Australian Government
Productivity Commission

PRODUCTIVITY COMMISSION

INQUIRY INTO THE TELECOMMUNICATIONS UNIVERSAL SERVICE OBLIGATION

MR P LINDWALL, Presiding Commissioner

TRANSCRIPT OF PROCEEDINGS

AT SYDNEY
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MR LINDWALL: We might, ladies and gentleman, get underway shortly. I have a brief introductory stuff that has to be said each time, and today hasn't got so many people. I mean, you never know, other people might turn up. Tomorrow's a bigger schedule in Sydney, so if we're ready, we'll get going, and then I'll ask for our first witness to appear. So all right.

So good morning. Welcome to the public hearings for the Productivity Commission's inquiry into the Telecommunications Universal Service Obligation. My name is Paul Lindwall and I am the commissioner for the inquiry.

I'd like to start off with a few housekeeping matters. In the event of an emergency, SMC Conference and Function Centre staff will direct and assist everyone in evacuating and moving to the assembly point.

We will be breaking for morning tea at around 10.30 am. We would like to be concluding the hearing at lunchtime by around 1 pm, unless other people turn up who wish to appear. If you have any particular questions, or wish to present at the hearing, please see Luke at the back if you aren't already registered.

The inquiry started with a reference from the Australian Government in April last year that has asked us to examine "to what extent are government policies required to support universal access to a minimum level of retail telecommunications services?" This includes recommendations on the objectives of a USO or equivalent, the scope of services to achieve objectives, specific user needs, and funding and transitional arrangements.

We released an issues paper in June and have received about 60 submissions since its release. We have talked to a range of organisations and individuals with an interest in the issues. In December, we released our draft report, and have since then received quite a few submissions which are still flowing in.

We are grateful to all of the organisations and individuals who have taken time to communicate with us, meet with us, prepare submissions and appear at these hearings.

The purpose of this round of hearings is to facilitate public scrutiny of the Commission's work and to get comment and feedback on the draft report. Following these hearings in Sydney, hearings will also be held in Cairns, Launceston, Melbourne and Port Augusta. We will then be working towards completing a final report to be provided to the Australian Government in April. Participants, and those who have registered their interested in this inquiry, will automatically be advised of the final report's release by government, which may be up to 25 parliamentary sitting days after completion.

We like to conduct all hearings in a reasonably informal manner, but I remind you that a full transcript is being taken. For this reason comments from the floor cannot be taken, but at the end of proceedings for the day you will have an opportunity to make brief presentations, including commenting on previous submissions or previous hearing comments.

You are not required to take an oath, but should be truthful in your remarks, and you are welcome to comment on the issues raised in other submissions, as I mentioned.

The transcript will be made available to participants and others on our website following the hearings. Submissions will also be available on the website and are available on the website.

I invite you to make brief opening remarks, preferably around about five minutes or so - I'm flexible - and then we'll have a questions and answers after that.

So I'd like to invite Malcolm Moore as our first participant today. So - - -

MR MOORE: I assume I'm sitting here, am I?

MR LINDWALL: Yes, please. And Malcolm, if you could just state your name for the record, and - - -

MR MOORE: Certainly.

MR LINDWALL: - - - any capacity of which you're representing yourself or an organisation, please do then. And then just give a statement, whatever you wish to say today.

MR MOORE: Okay. Voice is clear? All right.

MR LINDWALL: It doesn't amplify, it just records.

MR MOORE: Oh, that's good. I'm Malcolm Moore. I've - I'm a very practical expert consulting telecommunications engineer, who has worked on almost every type of telecommunications infrastructure in Australian throughout most of my technical engineering management career since 1966.

As I see it, this USO topic is primarily about the economics of significantly changed telecommunications infrastructure, its maintenance practices and cost overheads, in relation to the engineering-based history of gradually advancing telecommunications technologies from about 1974 through to about 1993, then through to about 2000, then through to today.

Nobody likes to be the bearer of bad news, so I'll start with the bad news and finish with the good news. My initial question was, when I read through, is there any experienced telecoms engineers involved with this draft policy? Because - and if not, why not? Because I thought this would be a mandatory to get this draft documentation accurate and relevant first time round.

Now, I know that this is a political document, but I'm rather concerned that the relevant references used in this PC draft document did not include the base reference Davidson

Report 1982. I don't know if it's readily available, but I've got it on memory stick, but I'd arrange.

Two, were primarily from other federal government departments, the ABS, ACCC, ACMA, et cetera, and as I understand it it's been primarily written by policy officers, journalists and academics. I might be wrong there, but it just - just the way I read it, it appears to be like that. And critically, I don't believe that those people have an engineering background.

And three, were generally - most of those documents are around 2016 and in my opinion, highly inaccurate and/or misleading, and I'll explain why shortly. They have confused or replaced the word "technology" with "competition", interchanged them in lots of places. They have confused the economic and business meaning - I'll start again. They have confused the economic and business meaning of competition, which is a major issue, and they have confused retail products and services with wholesale infrastructure and vice versa.

And further, if you - oh, and four, did not take - or did not include any telecommunications engineering based references in the documents that I saw, to set a realistic economic time-based relation for phasing in and phasing out various technologies.

Now, this is extremely important when it comes to the USO, because the USO is all about how well the infrastructure that is in place operates and what the overheads of it are. Now, further, because of the above, the draft document has an extremely thin and very patchy history that I saw in there. There may be more, but I didn't see much of it. It totally omitted the relative telecommunications economic overhead costs that are historically related to the current and earlier telecoms technologies. It has omitted the massive economic impact on the gradually developing silicon-based and solid state and associated telecom technologies from the early 60s. Now, that's a gradual process. It's still going on.

And three, it's oblivious about the radical reduction in telecoms overhead maintenance costs due to digital technologies introduced from about 1980, and fully implemented by about '93, that should have, from what I understand from my seeing, should have terminated the (indistinct) before it even came in, in other words.

There is a TQM exercise called Chinese Whispers - Total Quality Management. If you get a group of people and you pass a message verbally to them and then ask them to pass it on, and they pass it on, pass it on, pass it on, the message you get back is usually very different than the message that was sent in, and that, I think, is what has happened with the government documents that have been used for a reference. Because they're recent documents, they've used other recent documents, they've used them, and they've used recent documents too, and those people don't have the engineering background to go right back to the first one and get it right the first time, and that's why you've got what I saw as a multitude of errors - or that I see as errors - in the document all the way through.

It seems that nobody in this area has got the long, accurate expert history about the whole what's happened all the way through, and they've only picked up the last few weeks or months or years, and it's unfortunate.

In my opinion, what - the very large of what is written in this draft document is full of sweeping statements that are innocently - they are incorrect in almost every way. For example, there's a piece there at the start, the telecoms technology infrastructure is - they say it's fast moving. It's not fast moving. It's like a - it's slow and it's certain. It's like a glacier. It just gradually comes through.

I have worked in this stuff for several years, and - oh, I've worked in research for several years too, and that's all about building a better mousetrap. You ask the people there, "What are you doing?" "I'm trying to make this work better." It's not about competition. Competition for them scares them, they don't want to have a part of it. And it's about making something work better.

Competition has absolutely nothing to do with telecom technology advancements, because that comes out of research. Sales and leasing of retail telecom products and services is fast-changing, and that's what I think is being confused with the technologies, because that's the retail side of things. And the reason it's been fast-changing is because it's the - it's the mode of competition. To have profits, you've got to change things swiftly or you don't have profits.

The leasing of telecoms wholesale products and services is very slow, and moving in line with technology rollouts, and usually takes many years if not decades. And if you look at the telecoms technologies that are in the country areas, I can almost assure you that almost nothing has changed since 1993. Almost nothing. A little bit here, a little bit there.

And on top of that, from experience that I have had in other countries that I have worked with since then, it is not uncommon to move equipment out of the major capital cities into country areas - that is, old equipment - and use it there, and put new equipment in the city areas.

One of the classics of that is ADSL. ADSL modems work on the length of line, and most of the urban lines are 0.4 millimetres diameter. So what happens is if you have an ADSL modem capable of 8 megabits a second in download speed in a city area, and you think, "Oh, we'll bring in a new 24 megs and put that one there and get rid of the old one, we'll put that in a little country town."

Well, a little country town has got a radial distance of about 800 metres, so that's all capable of 24 megs, so what do they have? Maximum 8 megs. You put the new 24 meg DSLAM in a city area and what do you have? Because the average length of the line is 2.9 kilometres its average speed is 8 megabits. So you put the wrong equipment in the wrong place. Why? Because that's what competition is all about. It's not about actually engineering things properly. And they've done that time and time again.

The Davidson report - the primary purpose of the Davidson report was to find a way to justify the USA-driven splitting up of the then highly productive and effective Australian Telecoms Infrastructure Commission to facilitate USA private sector investment.

And there's a story behind that, and that comes from USA itself. In 1981, there was a problem of the non-metropolitan telecoms engineering costs were a cost centre. Private costs of technology - the technologies in those days were expensive. The killer was metering. All metering was done by hand, all of it, and they even had a call centre in Woolies - oh, down - up there, a lady would take a roll of magnetic tape down to Pitt Street by hand because they didn't think that they could actually put it on a broadband line and send it through in seconds.

So metering only became electronic after about 1985, and that really made the costs of telecom come down, and it provided the availability of services, because you couldn't do - without having the digital switches that were introduced after 1980 and got effective by about 1988, you couldn't put in a range of products like call forwarding, like, you know, call answering, like the 13 numbers. They could - that was physically impossible before.

Yes. So basically that's all the bad news. The good news is if you want any help on this, I'll be glad to help you.

MR LINDWALL: Okay, thank you. All right, Malcolm. Well, yes, I acknowledge that, like in any subject that the PC undertakes hearings, or for that matter any other organisation that conducts hearings, they may not have necessarily the expertise in a particular discipline, in this case engineering.

MR MOORE: Yes.

MR LINDWALL: But this is - like any other hearings, we accept evidence in various sources. You know, the staff and I have read quite a lot of material and literature, so is - are there defects? But in the end, what are we trying to do here? This is a policy question.

MR MOORE: That's right.

MR LINDWALL: And in the end the government is, through both a levy and taxpayer funding, has a Universal Service Obligation. Separately, it is building an NBN infrastructure. Separately, there has been a growth, not through government intervention, of the mobile phone networks. And the government's asked us to look at all of those three things and what's an optimal path forward.

And I guess that's what we've tried to do. Have we done it perfectly? Probably not, but I mean, we certainly appreciate any advice that we could improve it. I mean, when you said that there haven't been terribly much changes, I assume you're talking about the physical matters of things such as wavelengths and spectrum and things such as that, as opposed to the dramatic change in the use of technology which, for example, in recent

estimates 2.2 zettabytes - in other words, 2 by 10 to the power of 21 bytes of data - is being transmitted around the world each year, which is quite amazing to me.

MR MOORE: Yes.

MR LINDWALL: And that's growing exponentially. We know that people are using technology in ways that I think 10 or 20 years ago they wouldn't have anticipated. You think about GPS locators and communications where people in remote areas now have a way of communicating and finding information that they couldn't in the past. You can now undertake research and collaborate with the researchers in other universities very easily who might be on the other side of the planet, which was very difficult 10 years ago or 15 years ago.

MR MOORE: Exactly.

MR LINDWALL: So I guess what I'm asking is - and on the competition side, well, government policy, as we've commented in the past in Commission reports, has been good and bad at times and, you know, when the Postmaster-General's Department was split out and became ultimately Telecom, and then that wasn't privatised and wasn't structurally separated, some people said that was good and some people said it was bad. Well, that's a matter of assessment. My view was that it was - it would have been better to be structurally separated.

The NBN is structurally separated, but that has some - its own issues, for example. You know, if you have a retailer on the NBN and you're a customer and when it's a problem that's an NBN problem, some retailer might try and shift blame - say it's the retailer's problem, try and shift blame to the NBN, and the NBN might try and shift blame to the retailer. So the confusion to the customer can be quite acute there, so - so I understand all that.

So I guess what you're - what I'd like to know, is what in particular in our recommendations would you like to comment on at this hearing, given that you've given us submissions which we much appreciate, and they're quite lengthy submissions. In terms of changing the policy, we've said that the USO - you know, it is a fact that people are using voice less than they had in the past. I used to have a landline myself, and now I don't. I have an NBN connection, it's been rolled out, I've got fibre to the premises.

So I would be interested in some of your tech - since you're an engineer, about what can be done in the satellite regions, for example, where currently the satellite area is 400,000 people, so if you know the NBN is the premises - - -

MR MOORE: Yes, I do, I understand it quite well.

