capacity quickly and quite sharply increases, and you have to be able to cater for that demand, and often within very small geographic areas. So it is concentrated. That is what really drives a higher requirement in terms of the architecture of our network and the redundancies that we have available to us. It is not equally spread across the network. It can be concentrated at a particular incident, and it can involve multiple agencies.

CHAIR: What would be an example of such an incident?

Mr Barrie: It is really up to your imagination, but, to take one that comes to mind, in the eastern suburbs not so long ago we had a partial collapse of a building, a structure. In response to that, you would expect to have urban search and rescue, fire brigade, ambulance and New South Wales police, with a variety of different activities and responsibilities around that scene. The New South Wales police perspective might then bring in the forensic aspect. So there is a requirement then for more specialist services and the like. They might then drive an investigative response: 'What was the cause of that particular building collapse? Was it just an engineering issue? Was it through an unexpected impact? Or is there foul play at hand?' These are the sorts of incidents that generate a massive response within a very short period of time.

I heard one of the previous witnesses say that public safety do not have the luxury, if you like, of having a response which may involve many hours or perhaps even many days, in some instances many weeks, of increasing the capacity of a network in response to that incident. That is something that we do have the capacity to do now. So we do that. We increase the capacity of our voice networks, for example, around activities like the north coast car rally, where we have a world car rally come. It takes place in an area where we do not normally have a high level of operations, so we enhance the network for that purpose. And, in response to emergencies, yes, we have worked cooperatively with the carriers in the deployment of cells on wheels and the like to increase capacity and provide better communications for those areas. Similarly, we are aware that carriers enhance their own network around particular events—the Melbourne Cup, for example—but quite often the lead time is up to a couple of weeks. This, I suppose, illustrates the difference between the commercial imperative as opposed to the public safety one.

The other thing it demonstrates is that, even though carriers may enhance the capacity of their networks for preplanned events such as the Melbourne Cup, it still aligns to experiences that we have had around the world—for example, in Boston, where there were such large crowds and everybody had access to smart phones. When an incident occurs they all want to capture information, get in contact with love ones, and confirm the welfare of

their friends. We know that they are uploading images on the social media sites—and this is where even the carriers experience some difficulty, because generally people are downloading information; in these scenarios people want to upload information, upload data. That puts huge strain on those networks, sometimes to the point of collapse. So we do not feel, from a law enforcement perspective, that we can maintain mission-critical services that are reliant on those particular scenarios not occurring.

CHAIR: Or multiply the providers in those scenarios.

Mr Barrie: Yes. As to police in the field, whilst many of them are very technologically savvy, everybody relies on the equipment that they use on a day-to-day basis, and the expectation is that it will work when it needs to work. It is very difficult if, when you are responding to an incident, something occurs that changes the complete operating environment—such as: your communications no longer work—and then there is an expectation that you go to some other medium or some other way of communicating, and perhaps you are not practiced, drilled or trained extensively in the use of the alternative.

CHAIR: On a point Senator Nash raised before: what would the availability of this technology mean for getting policing expertise out to the regions? There is obviously only a certain number of experts available in any given field. Would this enable the experts who may be housed centrally to have a feed into what is going on, perhaps in a remote area?

Mr Barrie: Absolutely. The specialist group, the specialist resources, available to us in some other areas is a very limited pool of people—say, perhaps, the forensic area or accident investigation and the like. We do not have the luxury or the capability of deploying, from a staffing perspective, those resources in every location around the state. So we have to make operational decisions around whether we are going to centralise them or have some sort of decentralised model based on large regional centres and the like, largely dependent upon what the service requirements are. Where it makes a real difference is that, through video streaming and the like, you can virtualise the crime scene and, in real-time, immerse your expert from a central location into that crime scene and have them provide the expertise. With the technology that is available now, you can do so without necessarily even disrupting the crime scene. So you can put in a remote device which captures the images and so forth; it allows everything to be captured without disrupting the scene—without having people walking on the carpet, for example, or taking unnecessary people into the crime scene and perhaps disrupting the evidence. So those sorts of things are available to us.

Even just from a daily perspective, in terms of maximising our investigative effort, realising our responsibilities to provide evidence to the court and to the coroner, but at the same time having an awareness of the commercial impact of our activities—if you take that to the investigation of a fatal accident that has occurred on a major arterial route, it is a fine balance. You want to be able to realise all the evidence that is there. You want to investigate that matter thoroughly. You want to look after the welfare of anyone who may have been injured. Certainly you want to look after the first responders in terms of any hazards that might be in that area, if it is a tanker, say, or something that is carrying a hazardous material. But also we are well aware of the impact on the state, or on businesses that are trying to operate, perhaps across the Sydney basin or Melbourne or the like, who are caught up in these massive traffic jams. Essentially, business comes to a stop.

