

**GLA Oversight Committee – Tuesday 18 July 2017
Transcript of Item 5 – ESN Network**

Len Duvall AM (Chair): In terms of setting the scene for the emergency services mobile communication programme, if I can start with - it is important that we place this on record - the fact that in 2011, the Government set up a review of the communication system on emergency services nationally, for Great Britain. The review concluded that the best option was to replace the existing Airwave radio-based communication system with a new Emergency Services Network, which is ESN for short. We may be hearing that often during this questioning session. The ESN programme is run by the Home Office and co-funded by the Department of Health and the Scottish and Welsh Governments.

In 2015, the programme awarded three main contracts - principal contracts, we could call those - for the provision of ESN. One of these was to Kellogg, Brown and Root to design, build and test a new system. The second was to Motorola Solutions Inc. for user services including customers and services support, developing new applications, providing some of the network functions and providing an app store and device approval service. Then a third contract was to EE Limited to provide a mobile service, including increasing network coverage, improving network resilience and operating the network. Subsequent to that, Motorola bought out one of the existing parties. We are in a situation, it is quite clear - this may impact on some of the questioning - where Motorola was providing the existing service of Airwave but will also be a major provider for the new ESN service as well.

Then there have been some smaller contracts in relation to London and some of those are still to be tendered, if that is the right phrase, or to be awarded. One of those, we understand, is a grant to Transport for London (TfL) to provide ESN coverage on the London Underground and a caller framework for devices for the emergency services for all of you. Various contracts for device installations, control rooms, upgrades and transitional support are still to be awarded. I am seeing nodding there. No doubt you can update us.

Can I begin, then? In terms of the Home Office, this is a national programme that is rolled out regionally. What do you act as? I just want to clarify in my mind the role of Home Office as the lead co-ordinator or facilitator. They are the overseer of the programme and the money. Is that fair to say?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We hold the central contracts, yes.

Len Duvall AM (Chair): You rely on regional players - emergency services, other partners, TfL - for implementation of the programme?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We will responsible, obviously, for building the core system, but force by force and region by region, the

implementation and the rollout in their areas - issuing the devices to officers, installing the vehicle devices - will obviously fall to the emergency services themselves. We are helping co-ordinate that.

Len Duvall AM (Chair): Just take us through the aims of the programme and what you think it will deliver over and above where Airwave was.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): What we have at the moment in Airwave is a system that has worked and been successful on its own terms, but it is at the end of its contract life and it is a technology that is fairly end-of-life. It is voice with very limited data, basically voice and a little bit of text messaging. What ESN will provide is both critical voice and critical data, better coverage, and much cheaper and faster data. It will enable much better inter-operations working between the emergency services and it will be considerably cheaper.

Len Duvall AM (Chair): In parallel, some of our notes say the new ESN service is a cheaper service and more effective. The promise is that it will be as good as Airwave.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes.

Len Duvall AM (Chair): It should be adaptable for future changes in technology. That, in essence, is it.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Exactly right. Even in an urban city like London, you will have considerably better voice coverage and data coverage. For example, the in-building coverage. There is no current contractual entitlement to in-building coverage in the Airwave system, whereas there will be for ESN. There will be between five and ten times more masts in the London area. Because you are building on the coverage that the general public automatically get you do not need to come to separate agreements with Airwave every time something new gets built, like the issues we had with the London Stadium recently. On the data side as well, if a member of the emergency services is sitting next to a member of the public the member of the emergency services will get a better data service, up to twice as fast in some circumstances. As I say, we are building extra resilience and the emergency services always have absolute priority and pre-emption over the general public.

As you say, the reason it will be both cheaper and it will be able to take advantage of future technology is because you are building on the consumer network, the Terrestrial Trunked Radio (TETRA) network that ultimately got relatively little investment or research and design (R&D) because it was only used by what, in international terms, is not a very large customer base, maybe 10 million users internationally, whereas this will be built on a system that absolutely everybody is using. We would expect seamless integration from 4G into 5G, enabling the emergency services to get the benefits of all of that, just as you and I as consumers do.

Len Duvall AM (Chair): How is the programme progressing at national level?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We are making good progress through the testing and the procurement. As you know from the Public Account Committee (PAC) reports, we had a contract change notice that changed the delivery dates a little bit. What is broadly happening is that we are going through a considerable series of tests. We will take as long for the testing as is necessary. We are passing through the stages satisfactorily but we have had a stage of passing through not quite as quickly as we would like, so we are working with the suppliers to see if there are any further implications for timings. From what we are seeing of the stuff that is being rolled out, we are confident it works. We have seen lots of demonstrations. All the functionality we are confident is deliverable and is going to be delivered.

Len Duvall AM (Chair): In terms of that testing, is that the issue that is causing the internal debate inside the Home Office about - 'reprofiling' is not the right word - looking at your implementation dates and seeing where it is?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes.