MR LINDWALL: We - you know, 400,000 in that, and they're subject to the latency that comes from a geostationary orbit.

MR MOORE: Major issue. Major issue.

MR LINDWALL: What is the alternative there?

MR MOORE: Okay.

MR LINDWALL: How can you improve the services - - -

MR MOORE: Very simple.

MR LINDWALL: - - - to the remote communities and regional communities at a cost effective - it has to be cost effective.

MR MOORE: Okay. Number one, multiple things. Physically separate Telstra, number one. Put the NBN into Telstra's infrastructure and get it out of being a private company. So there's no handover of - all the handover's done by one group, internal to itself.

MR LINDWALL: So you mean make the NBN a private - - -

MR MOORE: It would be part of the infrastructure business, not a competitive business. Competitive business is retail, retail reselling. That's competitive business. That's where Telstra should be. Optus should be all the rest of them. The infrastructure should be one infrastructure business that is a natural monopoly, not a competing monopoly. You've got an NBN fighting against Telstra, and they're in a cartel relationship. You know the perfect competition model?

MR LINDWALL: Yes.

MR MOORE: Where all the model - all the products are the same size, all the buyers are the same, so everything's all even. The theory of the second best proves that does not work, so they move into cartels. As far as I understand it, NBN and Telstra are in a cartel relationship.

MR LINDWALL: I'm not sure NBN and Telstra would - and they can talk about that later on - would say that they're in a cartel arrangement, and I suspect that - you know, obviously where you have - you have more competition in cities by definition than in the country areas.

MR MOORE: Yes.

MR LINDWALL: But if you go to satellite, I think there's 10 or 12 retailers.

MR MOORE: I'll come to that. I'll come to that. I'll come to that. The moment the NBN goes and moves into an area and says, "We're going to move in fibre," Telstra pulls out and says, "We're not going to do any more ADSL." That to me is a cartel arrangement, because those customers are then cut out.

But if you want to do it economically in the country areas, there's about three things straight off. I showed a little chart on here - and I just can't pull it straight from the top of my head, but about 20 - - -

MR LINDWALL: This is your second submission or your first submission?

MR MOORE: Second - - -

MR LINDWALL: That's number 68, if I'm not mistaken.

MR MOORE: Second submission, page 10.

MR LINDWALL: 68, let's have a look.

MR MOORE: TSA, correction, number 2. Page 10.

MR LINDWALL: Page 10, right.

MR MOORE: There's a little chart on there, looks like that.

MR LINDWALL: That's 12 - oh, yes.

MR MOORE: Okay. This is a breakdown of the information provided by the My Broadband Government data, showing the broadband in Australia. I just broke them down into something more practical to do analysis on it. If you look at the urban areas, there's about 95, 98, 99 per cent of the pair copper wire is used for ADSL. So people are not using their phones, they're using that pair copper for broadband.

You go to country areas, the villages, there's 2,500 villages in the country areas, only 27% of those lines have ADSL on them.

MR LINDWALL: Isn't that because the copper runs are too long and the degradation - - -

MR MOORE: No, no, no.

MR LINDWALL: Well, how long is the maximum copper run to use ADSL 2+?

MR MOORE: At what speed?

MR LINDWALL: Well, say 12 megabits a second.

MR MOORE: At 12 megabits? About - about two kilometres.

MR LINDWALL: Okay.

MR MOORE: But a village - - -

MR LINDWALL: See, my mother lives on a place which is about 25 kilometres to the nearest - - -

MR MOORE: Well, that's an exceptional situation. Most of these village situations for these, they're within 750 metres of the little exchange hub. Most of them have got optical fibre to them. Most of them are using that fibre for 2 megabits a second or thereabouts for voice band communications. Most of those can have one gig or 10 gig, to keep it at the top, for almost no cost at all. Most of those places can have a mini DSLAM for about $3,000, so you can have that put in place for about $50 million for two and a half - - -

MR LINDWALL: Using existing copper line?

MR MOORE: Using existing optical fibre that feeds to their places - - -

MR LINDWALL: Yes, yes.

MR MOORE: - - - and the existing copper lines. And that can be done in nine months. So that would get that right out of the way immediately.

MR LINDWALL: But it sounds so easy, so why hasn't it happened?

MR MOORE: Because it would threaten the USO, as far as I'm concerned.

MR LINDWALL: The government's not bound by the USO in terms of that. If it wanted to spend money on something it could.

MR MOORE: No, but if Telstra goes and makes that area profitable, to me that seems to be a threat, to have a non-profitable area suddenly look profitable, suddenly then the USO's in threat. And if you're going to lose $270-odd million a year, I think I'd be looking at ways to make sure it's not profitable. That's if I was doing the business, but I'm not.

The other thing to look at is if you look in a country - in an urban area, the CBD is the money-making area, and the area around it, where the homes are, that is not money-making. They're a consumer area. So if you look after the CBD you make the big money on that, you provide minimum service that you can to the country - to the suburban area, and everybody's happy.

MR LINDWALL: So if we go back to your point about the villages - - -

MR MOORE: Yes.

MR LINDWALL: - - - and of the 400,000 premises that are in the USO satellite service - sorry, not the USO, the NBN satellite reach, is - what percentage of them would you say would be able to have that type of service.

MR MOORE: I would say 80%.

MR LINDWALL: 80% of them?

MR MOORE: Yes, straight off.

MR LINDWALL: And what would you have for the other 20%?

MR MOORE: That's what I was just coming to. In the country areas, the economics is back to front. You wouldn't provide the villages with all the infrastructure. The farms are the ones that make the money. So then ask the question, how come we're not providing good infrastructure to the farms? We're crippling them from doing good business.

And giving them satellite - would we run a capital city on satellite communications? You've got to be kidding. So we have got extensive optical fibre in the inter-exchange network, the part that the NBN doesn't seem to know about, and the people who did the NBN design seem to have - academics have no idea about it, by the looks of things. But the people - the farms can be set up with inter-homestead optical fibre. It's not expensive to plough in when you're going only 300 millimetres deep. You can do it with a single tractor. You don't have to be six fibre like most of this, you can put in 72 or 140 fibre if you want to. You can go from homestead to homestead to homestead.

In most situations they are only four or five kilometres apart, in most situations, so you can provide them with - well, it's effectively like a party line they used to use years ago, but actually separate optical fibre pairs to them.

On top of that, the big killer is you've shown in your document that the amount of internet usage is rising exponentially. We've now got to consider that you need to have more paths to connect, not faster but more paths. You need alternate routes so you can get through. You need to have these runs that would feed past the homesteads to also be the inter-city connections, and you do that at the same time, so the cost of the inner city connections would have more than covered the costs of putting the homestead connections through there.

They could put remote optical pick-up points in farm areas and every five, ten kilometres, that's easy done, and you could pick up from those and go to any homestead from that point for almost nothing. So it's there. It's really easy. It just hasn't been thought about the right way.

MR LINDWALL: You know, the digital radio concentrators that are used - - -

MR MOORE: Yes.

MR LINDWALL: - - - they're pretty old technology.

MR MOORE: They came out in the late 70s, yes, they are. I had a look at that. There's Murray - Boyd Murray from CSIRO, I was talking with him about those some time ago. Because they were asked to design the Ngara system, which is like what I would call an overkill of what's involved, but if they pared that technology right back they could make a radio system about the size of a pack of cards that would cost about $200, I would think, because I used to work in that sort of area.

They could put into that and provide 300 megabits a second on DRCS instead of what they've got now, so you could get - you could hop over hundreds of kilometres with that, quite cheaply.

MR LINDWALL: Quite cheaply?

MR MOORE: And bingo, you've got it. And then that connects with optical fibre and off you go, so again, it's - we are using technologies that are northern hemisphere based. We're not using ones that match Australia. The northern hemisphere is very high density compared to Australia.

MR LINDWALL: Yes.

MR MOORE: That's why we've got - well, since about 1995 when - no, since about 1985 when global manufacturing really kicked in, we've basically lost that internal expertise on how to design networks, and you usually go to other places for that.

MR LINDWALL: So basically you're saying that of the 400,000 premises in the satellite region - - -

MR MOORE: Yes.

MR LINDWALL: - - - quite a few could be catered for relatively inexpensively - - -

MR MOORE: Yes, very inexpensively, yes.

MR LINDWALL: - - - with technology - drawing upon existing technology.

MR MOORE: Exactly, yes.

MR LINDWALL: That's something that's interesting to examine further, but could you comment a bit also about - since your technical background - about the merits and demerits of fibre to the node and fibre to the premises?

MR MOORE: I haven't done - - -

MR LINDWALL: Given you mention that, you know, copper can have very fast - - -

MR MOORE: Copper can have very fast speeds, there's no doubt about it. The problem with copper - it comes in categories, and you've probably heard Cat 5 cable. Cat

5 cable is used for data connections up to - help me - it's 100 megabits a second, I think it is?

MR LINDWALL: Maybe even more, I would think.

MR MOORE: I think Cat 6 does a gig, so see, so yeah, Cat 5.

MR LINDWALL: Might be.

MR MOORE: Cat 4 cable is for carrier systems, analogue carrier systems, before digital came in. Cat 3 systems is for voice frequency. Cat 3 is maybe 50, maybe 200 kilohertz. That's the stuff we're using for ADSL. It's like getting a pushbike and running it at 80 or 90 miles an hour, or kilometres an hour. Yes, kilometres. At 100 kilometres an hour. Pushbikes don't like.

MR LINDWALL: We have people in the Productivity Commission who ride that fast on a bicycle.

MR MOORE: So this will work providing the line is very short, because the losses are very high. Why would you do that with old cable? The problem is this cable - it is relatively new, but it's polyethylene. They have gel in it. The gel actually breaks down the polyethylene, and it also cuts into the - it cuts into the copper, so it's a bit of a loss system, why would you do that? The - - -

MR LINDWALL: So you're saying it should be replaced?

MR MOORE: Well, if you get them replaced - if you can replace them, why don't you put optical fibre in the first place?

MR LINDWALL: Well, you would, yes.

MR MOORE: It's simple. The conduit they're normally in is a 20 millimetre conduit. It is kinked in often in many cases. I have never seen blowing of cable where they actually blow air through the cable and just feed it through. Apparently, what I've seen, it can blow it in as fast as you walk.

So if you have the right setup in the right places, you could go house - or premises after premises after premises and blow cables in as fast as you could walk to them, if you had the right setup going. I think it's a case of getting methods and practices worked out to get those things to happen.

MR LINDWALL: Okay.

MR MOORE: I think it's quite easy, personally. So they don't need to put in fibre to the - sorry, what do they call it?

MR LINDWALL: Premises?

MR MOORE: Put in fibre to the premises.

MR LINDWALL: Yes.

MR MOORE: Do not put in copper to the premises, that's a backwards step.

MR LINDWALL: No, no. But you've commented earlier that we should leverage off the copper in the areas that are covered by the satellite, yes?

MR MOORE: It's there. It's there.

MR LINDWALL: But you wouldn't replace that?

MR MOORE: I wouldn't replace that necessarily at this stage, because it'll become optical fibre later on and/or radio for - see, you could also use radio in a village area and cover the whole lot. That's another way of doing the same thing, if it's small enough.

Optical fibre in - ADSL in country areas, yes, that will work for the next 10 years in little bush town scenes, that will be fine. And the other thing too is there was a report I saw I come out about three years ago, two years ago, talking about speeds, and the common consensus was about 17 megabits a second is quite fast enough for most situations.

So "most situations" - yes, it will do for most situations.

MR LINDWALL: Well, at this stage. I mean, I'd be interested in your view about baselines, because 17 megabits a second, if you told someone 20 years ago they would think that's wonderful and how they could even want to use it, but you know, you don't know in 20 years' time what people will want.

MR MOORE: Between you and me, I was in Telstra headquarters in 1995, and I was having a chat with a bloke, and I heard a person call down the corridor, "Hey, we just got 6 megabits a second ADSL working through five kilometres," and we all looked at each other and said, "Wow, 6 megabits a second, that's really fast." It was in those days.

And considering we were doing 56 kilobits a second, that was a big difference.

MR LINDWALL: No, indeed.

MR MOORE: So that was - that was - we all thought, "Oh, that's fast." But I would think these days we'd need to look at - excuse me - at a base band of around about 50 megabits a second, bidirectional, not asymmetric. Because we're going to be moving into high-definition multi-screen multi-camera video conferencing, standard business.

And you consider if you're on a farm and you're selling 100,000 head of sheep or something, and you're on the phone, you have a chat about a few things first of all, then

you get into the stock and station, what you want and how you want it organised and shifted.