Those sorts of scenarios occur all too frequently—to the point, now, that we are giving consideration to things like flying in experts in that field. We are giving consideration to bringing examiners directly into the crash site, using PolAir and the like, as quickly as we can. The difference in terms of an hour-long investigation as opposed to a two-hour investigation can be phenomenal in terms of the cost to the community and the cost to the state.

CHAIR: To summarise that point, it might be penny wise and pound foolish to save money in terms of broadband allocation at this time only to result in greater expense to the community in resolving a situation of crisis downstream.

Mr Barrie: Definitely. Wireless technology is not a new phenomenon. Our grandparents commonly called the radio 'the wireless'. What we are seeing now is exactly as I described it before—convergence. Whereas we have traditional IT, such as our computing environment—desktop computers and the like—that is converging rapidly with what we previously knew, in terms of radios or perhaps a mobile handsets, such as our phones.

It opens up a huge opportunity but it also brings with it challenges. It brings with it challenges in terms of managing the public expectation. Why is it that I know that my friend is having a coffee at the cafe around the corner—I can see it here on my mobile phone—yet the police officer in the field does not have the same capacity? It is very difficult to explain to members of the community why that might be the case.

In terms of being penny wise and pound foolish, we need to explore these opportunities to fully realise the benefit. It is not simply a case of auctioning off the public resource, if you like, to the highest bidder. There is also

an opportunity to enhance government services, in the way that we respond and provide services to the community to better protect them, and to provide better outcomes in terms of the resources that are required to respond in an effective manner. So it is not all about driving efficiencies in the first instance; it is end to end. It is also about effectiveness in terms of how you are able to respond. It is a little bit more difficult to measure, in terms of putting up an economic model that supports that, but certainly around the country we are well experienced. Everyone has felt the impact of things like public disasters, natural disasters and so forth, over the last few years, unfortunately.

Senator NASH: I think you have covered most of the things I was going to ask about. I turn to the issue of cost and the economic argument. Surely, public safety should not be driven by whether or not something is economically appropriate. Do you have a view on that?

Mr Barrie: I guess there will always be a threshold that is reached in terms of what is economically viable or what government can support. But in some instances these sorts of services I am describing are nowhere near that sort of threshold. There are many papers that have been produced in the course of the last couple of years, through the activities of these steering committees, that say it is not reasonable to allocate spectrum to meet every demand scenario or every requirement. That is recognised by law enforcement and people in the public safety area. That is certainly not what we have asked for. We have asked for an appropriate allocation of spectrum.

Certainly it is an issue that needs to be managed, but it should not be to the point where it compromises public safety and compromises the safety officers—the first responders—in the field. I think that is a very real issue that we need to consider. It is certainly one for which, in many ways, we do not have too many choices. So, in terms of my workplace health and safety requirements and responsibilities in terms of the people that I deploy into the field, or the communications that I provide in support of officers in the field, I think we are quite quickly reaching a scenario where it will be a reasonable expectation that, prior to deploying people in hazardous situations you provide them with the information that can be provided through technology to make it a much safer scenario. The days of just putting people out into a bushfire scenario, which can be a rapidly changing environment depending on wind and so on, without also providing the information and the data that produces the modelling of the likely activity of that fire front and the hazards that are around them, are fast fading.

Senator NASH: That makes a lot of sense. What do you see—and you put a very good case—as the key issues of those who are arguing against 20—why should it not be 20?

Mr Barrie: I do not think I have heard a convincing argument against it, although I am conscious that there is certainly an environment that makes it very difficult for people to make decisions based on the evidence.

Senator NASH: What do you mean by that?

Mr Barrie: The evidence that has been produced from the steering committee so far is consistent with other studies around the world in terms of what would be a reasonable or appropriate allocation of spectrum. But what we see in this instance is that the ACMA has based its decision on a scenario which excludes anything other than business as usual. There is a significant danger in that where the independent regulator—and I certainly respect their expertise in that particular area—should not extend to the operational requirements that have been quite clearly articulated by commissioners around the country the capacity and capability of the function that they are seeking to implement.

Perhaps, to some degree, at the outcome of the work of the steering committee we were somewhat restricted in that there appeared to be if not a policy then a strategic view of how the 700 harmonised spectrum would be made available through an auction process. If you exclude that or take it off the table and look at opportunities in the 800 band, which is quite congested, there is a large portion of the 800 band that is currently used by the carriers that was specifically excluded from consideration. There is also a large number of incumbent users in that 800 band.

The difficulty then becomes, if senior officers have provided advice that public safety can be accommodated in the 800, going through a process which clearly defines what those requirements look like in terms of their capacity, and then finding that they are in a very difficult situation as to how they are going to achieve that. That is what I see as a frustration, and one that requires some leadership in the direction that is to be taken.

CHAIR: What would be the cost relation to changing over equipment to go into the 800 band? Would that come at a cost to emergency services?

Mr Barrie: That was one of the issues that we brought to the floor initially. We were aware that the equipment we would require is commercially available in the 700 and we are aware of other public safety agencies around the world that had a similar requirement in the 700. That drives competition in the marketplace and availability of the type of equipment we might wish to choose from, and the like; whereas in the 800 there

was not that development occurring. We certainly did not see that there was any reasonable anticipation of any market forces changing in the near future.

The ACMA have been quite active in taking that particular issue and seeking to allocate a harmonised band for PPDR in the lower 800 band. They have been seeking to do that, which to some degree would go towards creating regulation that would support the development by manufacturers of terminal equipment and the like. One of the difficulties is that you still need the market forces. We are aware that across the Asia-Pacific for example, the spectrum in the 800 is not just lying fallow; there are already incumbent users. I do not foresee that there is going to be a huge rise in market demand for equipment, even if we are successful in achieving that harmonised band in either the international area or through the Asia-Pacific.

Mr MATHESON: In your opinion, what would be the best option, or preferred option, to meet operational requirements for all the emergency services in New South Wales and nationally, without placing a commercial value on the piece of digital spectrum that you want to use?

Mr Barrie: I gave evidence previously to the Senate committee and supported their recommendations in terms of whether it is the 700 or 800. There is a case, and a very strong case, for an allocation of 10 plus 10. I still strongly hold that view. It then really is an issue for the ACMA, as the independent regulator, to identify where that spectrum can be allocated from, but my preference would be, as a law enforcement representative, that that would be in an area where we are able to support it through readily available equipment and keeping the cost to a minimum, if you like, in terms of the development of the infrastructure.

There seems to be a view that it is easier to invest more heavily in the infrastructure than allocate more spectrum and that spectrum should not be a substitute for proper network architecture and network design and the placement of infrastructure. There is a balance to that like everything. Public safety agencies do not have the luxury of only operating in central business districts of Sydney, Melbourne, Brisbane and the like. We have to operate across those jurisdictions, so the cost of infrastructure is already quite significant. But we also operate in areas where there is no commercial demand to provide those similar sorts of services. Even in the major capital cities—for example, Sydney—the Sydney Basin itself is punctuated by very some very difficult terrain, large tracts of bushland and the like, that we know does realise potential threats in terms of bushfires, floods and all those types of things. Public safety agencies still have to operate in those environments.

As the chair articulated previously, I was in command of the Hurstville area which has the Georges river, and every bushfire season there might be bushfire activity on one side of the Georges river that can quite quickly impact across the river just on a change of wind direction. It is very rugged terrain and very difficult to establish infrastructure. This notion that you just build more towers is one that I would find some difficulty in supporting. But even in areas where it is quite easy to develop a base, for example, there are also limitations in terms of what the community will accept, to the degree where we have seen draft legislation circulated amongst practitioners in the field for comment which may in effect put greater regulation or force greater consideration as to whether or not base sites can be established. The community have some limited tolerance for carrier towers and with that public safety towers also. Everyone likes to utilise their phones and so forth, but no-one wants a tower in their backyard.

Mr MATHESON: Would it be safe to say that the independent regulator's stance, in relation to what they want to allocate, would really compromise the way our emergency services personnel operate, based on the fact that it does not seem there is enough spectrum in relation to national disasters, terrorism? Do you think that the independent regulator's stance on this will compromise how things will work in the future?

Mr Barrie: Absolutely. I can certainly expand on that. This is a relatively new technology for public safety, but it is certainly one that I would expect will be used increasingly. We are only just seeing the start of the demand and the drive for demand in this particular area. I am aware of current projects within New South Wales police that will drive demand in terms of mobile broadband services. Everything is orientating not just in public safety but across society in terms of our capacity to take images, take video and communicate with others through mobile devices. It is no different in public safety. I expect it is no different in areas like health where people who are suffering illnesses which would otherwise restrict their mobility and their capacity to get around will be able to be remotely monitored for their wellbeing and to provide a report to someone who is looking after their welfare.

I guess the important point to raise there is that there has also been a suggestion that at critical points in time public safety can just effectively switch off what might be commercial services or services that are available to businesses, other commercial users, and private users. But there is a real risk in that, because we would be unaware of what those services are being used for at that particular point in time. Likewise it also reduces our tactical capability. I just have to think carefully about how I might phrase this. If we are, from a law enforcement

perspective, responding to an incident where there is a particular threat and we have an understanding that that threat might be supported through communications in a carrier environment, it might not be opportune if we are also reliant on the same services.

CHAIR: Senator Parry.

Senator PARRY: Thanks, Chair. Just in response to Mr Matheson's question, Assistant Commissioner, about whether you preferred 700 or 800 that spectrum, you clearly stated you wanted the 10-plus-10—

Mr Barrie: Yes.

Senator PARRY: but you did not really have a preference or specify a preference.