MR LINDWALL: Yes.

MR MOORE: So you can do it by phone, but you can also do this by having a video connection these days with - they can see the farm, they can see the sheep, they can see - - -

MR LINDWALL: Yes, we heard that in our hearing yesterday in Dubbo about cherries and the high resolution images that need to be made, but - - -

MR MOORE: Exactly.

MR LINDWALL: - - - I mean, how would you - for people in remote and rural Australia who have, say, a fixed line - fixed connection, however it is delivered to the premises - - -

MR MOORE: Yes.

MR LINDWALL: - - - how would they amplify that through their property, do you think? Since I think it's impractical, isn't it, to extend mobile coverage to 100% - - -

MR MOORE: No, I disagree.

MR LINDWALL: Yes, okay.

MR MOORE: I disagree. This radio black spots is a fiasco. Again, we're not thinking - we're not thinking putting Australia first. We're thinking of putting America or putting Europe first. The homesteads are the places that should have the radio base stations. Not the cities, not the towns. Put the radio base stations at the homestead, or near the homestead. Give them an IP PAVX. Give them free calls to their mobiles on their property, or near their property, off that base station, so they can be anywhere on their property, have the mobile connection. People are going past, they can pay them for the use of it. You'd have no radio black spots all over Australia. Really simple.

MR LINDWALL: Who should pay for that?

MR MOORE: If - another issue, if you do a bulk purchase of this sort of equipment - when I was working at Nortel, the typical discount was something like in the order of 36 to 40% for major providers. The alternate operator's got 5 to 10%, so - - -

MR LINDWALL: You have to be careful about the bulk discounts, because I can give you an anecdote from my days many, many years ago where Defence purchased 30 years' supplies for a particular aircraft which is no longer in use, so stored all this weaponry which is no longer in use.

MR MOORE: Yes.

MR LINDWALL: So you know, if you buy a whole lot of stuff which is out of date, you've got to be careful about that, surely.

MR MOORE: Okay, well I'll be more specific. We're buying DMS 100 switches. If the alternate operator wanted to buy them, it was going to cost them, say, $2 million. If one of the major suppliers - major providers wants to buy it, it's not going to be $2 million, it's going to be maybe $1.6 million, $1.4 million. Same thing. And they get it at the front of the production line and they get support right up front. The people on the alternate side, nothing.

MR LINDWALL: What - can you comment, Malcolm, on 5G and the implications of mobile 5G, do you think, given your technical background?

MR MOORE: I did see a thing on that this morning, from the ACMA thing. They had LTC not LTE on their report, and I thought, well, there's another little error. 5G as far as I understand it is going to be much shorter wavelength. That means much shorter distance. I would - I would see 5G as being useful in office blocks. That's where I'd see it to be useful. It would be useful in and around houses and those sort of things, but I think 4G's the - what's going to be the big one, and 5G is more likely a pipe dream, at this stage.

MR LINDWALL: Okay. So if I could understand your policy prescriptions, is that the government, as a government, should directly invest money not through - to private companies, is that basically it?

MR MOORE: I think they should - I think they should physically separate Telstra and put their investment into the infrastructure.

MR LINDWALL: Isn't that being done through NBN? NBN is 100% government owned.

MR MOORE: No. No, no, no, no. NBN is running as a public company - sorry, as a competitive company in direct locked horns argument with Telstra, as far as I understand it, and they're advertising. That money is - they shouldn't be advertising at all.

MR LINDWALL: Yes, but how would you structure NBN otherwise?

MR MOORE: As a "get in and do it" company, not a "look what we're doing" company.

MR LINDWALL: So you should seize property rights from the competitors?

MR MOORE: They shouldn't be competing. They should be working as one - - -

MR LINDWALL: But that goes against Australian competition law, competitive neutrality and - - -

MR MOORE: No, no, no, this is - competition should be restricted to retail reselling, not infrastructure. I was at the World Broadband Conference in 2010, down the road here, and some days after we got - everybody got to know each other, we're all sitting in a group, and every company was there, and they said, "Well, how is it working?" and they - "Oh, gee, tell me about it."

And I said - you know, they said, "Well, I see that one company's put optical fibre from here to Brisbane. Well, they're making good money on that. Okay, we'll put optical fibre in there, we'll put it in place. Oh, we're not making the same money we thought we'd make." "Yeah, we saw you do that, we put optical fibre too, we can't make any money on it." So we've got a triplicated system that does not work.

MR LINDWALL: Aren't you erring in the way that you're accusing the commission? That is, you've said that we haven't got the technical expertise in engineering, but have you got the technical expertise in economics? I mean, that is our speciality, after all.

MR MOORE: True, true.

MR LINDWALL: So we do understand competition and - - -

MR MOORE: I understand that, yes.

MR LINDWALL: - - - things such as that.

MR MOORE: Well, when you have triplicated networks that are - when two are redundant, you then ask a question, is that economical or not?

MR LINDWALL: Well, that's how the space missions to the moon were conducted, by competition between providers to - otherwise it wouldn't have been achieved by 1969. Competition does have a huge benefit in many ways. But anyway, are there any final points that you'd like to discuss with us?

MR MOORE: No, I think you've covered everything I needed to say there.

MR LINDWALL: I much appreciate your turning up.

MR MOORE: I appreciate being here, thanks very much.

MR LINDWALL: And look, I think we can have a morning tea now, and then we'll continue. Thank you very much.

ADJOURNED **[10.42 am]**

RESUMED **[10.59 am]**

MR LINDWALL: Phil, if you just state your name for the record and give your opening remarks, if you can?

MR SMITH: Yes, I can do that. Okay. My name is Phil Smith. I'm Chief Regulatory Officer and founder of OptiComm Co Pty Ltd. We are a fibre to the premises provider for greenfield estates, both broadacre and MDU. We've been operational since 2007, and in fact we're accredited to have come up with the Layer 2 business model that now NBN has adopted nationally. So we've kind of been in that fibre to the premises and that Layer 2 wholesale business for longer than anybody basically in Australia.

With respect to the submission we put in, which wasn't an extensive submission, but it was - we tried to make it more what you wanted, which was more a policy type statement. We believe that the USO still has relevance, but only on the broadband side of things these days.

The standard telephone service has pretty well had its day, and the majority of the technology now, whether it be satellite, fixed wireless, even fibre to the premises, most retail service providers now are doing over the top telephone services rather than standard telephone services.

So in relevance to regional areas, I believe broadband is more important than the telephone service, and the public telephone has definitely just about had its day. With the, you know, the relative ease of getting affordable mobile services, and with the Black Spots Programs, you know, the majority of Australians can get access to a mobile network.

So we do generally believe that the broadband is the key for an ongoing USO. We believe that the USO funding through the levy that is with a broad range of carriers and carriage service providers with the thresholds that are already set are relevant, even in a broadband environment.

We do believe that NBN Co. should be the primary responsibility for the USO provision of wholesale - on a wholesale basis, with retail services being competitive on top of that. So we don't believe there needs to be a retailer of last resort.

MR LINDWALL: Last resort.

MR SMITH: We only need really an infrastructure provider of last resort in those - particularly those non-economic areas. We also believe that NBN Co. should act as a wholesale aggregator. Now, this is something that NBN has rejected, but we have been pushing this and have commonality with Telstra on this, that we believe that NBN Co. should be a wholesaler of wholesalers to ensure that there is a level playing field with retailers across Australia.

That includes opening up the B2B, the business to business interfaces, and allowing interconnects between the likes of OptiComm networks and other providers of infrastructure so that all retailers can get to all networks.

We also believe that NBN Co. should be, really, the company that gets the funding at the end of the day, because they've got a - you know, to actually service the non-commercial areas of Australia.

We consider that the service to be provided - sorry, the USO should be provided as a mechanism - or we believe that the USO with the standard telephone service has been successful to date in providing ready access and affordable access to a standard telephone, but I think it's very much out of date these days.

Now, we - when we put the submission in, we considered a few other programs that have been going on. Obviously the Black Spot Mobile Program, and my comments about the mobile. But the more important one is the Bureau of Communications Research paper, and now consequently since we did this submission it's now come out with draft legislation which is - submissions are due this Friday. And as far as we're concerned, a great big new tax on providers like us is an unacceptable way of funding the broadband to the non-economic areas.

We see it basically as a way that the government and NBN is protecting a monopoly and are putting a new levy, tax, whatever you want to call it, on their competitors.

The amount that they are trying to recover was determined by NBN without detail, and then passed down to providers like ourselves. Now, in terms of what it means to OptiComm, a third of our wholesale access revenue would go straight back to the government for - or to NBN if this poor piece of legislation is implemented.

It breaks, we believe, competitive neutrality rules, and we also believe that it is against basic competition rules. Now, I agree that there's retail competition, but we do compete with NBN at a wholesale level for business in the greenfield market. That has been allowed since day 1 with legislation, that developers can choose their provider, and basically when we win those, winner takes all, type of thing.

So we have had a legitimate business, and we continue to have a legitimate business according to legislation, but imposing a - what we believe is a very unfair levy or tax through the Bureau - or what the Bureau has come up with is an extremely bad way, mainly because it doesn't actually produce the outcome that they want. The outcome they want is to fund broadband in the bush, and our estimates that the first year will be only around about $21 million that they'll collect, and they're saying their shortfall over 30 years is $9.8 billion, so it's - excuse the French, it's a piddle in the ocean.

So if you want to really achieve funding for the non-commercial, the USO is the best way to do it. That's really the crux of our submission. I think - - -

MR LINDWALL: You mean - sorry, I'll ask you when you finish.

MR SMITH: Yes, yes, no, no, I'm pretty - I'll open it up to questions.

MR LINDWALL: When you say the USO, you mean the USO funding?

MR SMITH: For broadband, yes, yes. That would then go to NBN.

MR LINDWALL: But that's goes with current users through a levy itself, the TIL, so - - -

MR SMITH: Yes, look, the reason why we disagree with the Bureau of Communications Research and the current legislation is that it's too narrow. It had too many exemptions.

MR LINDWALL: Okay. So could you, just for the record, distinguish between how the levy for the TIL is calculated and affects you - affects OptiComm versus how the proposed new one that's been - - -

MR SMITH: Okay, so with the TIL, there are a lot more carriers involved. All carriers and carriage service providers are levied, so the load is spread fairly evenly across the whole industry. So from our perspective, it would be a few percent of our revenue, not 30%. The Bureau's proposed new legislation is going to take up to 30% of our revenue, without distinguishing even what services we provide.

So if it's a 12 line service, that's more than 30%. For 100 services, it's less. But - so all it will do is drive prices up. And we've also got the competitive pressure of the ACCC trying to declare services at the NBN price. Now, as far as we're concerned that's not correct either in terms of competitiveness. NBN's our competitor. Why should they be setting the price, is our view.

So from our perspective it's more the narrowness of the proposed legislation that's going through versus the broader - - -

MR LINDWALL: TIL.

MR SMITH: Yes, the TIL will collect significantly more money than the one that we're - - -

MR LINDWALL: So what's the explanation that's been put to OptiComm about why it should be a narrow base rather than a broad base?

MR SMITH: They believe it should only be levied on wholesalers or infrastructure providers, but they have exempted, for example, Telstra Velocity, with the possibility of selling that to NBN, but it hasn't happened, so why exempt them from day one?

There are a lot of anomalies. As well, they haven't levied any of the fixed wireless or mobile carriers who can deliver broadband services of equivalent speeds to us, so it is very, very narrow - - -

MR LINDWALL: Okay.

MR SMITH: - - - is our argument.

MR LINDWALL: So you're not necessarily arguing which is an alternative funding means, which is for government to pay directly out of consolidated revenue?

MR SMITH: Look, the other part of the argument of them coming - of the government now coming and trying to get some money out of us through this other levy, not the USO, the wholesale levy, is that - look, we - sorry, I've lost my thread on that one.

MR LINDWALL: That's all right.

MR SMITH: We believe that we're in a competitive market with - in the fixed line market. So it's only going to levy fixed line. The reason why they're doing that, the real reason, is not to raise funds. The real reason is to clip TPG's heels, because they have come out and done a competitive rollout in brownfield of fibre to the node infrastructure.

So - but where unfortunately they couldn't just put a levy out for TPG. They had to make some kind of distinction, and unfortunately, we're the guys that are going to be caught.

MR LINDWALL: The meat in the sandwich, is what you're saying.

MR SMITH: We are the meat in the sandwich. Now, we as a company have operated since 2007, as I said, with zero government input. We have been self-funding, and investors investing money based on a business model that has now literally been destroyed by the proposed new tax on us.

MR LINDWALL: So would it be fair to say - would your argument be that OptiComm, and, I don't know, TPG and others, Telstra, to the extent that they build fibre networks in brownfields and greenfields, that they're actually reducing the burden on NBN, and that allows NBN to roll out faster to other parts of the country?

MR SMITH: I agree with that. We can - if you do the mathematics of the data that is currently available in the public domain, it currently costs NBN $2,100 per lot to build up a greenfields site, and they only collect from the developer $600 of that, which means there's a shortfall.

So every one that we win, we actually are saving NBN capital expenditure. So it is saving them money, and if they did agree to a wholesaler of wholesalers, they'd be getting revenue back through that mechanism, because there'd be a margin, so they'd be getting something out of those rather - without any capital.

MR LINDWALL: Could you explain to us how a wholesaler of wholesalers would work if you were to envisage it?

MR SMITH: Okay, so the way it would work is there is a common business to business interface which would be based on the NBN one, because that's the most mature one out there. What has happened with the NBN B2B, we submitted a letter to Mitch Fifield, to the minister, that Comms Alliance - in a working committee with Comms Alliance.

MR LINDWALL: Is that letter public?

MR SMITH: It's not a public letter, but we have provided it to the Productivity Commission.

MR LINDWALL: Yes.

MR SMITH: And essentially the committee - the Comms Alliance committee, under instructions from the previous minister, Malcolm Turnbull, he asked to investigate the B2B interface. So what had actually happened is NBN had built a business to business interface based on standards coming out of Europe, and then they tweaked it, and the rest of the industry doesn't know what those tweaks are.

So we've asked the minister to adjudicate firstly that the B2B become a proper B2B, and it's administered though Comms Alliance. But secondly, the second corollary to that which came out in the meeting and got stifled by NBN, they wouldn't agree to it, was that NBN then becomes a wholesaler of wholesalers, where we do interconnects between our points of interconnect and NBN's points of interconnect, such that if a customer rings a retailer, they can put an order on NBN, and NBN can say, "Oh, that's in OptiComm, I can deliver that," and back that service provision request through the B2B, ends up with us. We provision it, tell NBN it's our provision, and happy days.

Telstra wants to do it that way, because they want one interface into the wholesale group, and they're very strong on wanting to do that. As I said, NBN see it as competitive advantage that they've got Telstra on their network and we don't currently.

MR LINDWALL: I see.

MR SMITH: We've got most of the other retailers, but we don't have Telstra.

MR LINDWALL: And what - and if you just have this type of interconnect, what type of pricing would - how would pricing be set?

MR SMITH: At the same NBN price.

MR LINDWALL: Yes.

MR SMITH: No change to the retail price for those. It would be done within the wholesale. Now, if we have to pay this new levy, we have no margin to give. So it destroys that, you know, competition.

MR LINDWALL: Now, while we've got you here, in terms of rolling out fibre optic to greenfields, I would suspect it's cheaper than doing for brownfields, normally. Would that be a fair assessment?

MR SMITH: It is, plus we can, like NBN does, get a contribution from the developer - - -

MR LINDWALL: Yes.

MR SMITH: - - - which helps the - - -

MR LINDWALL: As opposed to brownfields.

MR SMITH: Correct.

MR LINDWALL: You purely operate in the greenfields area.

MR SMITH: We do, that's correct.

MR LINDWALL: Would you consider - but just - you're not limited to that, presumably?

MR SMITH: No, we're not limited to that. We did trial four building of fibre to the basement, and I believe that is non-economic for us to do it, and that - this was prior to NBN doing fibre to the node, so we trialled it before that, thinking it was a better technology for multi-dwelling units, or apartments. But we have stopped doing that. We don't do that to brownfields. So we are very much concentrated on greenfield.

MR LINDWALL: Yes, yes. And what about - because one of the issues that's come very strongly through this inquiry are the people who are reliant on NBN satellite, and of course there's a debate about voice calls made through the satellite service.

MR SMITH: Yes.

MR LINDWALL: And we've talked to others about that. But obviously the fewer people that are in the satellite - using satellite, the more bandwidth there will be for them, and so - are there any technologies that could be used to reduce the number of people in the satellite bandwidth area - - -

MR SMITH: Yes.

MR LINDWALL: - - - that are actually efficient or relatively inexpensive?

MR SMITH: Look, I - the satellites have gone up now, and unfortunately it is an expensive way to service those areas, and you could use other technologies to get to remote locations. One of the things that happened in - I know it's Europe, and the distances aren't as great, but what they did there for the rural areas was to provide rolls of cable to the farmers and the implement to go on the back of the tractor, and the farmers actually went in and rolled their own cable out, if they wanted it.

MR LINDWALL: Yes.

MR SMITH: Which was a great concept. That was never - that was never considered here, which I think was very poor. I do believe, like with small villages, it's not hard to provide fibre certainly to the exchange. Fibre to the node technology, you get your node close enough to the customer, is still a very viable technology, certainly in the short term. I'm a great believer in fibre to the premises. That's what we still do.

MR LINDWALL: Yes, of course.

MR SMITH: I think it's superior technology to fibre to the node, but fibre to the node is still delivering reasonably fast speeds.

MR LINDWALL: Yes.

MR SMITH: And the technology seems to be moving on even further, that they can get faster than 100 meg these days with - but it's all about physics. It's about getting close to the house. The fibre to the distribution point is the new technology they're trialling now, which basically puts the - you're only using the piece of copper from the pit outside the house into the house, and yes, they're getting very high speeds with that technology.

So there's new technologies out there.

MR LINDWALL: Yes, yes.

MR SMITH: What will happen if you start leveraging all the fixed line guys through this kind of funding and you don't - or you wipe out your competition through NBN, fixed line will become so inefficient that the wireless guys and fixed wireless guys will come in and go, "Yes, you beauty, we've got this to ourselves," because they can offer far cheaper prices and so on. You can see that in the mobile space now. You know, the likes of Optus and Telstra are now offering very, very big caps on the capacity.

I trialled my phone the other day on Telstra 4G and I got 144 meg. You know, there's a lot of people - in fact, a very good friend of mine who I sail with rang me yesterday and said, "I want to put the NBN in my area, fibre to the node," but the Telstra guy said, "It's probably cheaper for you to go mobile."

So we're already seeing competition.

MR LINDWALL: The - now, in the areas which OptiComm service with the wholesale fibre, right - - -

MR SMITH: Yes.

MR LINDWALL: - - - you have to sell it to retailers the same as NBN?

MR SMITH: Correct, we wholesale it in the same kind of way.

MR LINDWALL: And are the retailers the same retailers?

MR SMITH: Yes.

MR LINDWALL: There's no specific retailer for OptiComm areas?

MR SMITH: No, we're not vertically integrated at all. We don't own a retailer. There are some that only - that have chosen not to go on NBN because of the cost of going onto 121 POIs.

MR LINDWALL: Yes, of course, yes.

MR SMITH: Where we run one POI per state, which is cheaper for the smaller guys. So we do have some small guys that used to do ADSL with Telstra or TPG or somebody and OptiComm, but haven't made that leap yet to go into NBN.

MR LINDWALL: So how many, if you can say, approximately, number of customers would be at the retail level of OptiComm networks?

MR SMITH: We currently have 30,000 customers, but we have - and we've passed 50,000 lots of land, but not everything's built yet.

MR LINDWALL: Yes, of course, yes.

MR SMITH: And we have another about 250,000 under contract.

MR LINDWALL: And which states are you in at the moment?

MR SMITH: All states except WA - sorry, Northern Territory and Tasmania.

MR LINDWALL: Okay, that's interesting. And now, you've also seen, as well as the levy proposal about SIP legislation, you've seen consultation about that, and - - -

MR SMITH: Yes.

MR LINDWALL: Have you got any comment on that that you'd like to make?

MR SMITH: Probably not, not off the top of my head. I'd rather reserve - - -

MR LINDWALL: No, that's all right, yes.

MR SMITH: Yes.

MR LINDWALL: I'm just seeing if there's anything else I - oh, because we have, as you know, in our draft report, recommended to phase out the TUSO over time - - -

MR SMITH: Yes.

MR LINDWALL: - - - what are the implications for your company or for that matter for the NBN network in terms of cost, perhaps, or usage et cetera?

MR SMITH: Of phasing out the - - -

MR LINDWALL: If you haven't - if you don't have the standard telephone service - - -

MR SMITH: Yes.

MR LINDWALL: - - - and you don't have payphones, are there any additional costs to OptiComm from that, if the government were to decide that?

MR SMITH: I don't believe there would be anything from OptiComm. No extra costs.

MR LINDWALL: So there would be some people, because they are in greenfields, who might have wanted, you know, a standard telephone service, and they don't want to use broadband for whatever reason, they would then contract through a retailer to OptiComm.

MR SMITH: Yes, correct, or take a mobile service, yes.

MR LINDWALL: But that doesn't really cost you anything more.

MR SMITH: No, it doesn't. It doesn't cost us anything.

MR LINDWALL: Okay, all right. Any final points you'd like to make?

MR SMITH: No. It was really the - fighting the poor bit of legislation that's just been proposed is our biggest problem.

MR LINDWALL: Yes.

MR SMITH: And we 100% support the Productivity Commission's view that - that's the point I was trying to make earlier, was that we believe that the original costing of NBN included the regional areas, and to impose a tax after the event I think is very poor.

MR LINDWALL: Okay. Well, thank you very much, Phil. So now we're on to Laurie, I think, is that right? Hello.

MR PATTON: How are you? I'm good, how are you?

MR LINDWALL: Very well. Could you just state your name and - - -

MR PATTON: I will do all of that.

MR LINDWALL: - - - give a bit of a presentation like normal.

MR PATTON: I will do all of that. Yes, thank you very much. Hello, everybody. Yes, so for the record I'm Laurie Patton. I am the Chief Executive of Internet Australia, which some people may recall from its past as ISOCAU. We are a chapter of the Global Internet Society, which is the largest group of individuals and organisations working to defend and promote the internet. We are - - -

MR LINDWALL: You don't have to - everyone likes the internet.

MR PATTON: Everyone likes the internet.

MR LINDWALL: You're doing a very good job of promoting it.

MR PATTON: Thank you very much. We are a member-based organisation, and we represent everyone who uses the internet. We're not an industry lobby group.

The Internet Society's slogan is that the internet is for everyone, and so that I think probably is the key to our views in relation to the USO. I'd make the point that the only reason we ever had a universal plain old telephone service is because the government built one and funded it, and so we believe that the USO should be funded by the government.

The current USO model I think works arguably because there are only a small number of telephone providers, whereas there are who knows how many US ISPs could be RSPs, and nobody seems to know, but the estimates are somewhere north of 250 and maybe more than 400.

It's interesting to note that in the context of the data retention scheme that nobody, including the Attorney-General's Department, actually has a list of ISPs.

Our primary concern is - in relation to the USO, is three groups of people. People who are financially strained, people who are in remote, regional and rural areas, and people with a disability. And for many of those people, access to the internet, access to data, is as important if not more important than voice. And that's certainly becoming the case more and more as new applications come on board that actually make the internet far more user-friendly, especially for people with disabilities.

We have a basic concern which is, I think, relevant to this consideration, and that's the relationship between NBN and its RSPs, and the analogy that I usually like to give is that

of the seller - the manufacturer and the seller of automobiles. And if you have a dealership, you are required to sell a certain number of cars, and if you do really, really well you get bonuses. If you do badly, you lose your dealership.

At the moment there seems to be a pass-the-parcel exercise going on. Nobody wants to take responsibility when a consumer complains that their service hasn't been connected or it's unreliable or its speeds aren't what were advertised, and there are many, many reasons why that can be the case. They can be technical, or they can be to do with the CVC provisioning of the respective RSP.

Why I raise that is because I think that's critical to any consideration of how you might have a workable USO arrangement. We believe that NBN should have the overriding and basic responsibility for ensuring that everyone has access to broadband, and that this should include an overriding responsibility to ensure that there is a workable USO.

Rather than be prescriptive at this stage, we'd prefer to review all of the suggestions on how that might be structured and the technical constraints, some of which were just discussed, and as always, we're happy to talk to you, either on the record or off the record, with our considerable technical expertise.

Look, probably just one issue that we have discussed and we have not yet come to a conclusion on, and that is in relation to the fact that there are really only a handful of organisations that have the ability to connect to all 121 points of interconnect.

So that raises the issue of who should be the one that actually delivers to the customer? And there are two options, one - two that we have talked about, anyway. One is that there is a small group of RSPs who undertake to be the provider of last resort, and the other possibility is that it should be opened up to anybody that wants to.