Mr Barrie: Certainly the argument for 700—if I move away from the technical argument, in terms of the technical characteristics the 700 I think was described by Mr Waites in his evidence as the sweet spot. I think there is no argument around that. But the technical differences between an allocation of the 700 and the lower 800 would be quite minor in terms of its performance.

Senator PARRY: Everything else aside, 700 would be preferred, if we cast away all other economic or other administrative decisions.

Mr Barrie: If you put aside just the pure technical argument and then you start to look at how we might operate with other visiting public safety agencies that in support of dignitaries and the like are our major events and things, interoperability is a real issue for us. So the ability to access common equipment is not just at a price point but it is also an operational capability. Certainly the preference would be that we can put aside many of our current issues around interoperability not only around the country but with some of our international counterparts by developing this new capability in a common area using common equipment. Certainly that provides a significant advantage. So it is not just in terms of the network design, architecture, the availability of equipment and at this point certainly the availability of equipment at a reduced cost. It is also around, then, operational interoperability, not just onshore but also with visiting agencies.

Senator PARRY: So are you suggesting that one area of the spectrum might be better for interoperability and one might be better for communications?

Mr Barrie: Certainly we are aware that there is public safety development in the 700 already in countries that we regularly receive dignitaries from and we would expect that any law enforcement agency that is travelling in support of those dignitaries would prefer to be able to utilise their equipment as their arrive onshore and provide that level of interoperability.

Senator PARRY: So where does their equipment sit? And I gather that technically the equipment is configured to suit the spectrum; is that correct?

Mr Barrie: So for example currently that would be in the US. That is reliant upon what they refer to as chipsets and there may be some argument that is largely dependent upon the sorts of chipsets that empower your device and whether your terminal equipment is then configured in a way that allows you to access various bands of spectrum. But again, there is a cost associated with that. There is research and development that is required in support of that. So it is not just what is possible, it is what is probably and what is practical, obviously from a cost perspective but also operationally.

Senator PARRY: So you have no objection—or New South Wales jurisdiction has no objection—to the availability of the 30 sitting within the 700 spectrum.

Mr Barrie: Absolutely. I mean, one of the indications that we were given, and perhaps in support of an earlier question about why we would only be given a five-year licence, there was great concern that if there was an allocation of spectrum that it might sit fallow, in other words not be used and not be taken up by the jurisdictions in terms of network development. I think that is probably the most prominent driver in terms of why a short licence as opposed to a longer one, or shorter availability.

The 700 is being cleared and harmonised so there are not the issues that there are around incumbent users into the future in the 800 that would have to be resolved. That is certainly a significant issue that could be put aside by an allocation in the 700. Again, if there is this great concern that valuable spectrum will lie fallow, why is it at this point then that the auction has not been successful, and on the potential that it will lie fallow, is there not the opportunity to make a decision around that?

Senator PARRY: A very good question. So the allocated space in the 700 would be suitable for most if not all applications. The only concern you may have would be the interoperability of foreign jurisdictions—not interstate but international. Would that be the only concern?

Mr Barrie: That is one of the elements to it that we would be seeking if possible: not only to have interoperability within jurisdictions and across agencies but to have it nationally and at an international level.

CHAIR: The committee has received from the previous witnesses, four documents and also confirmed a fifth document. The four documents are in respect to a recent test carried out in Western Australia regarding the coverage of a five plus five broadband allocation as opposed to a ten plus ten allocation. That is the first document. Are you aware of the test that was undertaken?

Mr Barrie: Yes, I am aware of that one. I did not visit WA to see it firsthand, but—

Senator PARRY: Have you seen the product?

Mr Barrie: Yes, I have.

CHAIR: We have also received a document that indicated quite a hazy video link, or a caption from a video link under a five plus five as opposed to quite a clear image in a ten plus ten scenario. Given the difference in capability that exists now, what would be your view of the suggestion of the Association of Public-Safety Communications Officials that the allocation of ten megahertz—five plus five now by ACMA—may be adequate if there is the opportunity of obtaining a further ten megahertz down the track? What would that mean to present day capabilities?

Mr Barrie: There are two issues in terms of capability. The first and foremost is that to restrict to five plus five will have a significant impact on anything you want to do other than business as usual. That makes it very difficult to rely on that kind of service in terms of response to mission critical events. That is the first and foremost issue. The second, in terms of capability, as you quite rightly outlined, is perhaps the difference in the quality of images that might be reasonably obtained without massive investment in infrastructure. An image of poor quality is going to be of very limited value to you, for example in the scenario that I identified before of the bank robber. In one image you might not be able to see a firearm and in the other image you would quite clearly see the firearm and the nature of it. That can have a significant value to us in being able to assess what the capability of that person is and what threat they pose—is it a .22 or is it a more significant firearm of high capacity, but also in terms of our ability to bring in experts into a scene from a virtual perspective. There would be limited value, I would suggest, in bringing a forensic expert in to assess a scene based on a poor quality image. It is certainly going to be difficult to produce that in evidence because there would be some conjecture about what that image actually depicted, and certainly there would be some difficulty in the expert giving a rational position based on what they could see.