But the difficulty, of course, is that most of the RSPs are relying for backhaul and other facilities from a handful of major providers. So within that context, our view is that it's really important that there is an extension of the USO to include data, and that that should be primarily over voice, and that it should be funded by the government.

MR LINDWALL: Okay. Thanks very much for that, Laurie. Could I start out by saying that - just be clear that obviously the USO as it is is about voice communication to the premises.

MR PATTON: Yes.

MR LINDWALL: I don't think from what you're saying that you disagree that we're moving towards data, and data includes voice to some - - -

MR PATTON: Yes. Yes.

MR LINDWALL: Now, the other things that we did say is that whilst a Universal Service Obligation means that there's an obligation to provide a service everywhere in

Australia, we looked at it from a perspective which said that some areas you probably don't have to worry about universal service, they're well serviced, and maybe you should target it to the problems.

MR PATTON: Yes.

MR LINDWALL: As you noticed in our report, we divided it between, you know, availability of the service, accessibility to the service, and affordability of the service. Is that a reasonable - - -

MR PATTON: Yes, and I think that's why in the end we believe that NBN should have a fundamental overriding responsibility, because they are the ones who are best able to determine where there is accessibility and where there isn't.

MR LINDWALL: Yes. And, as you say, technology has - is improving accessibility in many ways. In phenomenal ways, actually. But in terms of your analogy with car dealers, there's one thing that is a bit different, I think, is that if you go to a car dealer and you order a Ford or a Holden or a BMW or whatever, you know what you're going to get.

You go to an RSP, you order a, you know, 25 megabit service or a 50 megabit service, you might only get a 12 megabit service. It's like going to a car dealer and finding your Ford doesn't have a door or something like that. Is there a way in which, if it's not already happening, which government could encourage or even demand that retail service providers actually inform the public better about when you contract for 50 megabits of service, that means a minimum of what and an average of what, rather than being anything considered reasonable above zero, really?

MR PATTON: Yes, that gets us into slightly tricky territory. So I'd have to say, as an overriding principle, we are fundamentally opposed to the use of fibre to the node because it's a technically inferior service, and one of the difficulties in the current arrangement is that it's virtually impossible for an RSP to tell you what sort of speed you're going to get until NBN's connected it up.

Now, that's a particularly serious issue in the case of fibre to the node because you could have a slow service or a very slow service. If we were talking about fibre to the premises or fibre to the distribution point, we'd be talking about a fast service or a very fast service. And so what we're hearing is people are tending to sign up for the slowest speed, because that's the least likely way they're going to be disappointed, and we rather suspect that there are RSPs out there who are encouraging people to sign up to the slower speeds because that means less chance of an unhappy customer, and it's also cheaper under the CVC model.

So we have a fundamental problem with that whole issue, which is why we support testing of speeds. We encourage people to use the - there are a number of them, I don't need to mention them - the retail speed checks. But you can't do that until after the thing's connected.

I think we do need to look at a mechanism whereby there are, if not penalties for failing to deliver the speed that was sold, at least an obligation to immediately revert to a lesser speed tier.

MR LINDWALL: So how do you - and maybe I'm opposite to the people you just mentioned, since I do have fibre to the node at my premises recently and I signed up for 100 megabits a second and I was very disappointed with the results that I got.

MR PATTON: What did you get?

MR LINDWALL: About 12 megabits a second. And - - -

MR PATTON: That would be - that's - that's - by the way, that's not - that doesn't put you on a shortlist.

MR LINDWALL: So how - how does a customer know whether it's the NBN line that's at fault or the retailer's not providing the - - -

MR PATTON: That's the fundamental problem. As you know, that could be because there at the end of a very long line of very, very ageing and decrepit copper. It could be because the CVC - that the RSP hasn't signed up for sufficient CVC. And there could be a range of other issues.

And the problem that we're hearing, and as I say, we represent everyone who uses the internet, we're not an industry lobby group, although we do have lots of ISPs and other technical groups as our members, our problem is that we don't have an answer to that question when consumers ask us, "How do they know?"

And that's why I think the only solution - and it's not a complete solution, but the best solution is to dump copper, or at least dump fibre to the node, so that we're not getting people who want reasonably fast speeds getting 12.

MR LINDWALL: Anyway, that's all an issue, and this is a city issue, but - - -

MR PATTON: Well, it's an issue - sorry, it's actually more than that, and I'll just refer to the earlier conversation about satellites. It's just worth making the point that under the original NBN, we were to have a selection of fibre to the premises, fixed wireless, and satellite. Under the current plan, they've expanded the number of premises that will be signed up to satellite and correspondingly more people on fixed wireless.

Our view is that not only should we adopt fibre to the distribution point instead of fibre to the node, but we should go back and - we should be constantly expanding the percentage of homes that are on a fixed wire of some description, and - - -

MR LINDWALL: Or fixed wireless, even?

MR PATTON: And/or fixed wireless. But we've already suggested to NBN that they'll need a third satellite before long.

MR LINDWALL: This is all - it's true, but how do you - it costs more money, so - - -

MR PATTON: Well - and that's why we're suggesting they should get off the satellite as much as possible, because we're - and organisations like - who I'm sure are talking to you - Broadband For The Bush and the Isolated Children's Parents' Association, are constantly highlighting the problems of families in remote areas where they are not getting the speeds on the satellite and they're not getting the data caps that they need. So it's not just a city problem. It's very much an Australia-wide problem.

MR LINDWALL: But what I'm saying, I mean, I was in Dubbo yesterday, but - and if you look at all the submissions you'll see that people in the satellite reach talk about the reliability of voice and so forth.

MR PATTON: Yes.

MR LINDWALL: And so there are concerns there. Whether - what do you think, are those - if you're on a satellite service, NBN satellite service, the Sky Muster, would you personally be satisfied with the voice service, or would you want to buy something else? If you weren't - didn't have mobile.

MR PATTON: I don't think - we haven't considered that issue. The only position I could take on it would be to simply say that we have heard from a range of people on Sky Muster that they're concerned about the latency issues, and those issues will only continue and be exacerbated as more and more people sign up on the satellite.

MR LINDWALL: In terms of fixed line or fixed wireless, the voice services over that are very good, I would - - -

MR PATTON: Absolutely. And the earlier comment - I'd not heard the idea of giving farmers a roll of optical fibre and suggesting that they roll it out themselves, but I have spoken to people in rural areas who would be happy to do that. In fact, one of our board members actually suggested that if they let him he'd roll out the fibre. I think he was even happy to buy the fibre himself.

MR LINDWALL: That's good, yes. What do you think - well, you've spoken about - we've spoken in our report of a baseline. Did you want to give any guidance of what would be a reasonable baseline?

MR PATTON: I think our position has always been that that's a variable that should be determined - - -

MR LINDWALL: Over time.

MR PATTON: - - - by what is considered necessary for the applications that are available at the time, and that's why we favour an upgradeable form on NBN. That's why we point to the fact that while the previous speaker mentioned that there are increases in the speeds over fibre to the node, they will never be able to compete with the increases in the speeds that will be available over fibre to the distribution point or fibre to the premises.

And when we look at where we sit in the global rankings, we're going backwards. We were 30th. We're now somewhere around 50 to 60. And I think - so I think we need a mechanism that determines what that is from time to time according to what the uses are.

MR LINDWALL: And if you had a mechanism, would ACMA be the right organisation to manage - - -

MR PATTON: We haven't formally considered that, but as a general rule we've been part - we are part of the ACMA consultative mechanism, and I think, you know, that would certainly be one option, but we haven't specifically considered that.

MR LINDWALL: Now, what else do I - the - if payphones, as in the proposal, get phased out - - -

MR PATTON: Yes.

MR LINDWALL: - - - can you see any gaps? And if there are, how should they be addressed?

MR PATTON: Again, we haven't specifically considered that, but I think we would probably point to the need for consideration as to where the mobile coverage is, so that - because already under the USO you can - Telstra can provide you with a mobile phone instead of a fixed line.

I don't know that there - it would be interesting to see what Telstra's usage figures are on payphones. I know in some remote Indigenous communities, for example, they're setting up the equivalent of a community hotspot.

So again, that brings us, I think, back - without it having been considered by the board, I think we'd come back to that's one of the reasons why we think that someone - and that someone is NBN - has to have an overriding responsibility to ensure that the USO actually works. So if there was a USO requirement to ensure that there was data availability, then there are ways that that can be done.

MR LINDWALL: Has Internet Australia examined or commented on the draft of the statutory infrastructure provision legislation that's been released recently?

MR PATTON: We haven't really - we're thinking about. We haven't - yes. It's - we tend to be - we tend to try to be as technology neutral as we can, and we try to analyse

legislation through the prism of the interests of internet users. There are plenty of technical bodies representing the industry that take care of that.

MR LINDWALL: Yes.

MR PATTON: We are thinking about it.

MR LINDWALL: Okay.

MR PATTON: We tend to wait and see, and at this point it's on our sort of watch list.

MR LINDWALL: Okay. Now, one of the trends that we have seen, of course, are more and more people using wireless - mobile technologies, and as you know, that we're moving in a few years' time to 5G, which will have higher frequencies, shorter cells, more cells, and hence larger throughput, one could argue I guess from that. And do you see this as an inexorable trend, that people in, say, the cities will move away from fixed line altogether?

MR PATTON: No. No, is the short answer.

MR LINDWALL: No.

MR PATTON: But the longer answer is, I tend to quote Iñaki Berroeta from Vodafone, who at a TELSOC function last year was asked that question, and his comment, which I think sums it up pretty well, is that 5G will be complementary with fixed line in an always-on world.

There are two specific issues that I would raise in relation to 5G. One is the availability of spectrum, and the other one is the relative costs of the technology. It will be for some time - according to the advice I have from our experts, it will be a long time, rather, before we will find a way to see 5G replace fixed line. And then when you look at all of the competing uses for 5G in relation to the Internet Of Things and so on, I think we would be naïve to think that 5G will replace fixed lines.

MR LINDWALL: Okay. And in relation to the comment of our previous presenter from OptiComm about NBN being a wholesaler of wholesalers, would you agree with that, or do you have any comment on that?

MR PATTON: Again, it's not something that I recall us having talked about in great detail, but I think we are very much of the view that we - I think everybody was hoping that the NBN as a wholesaler would improve competition, and again, just harking back to two other areas that we're concerned about, the Data Retention Act and site blocking, we're very concerned about any issue that prejudices the ability of smaller RSPs, in this case, and so I think where we're really - we're still struggling with the fact that we have 121 points of presence, and there were doubtless arguments as to why that was a good thing, but the question is, did we do enough to make sure that that did not unfairly disadvantage the smaller RSPs?

Again, the reason I use the car dealership analogy is because ultimately it's the manufacturer of the cars, the wholesaler of the cars, that is responsible for making sure that the car is what it is, and ultimately while you - to come back to your point, yes, you go in and you specify a particular car you want, but you go down to a fair degree of detail as to what you want, but there are basics that you know you're going to get, like brakes.

MR LINDWALL: Yes.

MR PATTON: And you know, the steering wheel's going to be on the right-hand side, and so on. And that's why we think that NBN really needs to take more account of the end result that we're creating, and if I were to express a personal point of view, I think that NBN has become a little bit concerned with being a wholesaler and trying to step back from the responsibility for actually getting it into people's homes. The original idea of an NBN was pretty much like when you went back to the PMG or Telecom where the responsibility was to make sure that the thing actually was in the home and working.

MR LINDWALL: And as car companies advertise - I mean, you could be sympathetic to the NBN, given that it has a large job to - - -

MR PATTON: I'm very sympathetic to the NBN. I think that they're doing a fantastic job, and as recently as today I've communicated with our members to reassure them that we are supportive of NBN, but we do think that NBN should be allowed to dump copper in the fibre to the node and move to the 21st Century.

MR LINDWALL: Do you have any final comments then, Laurie?

MR PATTON: No. No, we're very grateful for this opportunity, and we're always grateful for the opportunity to consult with you, and as I said earlier on, we're watching all of the submissions, we're reading the submissions, we're looking at what people are having to say, and we will doubtless then have further discussions as to how we think, from the point of view of the consumer, how this will best work.

Because obviously there will be people from the industry who will be looking at it from how it will best work for them.

MR LINDWALL: Yes.

MR PATTON: While we are concerned for the industry as well, we also want to bring that overriding consideration of what's best for the consumers.

MR LINDWALL: Indeed, yes, all right. Well, thanks very much.

MR PATTON: Thank you very much.

MR LINDWALL: All right, I think Ramah is next, is that correct?

MS VAN BEELEN: And Jane.

MR LINDWALL: And Jane yes.

MS VAN BEELEN: Excuse me, I just walked. It's 35 degrees outside.

MR LINDWALL: No, no, good to see you.

MS VAN BEELEN: Good to see you. Hi, Paul.

MR LINDWALL: So if you can both introduce yourself, and - like the rest of them?

MS VAN BEELEN: Sure. Jane Van Beelen, head of regulatory affairs at Telstra.

MR SAKUL: And Ramah Sakul, group manager, regulatory and social policy.

MS VAN BEELEN: So thanks very much for the opportunity to appear, and I think just wanted to commend the Commission on actually having hearings, and having hearings in different locations so that stakeholders can have a voice. They're certainly very challenging issues that the Commission has to grapple with.

Certainly in coming to this, Telstra has, you know, sought to understand the - you know, the trends that are, you know, not unreasonably driving calls for reform of the USO, but at the same time brings our tremendous experience in actually understanding the needs particularly of regional Australians, and you know, providing a fixed voice service, in particular, to all premises in Australia is no small task, it's no easy task. And there, you know, continue to be, you know, technology and economic changes in fulfilling that.

We thought we would just in our opening statement cover five key points, and then very happy for you to ask us further questions. In terms of the calls for change, I mean, we understand that. There has been huge technology change since the USO was instituted. Customer expectations are consequently changing. What services they want, what they want to do with them, how they use them, where they use them, how they interface with them, and the types of services that they're using their communication services to access, you know, has changed vastly.

And of course the market structure is changing, you know, principally with the advent of the NBN. In that context, Telstra has, you know, a contract with the government, but we're certainly open to change to USO policy, and in particular the changes recommended by the Productivity Commission in relation both to payphones and sort of a baseline broadband service that would provide voice.

But you know, those changes need to have that ongoing focus on particularly the needs of regional Australia, and so, you know, we need to ensure that that baseline obligation is able to be delivered effectively for consumers, and in our view that's not going to be the case until the NBN is rolled out, and until particular technology issues or challenges have been really thoroughly investigated.

So certainly in relation to the standard telephone service, we understand - or the basic service, we understand that broadband is now, you know, as important as voice, and that obviously it's possible to provide voice over broadband.

The changes, as contemplated, to move to, you know, the NBN effectively being the provider of that basic broadband service or baseline broadband service, you know, will, you know, require some migration of customers to different technologies, and you know, customers will understandably in some circumstances have some reservations, or certainly need to be managed through that process.

There's not currently any migration arrangements in relation to the fixed wireless footprint of NBN, and as you know, it's not currently able to be used to supply voice for contractual reasons, but certainly could be from a technology perspective.

We also think the refresh of consumer regulation is going to need to go hand in hand with this. You know, as the universal service provider today we are subject to substantial, you know, service quality regulation through the CSG and other regulation, and that reflects the fact that historically we were vertically integrated and able to control the quality of the service that we deliver.

As network provision and therefore, you know, substantive control of the provision of infrastructure is moving to NBN, then that's going to need to be revisited. And you know, importantly, we don't see NBN today as in a position to take on that, you know, provision of a baseline service upon request to all Australians, and even areas where they have rolled out, I don't understand them to be geared up to be able to respond to those requests as and when they happen with service level commitments that are appropriate for a baseline service.

On payphones, we support the Commission's recommendation to remove the obligation. You know, it is clear that mobile technology has substantially substituted for payphone use, and we're open to negotiating changes to the contract to affect that. The contract provides, you know, for a reduction in payment if the scope of the services we are required to provide is reduced, and drives cost savings, and that will, you know, from our perspective, create an opportunity to use the levy we don't have to pay toward payphones, you know, to invest in regional infrastructure.

We do see there's a bit of a question over areas where there is no mobile coverage currently. So that is something that would have to be looked at. And you know, that's really the key issue, I think, to understand what is the scope there to reduce the payphone obligation.

I thought we'd make just a couple of comments on NBN satellite, because that is something on which you, you know, clearly want to consider. So as I said, we've really taken a customer focus to providing the USO service, and our view was, not only contractually, but also technologically, the NBN satellite is not currently suitable to

provide voice, and that's why we use a separate satellite service that's optimised for voice to deliver our USO to customers who are reliant on satellite.

We do think that, you know, more analysis is needed on whether these issues can be solved. You know, if you really made an effort to optimise NBN satellite for voice, what could be achieved, and you know, would that sort of on balance solve the issues? So the two challenges, as you know, are quality and serviceability. On the quality issue, it's the double hop issue on satellite to satellite calls, and there may be technological solutions to that.

The serviceability issue we think is a bit more complex. The - you know, the reality is the satellite's subject to rain fade and today the broadband customers on Sky Muster experience that, and you know, so there's a real question as to how can that be addressed to ensure that, you know, customers who rely on this technology for their voice connectivity actually, you know, can do so.

Briefly on the funding arrangements, I mean, we of course support the idea that this should be a government funded policy. However, you know, the reality is we see that as unlikely. But in any event, funding is really something that needs to follow the sort of consideration of how the obligation might change.

And then finally on consumer safeguards reform, just to say that we do support your recommendation, that reform of consumer safeguards will be needed to reflect the restructuring of the industry, and in particular the recommendation to impose a baseline broadband infrastructure obligation on NBN.

As I said, this separation of the network from the RSP function means that the RSPs are not in a position to control much of the service quality, but they can control some, certainly in relation to broadband.

You know, our - we do envisage that if we can - there can be safeguarded consumer standards that NBN signs up to, then in a competitive retail market it may be that further regulation is not actually necessary of service standards, provided that competitive market is working well. So provided that perhaps there might be some requirement to be transparent and to publish service level commitments to enable customers to compare. But provided they have that opportunity then it may not be necessary to have retail regulation on that.

So I think that covers the key points that we thought would be worth covering, you know, as a start, but obviously happy to take questions.

MR LINDWALL: Well, thanks very much then, Jane. The - could I start with the - you know, the statutory infrastructure provision legislation that's been up for comment?

MS VAN BEELEN: Yes.

MR LINDWALL: Has Telstra provided any comments on that yet, or - - -

MR SAKUL: Yes, we'll be making a submission. That's due on this Friday.

MR LINDWALL: Okay.

MR SAKUL: So I think broadly we're supportive of the idea of NBN becoming the SIP, which would support our underlying argument that there should be a wholesale obligation at some point in time. In relation to those service level commitments, the SIP legislation allows the minister to impose service levels on NBN.

MR LINDWALL: Yes.

MR SAKUL: What we've said it's - we don't think you may necessarily go straight to regulation to solve this. I think there's not - or NBN should be given an opportunity to demonstrate what it can do in the absence of regulation.

MR LINDWALL: Yes.

MR SAKUL: And also with the ability for - with any SLAs that are set, that that is done in consultation with obviously NBN and the rest of industry to find - and consumers, obviously, to find that balance of serviceability timeframes and cost.

MR LINDWALL: That's good. Now, on - let's start with the satellite, if that's all right. You mentioned technological solutions to the double hop issue. Is that feasible, given that the satellites are already up in the - - -

MR SAKUL: Yes. So what our engineers have told us is that while you can't eliminate the latency from double hop, the way the traffic is prioritised or handled or the way it comes into the modem and how that's handled may be able to reduce the latency we've seen from it. So we show some initial testing that we've done.

MR LINDWALL: Yes, I saw that.

MR SAKUL: So the guys have said to me, look, there might be ways to better optimise that, and so what we've said is, well, maybe there's - before we sort of say this is solved, let's talk to NBN, let's sort of see - and the government, and see what's the best possible voice latency delay you can put on that, and then there's really a government call as to whether that's suitable or not.

And also worth noting that of the traffic, that's just one component of the traffic. Any call from a fixed service to a mobile or a fixed piece of infrastructure, there is no latency.

MR LINDWALL: Yes, I noticed your - in your submission on page 11 you outlined, you know, call from NBN satellite to NBN satellite, NBN satellite to USO satellite, and a little bit of latency, but I just wanted to check that, actually, that for NBN satellite or USO satellite for that matter, directly to a fixed line service, you - - -

MR SAKUL: The latency is not an issue with those services. So that's the quality issue, and as Jane pointed out, there's another question as to serviceability.

MR LINDWALL: On that, yes.

MR SAKUL: And we don't provide services over Sky Muster, so it would really be up to government and NBN to have a look at their own data, and maybe we need a bit more time, because Sky Muster is still sort of finding its feet in terms of serviceability and workforce planning and all those sorts of things.

MR LINDWALL: The USO Sat is on a different band, isn't it?

MR SAKUL: I believe so, yes.

MR LINDWALL: And it's less subject to rain fade.

MR SAKUL: Correct.

MR LINDWALL: What - that's the way it is, because obviously the NBN satellite is optimised for data. You would imagine why they've chosen that. But you've got how many customers on the USO satellite?

MR SAKUL: I don't have that data to hand, Paul?

MR LINDWALL: Don't have it? You know, it's in the early 1,000s, I thought, yes.

MR SAKUL: Yes, I think that's a fair - - -

MR LINDWALL: Is there capacity for it to increase significantly? I guess not.

MR SAKUL: Yes, I mean, we have the ability to make demand as it grows for those particular services, and that's how we've set it up.

MR LINDWALL: What else on the satellite? Are there anything else that you could - well, we've - we made an estimate that there are, of the 400,000 people in the satellite zone, about 90,000 wouldn't be in mobile phone coverage, and that's assuming 99.3% coverage of premises by Telstra's mobile network.

MR SAKUL: Yes.

MR LINDWALL: Of that 99.3 - does that take account of, you know, people having patchy coverage? Or how do you define the 99.3%?

MR SAKUL: Well, that's based on the estimates we've put based on population coverage and maps, and one of the things we've called out in our submission which you've probably noted is it's one thing to say there's an area of coverage, but it's another thing to say you can get a service within the particular premise.

MR LINDWALL: Yes.

MR SAKUL: And there are challenges to doing that. Now, there are solutions around that.

MR LINDWALL: Like antennae and - - -

MR SAKUL: Correct. Correct. And so what we've noted is, look, while that's - you know, while that's true in terms of the coverage, if you wanted to make - ensure quality service for customers at a premise, you'd need to account for the antenna - - -

MR LINDWALL: Okay.

MR SAKUL: - - - and also the - you know, the ongoing - the costs of setting it up, because I don't think customers would be very happy to move straight onto another service and have these upfront fees just for the privilege.

MR LINDWALL: So just to be clear for the record, 99.3% is not a guarantee that if you're in a premises and you don't have an antenna that theoretically you're in the coverage zone but you may not have a great service?

MR SAKUL: That's correct.

MS VAN BEELEN: That's correct. I mean, you're really looking at having some kind of service qualification process if you're going to rely on mobile or in-premise coverage.

MR LINDWALL: Yes, yes. And by definition, as far as I understand it, about 30% of the geographic area of - or maybe slightly less - are covered by the Telstra mobile network. It would become progressively or exponentially more expensive to expand it beyond - much beyond - I mean, it's growing as it is, but there must come a point where it becomes uneconomic, I suppose.

MS VAN BEELEN: That's right. I mean, our network covers I think about 2.5 million square kilometres - - -

MR LINDWALL: Yes.

MS VAN BEELEN: - - - but the Australian land mass is over 6 million square kilometres.

MR LINDWALL: Yes.

MS VAN BEELEN: But yes, in that 2.5 million square kilometres we've covered 99.3% of the population. But you know, at the end of the day we are incentivised to use the most efficient technology to provide the USO today, subject to the copper continuity obligation. You know, we are looking at whether in some circumstances wireless

infrastructure may help with that, but it's - building out wireless to 100% of the land mass is never going to be the most efficient way - - -

MR LINDWALL: No, no.

MS VAN BEELEN: - - - to supply voice services to Australians.

MR LINDWALL: The - sometimes you can buy sleeves now for your mobile phone to get a satellite phone service. Traditionally telecommunications have come down in price over many years quite dramatically. Is that likely for satellite services, do you think?

MR SAKUL: Well, I think some of the challenges with satellite services is not necessarily - it's the infrastructure that you have to maintain for the premises, and the remoteness of particular premises. So that's always -that's the ongoing challenge, not necessarily the infrastructure that's in the sky, it's maintaining the existing infrastructure that's in the ground to date.

MR LINDWALL: Yes. Now, we know that Telstra has quite a few USO customers who use their digital radio concentrator, which is extended into fairly remote areas or quite lengthy runs. The - that's pretty old technology, and I've heard that you've had to cannibalise parts to repair things. How long can that feasibly be continued, I guess?