CHAIR: So it would affect current command and control capacity and the allocation of resources to a scene currently? It would restrict that current capability, if it was restricted to 10? Is that the case?

Mr Barrie: That is the case.

CHAIR: It seems that we have been provided as an attachment to a couple of submissions a joint submission by all jurisdictions to the steering committee. It is called *The public safety mobile broadband joint states and territories submission to the Standing Council on Police and Emergency Management and the Australian Communications Authority*. You are aware of that, as you are on that steering committee.

Mr Barrie: Yes.

CHAIR: That represents the collective view of police commissioners around Australia.

Mr Barrie: Yes, my understanding is that the committee will receive—although belatedly, and I apologise—a submission from New South Wales. I say that, however, noting that the Premier has not had the opportunity of going through that document. But certainly in draft form it relies heavily on the information and the evidence that is provided in that submission.

CHAIR: In that submission, issue was taken with the statement, which seems to be that the crux of ACMA's determination on this matter, or at least provisional determination that 'would it be highly economically inefficient to try and dimension spectrum provisions around what might be a once in a generation event'. From what you have said, the sort of scenario where this technology would be invaluable is far from a once in a generation event and you gave an example of a building collapse in the eastern suburbs. Is your view consistent with that criticism of the definition of a once in a generation event?

Mr Barrie: Certainly. The issue to extract from that is in the ACMA's decision they look at business as usual and discount what they see, and I obviously do not agree that these are once in a generation or once in a life time events. If that is the case, then we have all been around for six or seven generations already because we have experienced so many in recent times. The real concern is that, by only considering business as usual and what they see as once in a generation incidents, they have excluded everything that occurs in between. It is the response

to all of that that occurs in between that provides the evidence in support of what we have put forward consistently over the last three years, and that is that we require a minimum of 20 megahertz—10 plus 10—to be able to respond to those types of incidents. As you scan through the document, you will see that is particularised in quite a lot more detail.

CHAIR: My final question is in a number of jurisdictions, the police literally take charge of an emergency situation. I know there is specific legislation, for instance, in Queensland. The police there have command and control of a natural disaster situation. Would the ability, for instance, to have feed of a tree across a road impeding some evacuation path be potentially crucial to saving lives if that feed could accurately determine what was across the path such that police could then direct people to alternative evacuation routes—things of that nature?

Mr Barrie: Correct. There are other technologies that align nicely with mobile broadband capability that are developing just as fast—for example, those around spatial technology. That gives an ability to gather information and model it against already known detail. We can look at an incident—it might be a flood or a fire or the like—and our spatial technology experts can use that mapping to tell us where the critical infrastructure is and where potential hazardous situations may arise. Then, as the information comes in, whether it be from members of the public through a range of media—it might be through social media that we actually have some capacity to look through; it might be through the traditional phone and triple zero calls; it might be through public safety officers in the field—we can then map those and make them available to the operational decision makers in real time. Similarly, through improvements in meteorology, we can overlay that with information from the Bureau of Meteorology about the likely impact of impending weather events on that particular scenario. Mobile broadband is one part of it. Spatial technology is another. The move towards storage in the cloud and big data and being able to do real-time analysis and modelling and risk assessments are all things that are on us that really enhance operational decision making. That is restricted significantly if you do not then have an ability to convey that to the field.

Mr MATHESON: Following on from the chair's question: this technology can actually pass through structures, so, with a natural disaster or an earthquake, that is going to save lives, isn't it? And I think it is vital to our emergency services that we have this technology available to them.

Mr Barrie: Certainly for an operational capacity, in these sorts of scenarios, you never have all of the information available to you. You never have the luxury of knowing everything, and at some point in time you have to make critical determinations and critical decisions, as you say, which will potentially save lives and property or perhaps threaten lives and property—evacuation in a bushfire event and the timeliness of it and those sorts of things. So there is a high level of public expectation about the level of information that is able to be assessed by key decision makers in making these critical determinations and critical decisions. Particularly when they are examined on review, whether it be through public inquiry or by the coroner, people align their expectation through what is available to them in their everyday walk of life. Mobile broadband is here, and people's expectations are based on their own capability.

CHAIR: Well, thanks very much for coming along today and the for your contribution to the committee's deliberations. It has been very informative. We note that a submission is coming from New South Wales, but if there is any response that either yourself or anyone from the New South Wales jurisdiction would like to put in in reply to evidence that has been presented, the committee would certainly welcome that. Thank you.

Mr Barrie: Thank you for the invitation and the opportunity to address the committee.

BLACK, Mr Christopher, Manager of High Tech Collections and Capabilities, Australian Federal Police

MORRIS, Assistant Commissioner Timothy, National Manager High Tech Crime Operations, Australian Federal Police

PHELAN, Deputy Commissioner Michael, Close Operations Support, Australian Federal Police

[11:02]

CHAIR: Welcome, gentleman. I will open with a few questions. What, from the AFP's point of view, would be the advantage of this technology to AFP policing operations, in the sense of both the community policing that you do within the ACT and the broader international deployments, potentially?

Mr Phelan: The Australian Federal Police is no different to any of the other jurisdictions when it comes to access to this type of technology. At the end of the day, anything that can enhance situational awareness at the coalface where our officers are operating is going to help us make time-critical quality decisions within the organisation. It would seem to me that it is incumbent on us all to have as much information as we possibly can to be able to make those quality decisions. With technology galloping the way it is and with the amount of information that is available to make those decisions, it is extremely necessary to have some sort of broadband communications, a two-way: back into the operations centre and also vice versa, back the other way.

The amount of information available to us now that needs to get to the practitioners in the field, and likewise the other way, is far more comprehensive than it ever has been in the past. For example, if we wanted to get CCTV footage out to the field so officers can make critical operational decisions in the field then a lot of that is high-definition CCTV now and you need better broadband to be able to get it down there. As I heard in earlier evidence, the last thing we want to do is to send grainy quality photos or pictures down the line if we have the capability and the capacity to send high-quality video. Likewise, coming back the other way, the more quality information that can come from the field back to operation centres the better, so that we can make better decisions with the totality of the information available then we are going to get better quality decisions. The AFP and other jurisdictions including the ACT are not immune. If we go back to natural disasters in the ACT, to the fires 10 years ago, then one could imagine that it would be much easier to make decisions in the operations centre if you have high-quality video coming from the field.

CHAIR: I show you five documents that have been received by the committee. The first two are from a trial of the various comparable technologies conducted in Western Australia by Motorola. The first two are 5 plus 5 technology and the extent of coverage both from receiving and putting out the information. Documents 3 and 4 are in respect to the same area and the additional coverage you get from using 10 plus 10. Then there is document No. 5 which is a photograph. I would like you to assume the hazy photo is one that you received from a 5 plus 5 which looks like a police officer hugging a victim, and when you look at that received from 10 plus 10 you see that the person being hugged is holding a weapon. If you assume that is the difference in quality between a 5 plus 5 and a 10 plus 10, what would be the difference to policing capabilities under the two phenomena?

Mr Phelan: None of these documents dispel any of my intuition. I would imagine that, just having a look at them, the more spectrums available both uplink and downlink is going to give you more quality information to make decisions. Operationally, one could make two totally different decision based upon the information that is before you in relation to the photograph with the gun and I would have though quite obvious decisions. In relations to the others around the coverage then you will clearly get more quality information with at least 20 megahertz of spectrum.

CHAIR: The AFP more often than not is involved in working in partnership—visits from foreign dignitaries, for instance, a President of the United States. Is the capability of working with the law enforcement officers that may come out with such a foreign visit important? In that sense, is the interoperability of any equipment with that which might currently exist in this area something the committee should have regard to?

Mr Phelan: Yes. Whilst I have no exact examples, the ones you have put forward to me make sense intuitively. The AFP does work closely with our partners offshore and any sort of spectrum harmonisation when we use the same sort of equipment and spectrum as others would be handy, even if we are operating offshore, as you know, the Australian Federal Police does with permission from jurisdictions in other countries. It would be nice to be able to operate within an open spectrum they are using as well.

CHAIR: One fact we should have regard to is the capability of the AFP and other police officers to work in joint operations, be they onshore or offshore, with technologies that may currently exist.

Mr Phelan: Yes. It would be a small component. More important would be the interoperability with our state and territory colleagues here in Australia, but the overseas dimension is important as well.

Senator NASH: In terms of opportunity forgone, it has been raised that this is a once in a generation opportunity to enhance operations. Would you agree with that? Is this about opportunity forgone if we do not move to the 20?

Mr Phelan: Absolutely. If one is to step back in time and look at the capabilities and things that were available for us to do our operations then and you bring it to a point in time now, you cannot make future decisions based upon things we are doing now and the requirements because our requirements to use broadband spectrum in the future have the potential to grow well beyond even the capacity of a 10 by 10 spectrum. It is pervasive in every part of our lives, even in your own personal mobile communications—compare what you are using today with what you used five years ago and what you will use five years from now. Law enforcement is no different; we are going to need that capability as well. The amount of information that is going to be available to us in terms of the size of files, the amount of information that is available to transmit, we will need that capability into the future, and if we do not take the opportunity to harvest it now we will be back here in five years time asking someone else to reharmonise another spectrum again so we can find some spectrum just so we can keep the country safe. It seems to me that while we have the opportunity we should be doing it now.