MR SAKUL: Yes. Look, we're always looking at other more efficient ways to deliver the technology, and as you've pointed out, there are some limits to some of this equipment and how long it can be there.

MR LINDWALL: Yes.

MR SAKUL: So at this point in time we - you know, the advice that our engineers have told me is that there's still life in the infrastructure yet, but yes, we'll have to be looking at it. That's why we're always looking for other efficient - other technologies, such as you noted, we have a fixed wireless 4G solution for some of those customers. Some of those customers, you know, will have to look at other options.

MS VAN BEELEN: Including potentially satellite.

MR SAKUL: Correct.

MR LINDWALL: So yes, it's a - you know, all services are not 100% reliable. No service is 100% reliable. You're using technology as you best can with - as economically as you can as well, obviously, to achieve and end to sell to customers, but you can't guarantee entirely that - - -

MR SAKUL: And to ensure - and to ensure a level of customer experience too, so that's - - -

MR LINDWALL: Yes, yes.

MR SAKUL: And so, as we noted, our USO Sat isn't obliged to solve the double hop issue, but based on the feedback we got from our customers, they made it clear to us at the time that this was an issue for us, and we looked to solutions to solve that, and we're looking to other solutions and looking to work with NBN and see how can we best optimise that delay.

MR LINDWALL: Now, as you know, and because of the way the USO contract works, there's limited use - and limited information about the number of users for STS services and digital radio concentrators and that. Is there anything beyond what you've provided to the Commission already that you're able to provide on that, or how the $300 million a year is being used?

MR SAKUL: No, not at this stage, and what we've put the offer to government is to - if you want to start - if you'd like to talk to us about changing that and how we can do this more efficiently and change the scope, we're open to talk to them about that.

MR LINDWALL: It's something that obviously the government has to - if they took up our recommendations in the draft report - and you've made it quite clear, and I think that's quite reasonable, you should wait till the NBN is completely rolled out.

MR SAKUL: Yes.

MR LINDWALL: And then - because between then, that's a while off, 2020 say, there's a period that you can talk to the government about negotiating change to the agreement.

MS VAN BEELEN: Absolutely, although we do think that payphones could be looked at earlier.

MR LINDWALL: Earlier, yes, yes.

MS VAN BEELEN: It's not really NBN dependent. So it will be a question for government whether they want to start that discussion earlier.

MR LINDWALL: Yes. In your submission you've raised the point about community payphones and options instead of payphones. Have you got anything that you'd like to elucidate on?

MR SAKUL: Yes. So I think what we said on that in relation to the community, there is already a community phone program.

MR LINDWALL: Yes, yes.

MR SAKUL: What - we think that's quite a separate objective to what we are currently delivering within our current payphone scope, which is why there is already another program to deliver that. So what we were saying there is, obviously there is an

opportunity for the government to consider that on a stand-alone basis, and we noted, look, that should be subject to government funding and an open - you know, an open tendering process would make sense to us. We see that as quite separate to change to the payphone obligation.

MR LINDWALL: Yes, yes.

MR SAKUL: So what we're signalling is we don't see that as the current payphone arrangements morphing into a community phone arrangement. That would be run separately too. So you'd remove the payphone obligation - - -

MR LINDWALL: Yes.

MR SAKUL: - - - but concurrently look at what you want to do separately for community - regional remote communities with a community - - -

MR LINDWALL: And there are some novel technologies that can be used, and ones that can be targeted. So you broadly agree with our approach, I guess, from what I'm understanding, that rather than having a universal, in the alternate once it's been discussed and negotiated - rather than having a universal obligation, it should be targeted to those in need, whether it be for accessibility reasons or availability reasons.

MR SAKUL: For that particular - - -

MR LINDWALL: Yes.

MR SAKUL: - - - issue you raised relating to remote communities, yes.

MR LINDWALL: Remote communities, and remote Indigenous communities too.

MR SAKUL: Correct, yes. Although we didn't see there was a specific remote Indigenous issue. We saw it as a remote community issue - - -

MR LINDWALL: Yes.

MR SAKUL: - - - of which there are a lot - a significant proportion of that would be remote Indigenous communities.

MR LINDWALL: I think we asked in one of our information requests, are there any reasons why you would have specific in remote Indigenous programs rather than just for remote users. Can you see any benefit one way or the other?

MR SAKUL: I think our view was, look, you know, if it's a remote community issue it's an issue for all those types of communities.

MR LINDWALL: Yes, yes.

MR SAKUL: And which we are totally supportive of the Indigenous communities as part of capturing that.

MR LINDWALL: Yes. And obviously different communities have different challenges. Some of them are not wedded to a particular premises - - -

MR SAKUL: Yes.

MR LINDWALL: - - - and they're more mobile, obviously, so - are the - going back to the satellite point, and of course the 400,000 people that are supposedly in the satellite footprint, and we made an estimate of 90,000 not having mobile coverage. Of course, I'm now clear that that means that of course the other 310,000 would have to have - some of them would have to have pretty good antennae and so on.

But are you able to - do you think that 90,000 is a reasonable estimate, or are you able to improve on it?

MR SAKUL: I don't have that data to hand, but it's certainly obvious if that's something if the government was to come to look at what we want to do in terms of solution - - -

MR LINDWALL: Yes.

MR SAKUL: - - - that's obviously one of the things that they would want to talk to us and understand the scope.

MR LINDWALL: So it's not - I mean, do you accept our logic that if you have multiple redundancy in services, you probably can forego one option, in this case the USO service? So there's - if you have a reliable mobile phone service and an NBN service, however we define the satellite service in terms of a baseline, which of course is another issue, then that would be a sufficiently good public funding for that?

MR SAKUL: So are you saying that if there was infrastructure that was available to a premise, more than just one type - - -

MR LINDWALL: Yes.

MR SAKUL: - - - would - could it be considered that the USO is met in those circumstances? I think it would depend on the extent to which there was an obligation to supply in those circumstances, and how.

MR LINDWALL: Yes.

MR SAKUL: So for example, would the wireless operator be obliged to offer a voice service to that particular premise, as a stand-alone basis, but again, that's all really dependent on how the overall structure and the regulatory arrangements are set up from the government at the - and a reform option.

MR LINDWALL: No, it's - - -

MS VAN BEELEN: So it's the obligation and then the standard.

MR LINDWALL: Yes.

MS VAN BEELEN: And then the, you know, confidence that the provider is, you know, obligated and able to meet that standard.

MR LINDWALL: Now, we've spoken earlier today about communication between the wholesaler and the retailer and the customer in respect of NBN services, and the - sometimes people are not getting the type of service they expect. Why isn't competition helping their - there are quite a lot of competitors in the retail market about - I haven't seen personally any examples of retailers saying that, "We will guarantee you a minimum of X speed download and X speed upload if you take this package."

MS VAN BEELEN: Yes, I mean it is something that's been called out by a number of stakeholders, just that there are probably some in the community. Certainly at a forum I was at yesterday we were hearing from regional communities that there is some confusion about what, you know, is on offer from the various RSPs over the NBN.

The reality is that, you know, the wholesale service is provided on a non-discriminatory basis - - -

MR LINDWALL: Yes.

MS VAN BEELEN: - - - but the RSPs are able to, you know, differentiate the service they provide, including by the amount of CVC capacity that they acquire from NBN.

Telstra has recently announced that we want to do more to provide information to our customers about the speeds that they can expect, and to check that they are getting the speeds that we have represented that they will be able to get.

So later this year we're planning to roll out the capability to do that, and you know, we do hope that that will, you know, enable consumers more broadly to be more - to be better informed and to be able to compare, you know, the different service offerings to understand value. Because, you know, otherwise they can face different prices but not understand the different - - -

MR LINDWALL: Exactly.

MS VAN BEELEN: - - - speed or quality that they might be able to choose from.

MR LINDWALL: Because in the end, the customer wants a particular type of speed that he or she wants to contact, but obviously also you're able to distinguish as a retailer by how many - how easy it is to contact you at certain hours of the day, whether it be by

phone or whether it be by a chat or something like that, to get a service response if there's a reliability problem or something like that.

MS VAN BEELEN: Yes. I mean, I was talking particularly about the broadband speeds that customers can expect, but of course there are aspects of service quality around - which is what is currently regulated under the USO, around responsiveness to - for activation and for fault repair.

And you know, and of course, you know, contactability is perhaps another element of the way RSPs compete.

MR LINDWALL: Yes, it's quite important for many people, I would imagine, so - now, people have generally said that mobile phones are a complement to broadband rather than a substitute, although we do see increasingly some people choosing just mobile, and I've asked before about 5G. How do you see that changing that dynamic?

MS VAN BEELEN: I think we would agree with the comments we heard earlier, actually, from Internet Australia. They're very much complementary, and it is part of people, you know, wanting to access content and applications and services wherever they are, using, you know, the most efficient or best value technology available to them where they happen to be.

And so it's really that they'll be moving between the mobile and fixed world in a complementary way. So we would never have said that the technologies are complete substitutes.

MR LINDWALL: No, that's true. And what's your current timeline for 5G service, do you think? Or when do you expect it to start be trialled?

MS VAN BEELEN: Telstra's announced that we would like to pilot some 5G services at the Commonwealth Games in Brisbane in 2018, so we are working towards that. After that, you know, it would be a gradual process of commercialisation and to scale.

Of course, that's dependent on the spectrum being available, and the ACMA is currently consulting on the 3.6 gigahertz band and the 1.5 gigahertz band, and also, you know, more broadly their spectrum outlook for the future as to what spectrum, you know, needs to be prioritised for 5G.

MR LINDWALL: Am I not mistaken that because 5G operates with a higher frequency and smaller cells that you actually have less problems with bandwidth - with spectrum than you would with the wider ones where it's more contested?

MS VAN BEELEN: Well, you need a range of spectrum. 5G is really a range of services, so - and I'm not the engineer, can I just point out.

MR LINDWALL: No.

MS VAN BEELEN: But you will still need low band spectrum for 5G to provide the high speed - you know. And also the distance, you know, and penetration, that low band spectrum, like the 700 megahertz spectrum, delivers. Particularly in regional areas, that low band spectrum is still going to be important to get the distances. Then - you know, but you still need then large chunks of spectrum, you know, and currently that sort of 3.4 to 3.7 gigahertz band is looking like being the first globally harmonised 5G band for that, and so certainly we've advocated to the ACMA that they need to progress the making available of that spectrum.

And then you have the very high band spectrum which is for that sort of, you know, millimetre wave technology, which is, as I understand it, quite short distances, but then can be repeat signalled, and you know, that's also a priority, and we've asked that the 25 gigahertz band be prioritised for that.

MR LINDWALL: Okay. Now, one of the messages, and we've alluded to it already, talking about the satellite areas, and - there's a dilemma here. There's - NBN is rolling out a very large infrastructure project, and it's very easy to go to regional towns and saying, "It's all coming, it's just a teething problem," and all the rest of it, and they're frustrated because they don't have a service that they like, and they see other people in the cities that have much better services, and they - well, they're concerned about that.

Are there any practical things that can be done beyond what was already being done that could address some of these gap issues in time, really? Because I think we can be reasonably confident that NBN can achieve its objective by 2020, but there's that period between now and then when there will be increasingly frustration in regional areas, yes.

MS VAN BEELEN: Yes, no, we certainly, you know, absolutely understand the frustration. It's real. It's not just, you know, residential customers but it's actually, you know, the agribusinesses and big sort of, you know, opportunities for regional development that rely on internet connectivity.

So they are, you know, crying out for more coverage, more coverage investment.

MR LINDWALL: Yes.

MS VAN BEELEN: You know, in terms of what can be done in the meantime, we do think that the government's Mobile Black Spot Programme is really important in bringing mobile connectivity to areas that don't currently have coverage. We think that investment in mobile infrastructure is going to continue to be really important, and it's very important that the regulatory environment continues to encourage that investment.

Telstra also has actually announced its investment plans. You know, we've disproportionately invested in mobile infrastructure over the last decade. 15% of our mobile capex has gone to the last 2% of the population, and we've committed to continue that, and we've actually announced co-investment plans as well, so making some funds available to co-invest with, you know, local customers, stakeholders, councils, state governments, et cetera, and as part of the Mobile Black Spot Programme.

But all of that, you know, requires a regulatory environment that continues to encourage that investment. You know, the other thing that Telstra is trying to do is to improve the DSL experience for customers. I mean, the reality is that usage has gone through the roof. You know, it's called the Netflix Effect, but it's basically - you know, it's video, and as I said before, it was what people are using their broadband services for, you know, is just - you know, is much greater than previously.