Senator NASH: In your view, is ACMA incorrect in their assessment of using a business as usual type model? From what you are saying, business as usual is the last thing that will happen in terms of the IT needs over the coming decades.

Mr Phelan: In terms of the Australian Federal Police it is difficult to say, but I have been looking at the data and I have read components of the report and the business as usual component might be true but when we are talking about the once in a generation events that come along that we would need it for, there have been around half a dozen, if not 10, of these events in the last 10 years during my time in the executive when that type of information would be important. Applying a business as usual approach in 2013 to a problem that will exist in 2020 or 2023 is not the right mathematics. We are going to need a lot more than we do now. To put it into perspective, it is the reason why ACMA continually harmonises all of the spectrum, so there is always space made available for other purposes. It seems to me quite obvious that we are going to continue to need more spectrum as we go forward.

Senator NASH: How do we sit globally comparative with similar nations in terms of the ICT capability that we have for operations?

Mr Phelan: In terms of our actual capability, we are world first in terms of what we have available. In terms of our communications, our ability to uplink, downlink, we have technology and capability equal to anyone else in the world. Having said that, we need to most amount of spectrum available to us to be able to exploit that. If you did not have the capability then you would not perhaps need the spectrum. But in Australia all of our jurisdictions either have the capability or are developing it to work within that requirement of spectrum.

Senator NASH: So it is a bit like having a very flash car and a dirt track in front of you. If you have not got a decent road you cannot run the car to the best of its ability.

Mr Phelan: It is a nice analogy.

Mr MATHESON: I note in your response to this inquiry that, at least in part, you rely on commercial providers for your own mobile broadband capabilities. Are you supportive of the Police Federation of Australia submission in relation to having a stand-alone piece of digital spectrum for use for emergency services alone, not being reliant on commercial providers?

Mr Phelan: We would prefer to have the spectrum available for public safety use. I am not sure how those details would work. From my very selfish point of view, I would have thought the last thing you would want to do would be looking at overflow. It would have to be that whatever is available must be dedicated for us. If I was working with a commercial partner I would want to make sure I was not being gouged either. In the interests of public safety it would want to be a no-cost or a cost-neutral basis, as far as I am concerned. I would need to make sure that the guarantees were there that we were able to access the communications when it happens.

I will put that in perspective. Major events that have occurred overseas and domestically in Australia have shown that when an event occurs there is a spike in requirement for use of spectrum. It is obvious that when there is a major event everybody is using their mobile phone, and everybody is trying to send photos and things like that. If you have ever tried to download something while you are at the MCG or at a football game, it is impossible with the number of people that are using the spectrum and you cannot get anything. The same thing happens in a disaster when everybody is trying to use it. I know we can have the ability to have components of it hived off for law enforcement but, at the end of the day, that is still not going to stop congestion. We have to

make sure there is an absolute ironclad guarantee that, in the case of an emergency, law enforcement, if only for first responders, will be able to use that information otherwise lives will be lost.

Mr MATHESON: In relation to the independent regulator there are people at national level who think that that is compromising emergency services in responding to critical incidents like natural disasters and terrorism. Would you agree with that?

Mr Phelan: I would not agree with that. No-one is compromising national security or lives. Everybody has a job to do here, and I think ACMA have a very difficult job. They are under the Radiocommunications Act and have to determine what happens to the spectrum—there is a requirement there for use for public safety—and that is not an easy thing to do. All the public safety agencies are putting up their best case as to the need. I think it is really up to some of the experts to determine how much we need, vis-a-vis how much is available, and the commercial aspects of it. Also there has to be some sort of public safety dividend in that amount as well. Of course, it is difficult to put a cost on public safety but obviously the cheaper it is made available to law enforcement agencies the better.

Mr MATHESON: The Police Federation of Australia is saying that 20 megahertz in a 700 band is the best option for them. You interact with those other states, so would you be supporting the best options available to them?

Mr Phelan: I am not disagreeing with that. We have co-signed letters and so on that we agree with 20 megahertz being appropriate. I am basing that on information I have seen because I am not a technical expert. Having said that, whether it is 700 or 800 megahertz, I am relying on the experts from ACMA to tell us which is available. I know that through the committees, et cetera, there was a position that we were able to work within the 800, albeit perhaps not as good as 700. Now the argument is being re-prosecuted because 700 is potentially available. Whether or not that is appropriate, really is for someone else to answer, not me.

Mr MATHESON: We have heard previously from our international counterparts, dignitaries and people like that, when they visit Australia that 20 megahertz in a 700 band—like in America—was set aside at no commercial cost to different agencies. Do you agree with that principle? Is that going to be good for us to interact with our international counterparts?

Mr Phelan: Very much so. As I said to the chair's question, for the AFP, if our counterparts are operating within that band, then that makes a lot of sense.