And that, you know, has caused some capacity challenges, you know, in fixed and mobile networks, frankly, in order to try and improve the experience of our DSL customers. I mean, we are trying to optimise investment, because obviously the NBN is coming, and any investment we make in our DSL network now is effectively redundant - rendered redundant by the NBN.

But we do have some plans in place to try and optimise and get the very best experience out of DSL, including putting some more investment in wherever we possibly can if there's, you know, more than, you know, 12 months to wait until the NBN comes.

So they're a couple of things that we're doing. I don't know if there's any other options we have in mind.

MR SAKUL: I think you've covered them. I think - just to reinforce the benefits of the regulatory environment that is encouraging that ongoing investment.

MR LINDWALL: Yes, and not discouraging investment, yes.

MR SAKUL: Correct, yes.

MS VAN BEELEN: Yes.

MR LINDWALL: Now, if you could indulge me, I was going to ask you a question that's on another topic that's related. I'm doing another study on regional economies, and it's about producing a metric about ranking regions for their resilience, and trying to come up with policy lessons.

And I'd encourage that Telstra looked at and made a submission into that at some stage, but I think it's a reasonable assessment that one of the important features for a region as being strongly resilient and growing is its communications ability. In today's society, that would be - I don't think you'd disagree with that.

MS VAN BEELEN: We'd absolutely agree, and it's what we're hearing from our regional customers and stakeholders.

MR SAKUL: Yes.

MR LINDWALL: It allows them to market their product internationally and so forth.

MS VAN BEELEN: Yes. Well, particularly in the agribusiness sector. I mean, you know, farming equipment, much of it these days is actually able, you know, to communicate via networks.

MR LINDWALL: Yes.

MS VAN BEELEN: But we need technology. And you know, it's not all about mobile networks.

MR LINDWALL: Yes, yes.

MS VAN BEELEN: There are other technologies which can actually work to, you know, extend the coverage or enable that equipment to communicate and ultimately get back to the network.

MR LINDWALL: Within a farm, yes, yes, yes.

MS VAN BEELEN: But yes, there's absolutely - so our agribusinesses and our other regional businesses are all going to rely on communications capability.

MR SAKUL: And there's a lot of clever things they're able to do now with narrowband type solutions where - you know, which are - where you have devices out in the paddock - - -

MR LINDWALL: Yes.

MR SAKUL: - - - which use very small bits of data that's not time-dependent which you can just send and the signal can be picked up when it can. And so there's all these sorts of smart solutions that will be available - which will become available to agribusinesses, but it's - yes, it's how do you get not just the service to the farmhouse but to the top paddock as well, is really the enabler in all this.

MR LINDWALL: Exactly, and some of those technologies are phenomenal. The soil monitoring, you know, the amount of moisture, and so you can optimise irrigation for example and fertiliser usage and - - -

MR SAKUL: And that's the application narrow-band type services have. The Internet Of Things.

MR LINDWALL: Everyone thinks of broadband, but that makes a good point. Now, I might just check that I haven't missed anything that I should ask. I think I've covered pretty much everything. Oh, yes, you did raise in the submission about the CVC pricing, and how that might affect Telstra's customer base, given that you have a proportionately high, you know, voice only type customers. Would you like to elaborate on that?

MR SAKUL: Yes. I mean, I think we've sort of been speaking to a lot of our consumer groups, and obviously we have a strong connection to the low income area. I think we

have raised concerns with NBN and others in terms of the impact of the change of the dimension based pricing approach to CVC, whereby - - -

MR LINDWALL: There's discounts for large customers.

MR SAKUL: - - - the discount with your larger customers. So you know, I think our central premise is if we're competing with other major players who are competing at sort of high consumers, essentially the price - the per-unit price we pay for those services will be higher because of our large proportion of small use and voice only customers.

And I think our central premise is there needs to be some solutions around how that's being done, otherwise that will have flow-on implications for that group which may be impacted by increasing prices to make up for the losses we'll make on those - - -

MS VAN BEELEN: There will certainly be less providers competing to provide services to that sector of the market, and that is obviously not in their interests.

MR LINDWALL: So you're in continuing discussions with NBN over that, I presume? Yes.

MS VAN BEELEN: Yes.

MR LINDWALL: Nothing more you can say, I guess, about whether you might have a positive outcome from Telstra's perspective?

MS VAN BEELEN: No. I mean, NBN is consulting on it - - -

MR LINDWALL: Yes.

MS VAN BEELEN: - - - you know, with their customers, and we're party to those consultations.

MR LINDWALL: Okay. That's good. The - oh, about reliability of the networks, which of course Telstra does report upon the overall reliability in that, are you able to distinguish between reliability of the different parts of the network? Like, the digital radio concentrator we spoke of earlier, and - - -

MR SAKUL: Well, I mean, we report as per the performance measures that are set out in the CSU regulation, which is not by technology but by area, so the reliability of the different areas, so we don't have reporting by particular technology type.

MR LINDWALL: No, I didn't think so. And I think that's - missed nothing? All right, well, thank you very much Jane and Ramah.

MR SAKUL: Thanks, Paul.

MS VAN BEELEN: Thank you.

MR LINDWALL: Now, ladies and gentlemen, that's the end for our official presentations, but now I can invite anyone else who wants to come up and say something, or who wants to comment upon previous presentations, it's now your opportunity. Does anyone want to do so? Please. Please come up to here, state your name and organisation if you do represent one, and make a statement, please.

MS RAICHE: Well, I'm not sure I'm representing my - Holly Raiche, and I'm not sure I'm representing my organisation, but I do have a question. My understanding about NBN Co., certainly back in 2010, was it was essentially a government-funded instrumentality to provide infrastructure, whether you call it the new SIP or whatever you call it, the universal communications infrastructure provider.

The legislation that is in draft form that we're all commenting on suggests a levy, and I have a very real question why you need a levy for a government-funded organisation. I would have thought that, to the extent that the government has said, "Thou shalt provide universal infrastructure, and we fund it, and by the way, we're taking 7% of your revenue anyway," I'm not sure of the levy.

And particularly since it's just carrier to carrier. It seems to me that the - if you'd taken that section and said government funds it, the costs, if there are costs - and I think there are additional costs for retail service providers, CVC, backhaul and so forth - that may be where you would look to subsidise high cost areas where there is not the possibility of a business case for a retail service provider, even though there's infrastructure.

Now, we've heard from OptiComm already saying this new structure, which is a new structure - suddenly you've got carrier-only, where you used to have carrier and carriage service provider, and it now relates to infrastructure, we think. It's a very different structure, and I'm just - I'd welcome comments on what people think about that.

MR LINDWALL: Yes, well, we're welcoming comments on what people think too.

MS RAICHE: Mine's a question.

MR LINDWALL: You know, all I can say is that something costs X dollars and governments can fund it in a variety of ways. They can appropriate money from the budget directly - - -

MS RAICHE: Yes.

MR LINDWALL: - - - they can have levies. And as you know, in all parts of government areas it is funded in different ways, so sometimes there's good logic to things, and other times there's not, and on this particular occasion I can't really comment at this stage, but - - -

MS RAICHE: I'm not expecting you to say there's not logic.

MR LINDWALL: But in the end, governments have to fund - if something's loss-making it has to be funded some way, yes.

MS RAICHE: Jane will understand that Telstra used to fund lots of loss-making.

MS VAN BEELEN: Yes, we still do, probably.

MS RAICHE: Exactly.

MS VAN BEELEN: The - - -

MR LINDWALL: Did you want to come up, Jane?

MS VAN BEELEN: I can have a go, if you like.

MR LINDWALL: Well, you might stand near the microphone then.

MS VAN BEELEN: I mean, I'm not going to defend it, but I just - - -

MR LINDWALL: That's okay, yes - - -

MS RAICHE: I didn't expect you to.

MS VAN BEELEN: The - I mean, the NBN as originally conceived was wholesale only and a monopoly, effectively.

MS RAICHE: Yes, yes.

MS VAN BEELEN: And so - and it was to have uniform national wholesale prices, and whatever returns it was going to generate, it was going to generate them, you know, on that basis.

MS RAICHE: Yes.

MS VAN BEELEN: The incoming coalition government basically facilitated infrastructure competition with NBN in certain - well, wherever, really, but under certain conditions, under the supervised network obligations.

What that meant is that there's the scope for what is known as cherry-picking.

MS RAICHE: Yes.

MS VAN BEELEN: So it means that NBN doesn't have a monopoly anymore. And so the idea was not to impose a levy on all and sundry to contribute to the loss-making regional services, because that was already inherent in the averaging that occurred inside NBN, but the idea was meant to be to simply, where the cherry-picking occurred, make

sure that those network operators weren't draining the source of the funds for the regional higher-cost infrastructure.

So the idea was that the cherry-picking operators were the ones that ought to contribute to the levy, and that NBN implicitly had the levy in there because their price was averaged nationally. Does that make any sense?

MS RAICHE: No, it makes perfect sense, except - I completely understand what you're saying. But I'm not sure that the legislation actually is going to do that.

MS VAN BEELEN: No, I agree with you, because the application of the levy is now much broader than the leakage issue that it was meant to be designed to address.

MS RAICHE: That was my question, thank you.

MR LINDWALL: All right, thank you both, then.

MR PATTON: Sorry, can I just for the record - Laurie Patton. Can I just point out that Holly Raiche is on our board, and is speaking entirely in her own right.

MS RAICHE: Yes. I'll wear another hat.

MS VAN BEELEN: I'm just trying to be helpful.

MS RAICHE: That was my understanding, thank you.

MR LINDWALL: I hope we haven't confused our - - -

MS RAICHE: No, no, no.

MR LINDWALL: Anyway, please. Final comments? Yes. Please state your name again, Malcolm.

MR MOORE: Yes, thank you. Malcolm Moore. Two points come up. When I was rolling out - I was the supervising engineer for Telstra's - or contracted to Telstra's cable internet rebuild in 19 - sorry, in 2005, that was in Sydney I was doing that partially, $2.5 billion contract with Silco at the time. It was about $670 million in Sydney, it had 124 sites, I think, in about eight months.

The way of connecting the cable modems in the premises uses the MAC address, and the MAC address could then work back to a database I think was in Adelaide, if I remember correctly, at that time. So basically it didn't matter where you had your modem, you could pick your modem up from Sydney, you could take it down to Melbourne and plug it into Melbourne, it would work. You could put the same modem, take it up to Brisbane, plug it in there into that network, it would work too.

If you put in another modem that didn't have a MAC address attached to that database, just say, "I know you," you couldn't connect. If you take that one step further, you don't need any POIs, any points of interconnect. You can absolutely get rid of points of interconnect entirely. You do not need them one bit at all. So that would save Telstra a couple of billion, maybe. It would save Optus, it would save NBN, a massive amount of money to do that, with a bit of cooperative competition, put it that way.

The other part I was going to say was the optical fibre - oh, if Telstra is running at a loss in the country areas, then wouldn't it be logical to just have the entire country areas handed over to the NBN, thank you very much, no cost? It makes sense to me. Because if Telstra wants to run to profit and it's a cost centre, they don't want it, put it in the wholesale manager area, and let the NBN wholesale look after it.

The third thing - makes lots of sense - - -

MS VAN BEELEN: I'm sure they don't want it, but anyway.

MR MOORE: I'm sure they don't either. The other thing is, I'm not sure about the actual usage of the optical fibre that is in the country areas in Telstra. I know there's about 60,000 kilometres of it. My gut feeling is that most of it is either six fibres or 12 fibres. It's a long time since I've been involved with it.

My other gut feeling is it's probably being used in most cases for two megabits per second voice, that's all. And when they say, "Sorry, it's occupied," I say to myself, "and what about the other gigabits or 10 gigabits you could put over the same bit of optical fibre to provide broadband in country areas, that you could do for almost nothing?"

So I look at that and say to myself, we don't need to have satellites in a whole lot of these areas out there. We can have broadband rolled out very inexpensively in country areas. It just needs a bit of common engineering to put this over the top and have the existing voice two megabits slotted in on the bottom of the optical fibre as it is.

That's just my little - hope that helps.

MR LINDWALL: Thanks very much. It does, it does, yes. Now, anyone else want to come and make a comment? Forever hold your peace otherwise? All right, well, I'll adjourn the proceedings and we'll resume tomorrow here - here tomorrow at - what time do we start? 10 o'clock tomorrow, is it?

ASSISTANT: 8.30.

MR LINDWALL: Sorry, 8.30? 8.30 tomorrow. 8.30. So thank you everyone, and - - -

MATTER ADJOURNED AT 12.36 PM UNTIL
WEDNESDAY, 1 FEBRUARY 2017 AT 8.30 AM