Mr MATHESON: Would you agree that the 20 megahertz set aside in the 700 band, independent to a carrier with no commercial values to it, is better for agencies across Australia? If there is an investigation it may involve the carrier.

Mr Phelan: Yes, I would have thought so, providing the equipment is there that enables us to do so.

Senator PARRY: Deputy Commissioner, in the submission dated 5 June, the second paragraph reads:

I note the Australian Federal Police (AFP), as a Commonwealth agency, will not be receiving an allocation of spectrum ...

Does that include ACT policing?

Mr Phelan: No. My understanding is the ACT will be receiving a level of spectrum as a result because it is a territory government. It would be, yes.

Senator PARRY: I know you were formerly head of ACT policing. From that perspective you fit very comfortably with the discussion about the 20 megahertz in the 700 band, and that is desirable for ACT policing.

Mr Phelan: That is right. I am comfortable with everything I have seen, and certainly when you look at these maps. I am comfortable on both fronts: on a national front and on the front of ACT policing for 20 megahertz.

Senator PARRY: The other indication in your submission is that the Public Safety Mobile Broadband Steering Committee is ensuring that is where the AFP will get coverage from every other state when operating interstate. Basically, you just use existing state jurisdictional networks, and your equipment is configured for state networks at the moment.

Mr Phelan: That is the plan as it is put forward so far.

Senator PARRY: Is that happening today?

Mr Phelan: No, not within the 700 megahertz.

Senator PARRY: But are you configured to a variety of different states today?

Mr Phelan: It depends. When we operate in our voice network we are compatible with some of the jurisdictions and not with others.

Senator PARRY: So if every state jurisdiction is operating within 20 megahertz—10 up, 10 down—in the 700 band then it will be easier for AFP when you are operating in a multijurisdictional way.

Mr Phelan: Absolutely. Without doubt.

Senator PARRY: Can you identify a cost saving with that or not?

Mr Phelan: Obviously, there would be, because if we had different spectrums right across the place where everybody was using different components then the AFP would have to have different equipment to operate in each of the different states. We are highly mobile now, much more than we ever were before. To be quite frank, the Australian Federal Police does next to nothing on its own anymore without working with its state and territory and other Commonwealth partners in all of the jurisdictions in which we work. To have incompatible data systems along with incompatible radio systems makes no operational sense as far as we are concerned.

Senator PARRY: Could this be what you would consider a fairly significant improvement and potential cost saving measure?

Mr Phelan: That is right. The way it is planned at the moment is that the Commonwealth would not, effectively, have any spectrum component—it would be to the states. There would be a provision under the arrangements for the AFP to sue components of the spectrum while in each of those jurisdictions, and we would like it to be the same so that we can use the same equipment.

CHAIR: On the cost issue, this is one thing that the committee needs to look at. There have been proposals that show it may be necessary to acquire coverage from the private providers in an extreme situation. I gather from your evidence that the last thing a commander wants to have to do in that situation is to say: 'Do I need it? And if I do need it, am I prepared to pay the cost?' It needs to be instantaneous: if it is needed then it is acquired.

Mr Phelan: Absolutely. I do not want my commanders to have to make sort of decision in a split second when lives are potentially at risk. I do not want them to have to worry about that at all. Anything that ameliorates those costs, as far as we are concerned, is obviously a good thing.

CHAIR: There has been some evidence previously that, increasingly, first responders are engaging with the broader community on the social networks and so forth—on their handheld device or otherwise—as to observations that they may have. Would there be a disadvantage in having to shut down or reduce that capability provided by private providers in order for law enforcement to come into it?

In other words, would we be impeding access to some information from the public?

Mr Phelan: Off the cuff, to do that, what you would be doing is cutting off one of the sources of intelligence that first responders would be using. So you would want to do anything you possibly could to maintain the flow of intelligence. The example that comes to mind is a bushfire or a major flood, where first responders cannot be everywhere and the amount of intelligence coming from the community could be vitally important. It could go to the police operations centre, for example, and then be pushed back out to first responders. You do not want to restrict the capability of the public to send in that information based upon their normal 3G or 4G network—whatever they happen to be operating on—so law enforcement can use it.

CHAIR: And I suppose, in turn, getting out to them information—for instance, a change in an evacuation route because of a bridge coming down, a tree coming down or something of that nature.

Mr Phelan: That is right. I would not want to have to argue in the court of public opinion that we should shut down a component of the network, meaning we could not send information out to everybody. That would be quite difficult, I would imagine.

CHAIR: It certainly would. Thanks very much for coming along and presenting evidence on behalf of the Federal Police. Again, if you would like to submit any additional information or any reply to any of the submissions that have been presented, do not hesitate. We would certainly welcome that. Thanks very much for coming along today.

Mr Phelan: Thank you.

CHAIR: I thank committee members for coming along.

Committee adjourned at 11:26