Len Duvall AM (Chair): It is the testing that is pushing you off a little bit?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We are not going to skimp on that one. We are not going to declare the system ready until it has been through the most thorough, rigorous testing, both internally and in a series of trials. Then users will probably want pilots. They will need to be able to have full confidence that the system will work under all the operational scenarios and that is what we are working with the suppliers to do.

Len Duvall AM (Chair): If we can start with questions to our other guests, I will start this end of the table because it is really about emergency services and we will end up with TfL in terms of their role. What do you think is your role in the ESN programme?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Thanks, Chair. Stephen [Webb] has covered some of the key issues for us. We are in a state of preparedness, really. For BTP in particular, we need to make sure that our infrastructure is ready to accept the new system when it comes in, which clearly has some cost and development implications for the force. More importantly, it is understanding that functionality once it is available for us to test. We want to be clear on the coverage. For us that has a national implication but in London in particular it is Tube tunnels, penetration into the actual trains themselves and also that coverage while we are travelling at speed. We could be on some of the urban services. That means our officers need that functionality. Testing all of that coverage capability is one element.

Second is the devices themselves. They do certainly offer new functionality, which will be a real step forward in the way that we can engage with officers. The push-pull functionality of information and data will be quite an advancement on what we currently have. We have had some discussions just in the last week at our programme Board around some functions that exist in Airwave, such as back-to-back. If we are operating in a tunnel and we cannot get Airwave

service, the devices work back-to-back currently. We will want to assure that those kinds of functions still exist before we can sign off.

Then the issue around cost. Again, it has a slightly different implication for us: we are not a Home Office force. Our funding model is very different. We enjoy a subsidy at the moment on Airwave that will not exist. Our whole debate around what this means in terms of cost mark-up will be different, I expect, than it is for other forces. In the scheme of the project, I suspect there will be great savings.

Len Duvall AM (Chair): We will come back to finances later on. Are you represented on the Home Office Emergency Services Mobile Communications Programme (ESMCP) Board?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Yes, very much.

Len Duvall AM (Chair): Is that because you are a national organisation?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Yes, and I represent also the other national forces, the Ministry of Defence Police (MDP) and Civil Nuclear Constabulary (CNC).

Caroline Pidgeon MBE AM: Could you let us know what “back-to-back” means?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Yes, sorry. It is just a functionality where the devices can talk to each other without the need for a network to support that. It is like a local network, so that officers in the same environment can talk to each other without needing to ping off anything else. Hopefully that is a sensible explanation of that.

Caroline Pidgeon MBE AM: Thank you.

Len Duvall AM (Chair): I will take nods for this but generally all the emergency services in terms of transport all sign up to the aims and objectives of the new system? That is what you want and you think you can get? Yes? That is one of the questions.

Let us turn to the Ambulance Service then. Take us through it. What is your role within the programme and who represents you on the Board?

Ian Hough (National Service Director, Ambulance Radio Programme): Thank you, Chair. If I start from a national perspective, the approach for ambulance is slightly different from police and fire in that the Department centrally funds and there is a central team that is responsible for the other areas Stephen [Webb] has talked about, preparation of control rooms, providing devices and mobile applications. I am the lead of that team. I represent the Ambulance Service within the ESMCP governance but we are also responsible from a national perspective for delivering those elements that are, for the other emergency services, done on a more regional basis.

Vic Wynn (Acting Director of Information Management and Technology, London Ambulance Service): I am the Information Management and Technology (IM&T) Director at the London Ambulance Service, but I have two roles. The other role that I have is representing all the information technology (IT) directors across the country and other IM&T leads within the national programme. There are two of us from that group who sit on the Programme Board within the Department of Health.

I represent our input to that forum but also within the service, I am responsible for making sure that what the two programmes are delivering to us is fit for purpose and has been tested - we are planning to do a lot of that with our London colleagues, not just as London Ambulance Service - and, moving forward, that we enable the transition in terms of training, installations and the control room work, but also look to exploit the opportunities for the future. That is what I do within the Ambulance Service. Kevin [Bate] is one of our senior users within our internal project and I work with Kevin to deliver that internally. The Department of Health approach of having something unified across Ambulance Services in the middle to deliver everything else is quite valuable to us because we can concentrate on making sure that what is delivered by both programmes is fit for service within the Trust.

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): For fire, I would say that our engagement has been very close with the programme throughout the whole life of the project. As all users were, we were very engaged in defining the requirements for the programme. Our role now continues to be to ensure those requirements are delivered and that there is no pull-back from those as we go through, for whatever reason. We are represented at board level through the National Fire Chiefs' Council. We have representatives from each region that come together as a group and then the chair of that group represents us at board level. Our funding, as we will talk about later, is different again for the Fire Service.

The challenges we have are the same as everybody else, ensuring that the system rolls out and meets our requirements, that we test it, and that there is the inter-operability solution because there is that transition from Airwave to ESN and during that period two systems will have to work together. It is how we gain confidence that that will still meet our requirements during that interim period. Then it will be testing, along with our colleagues in London. Perhaps we will come on later to how we are working together as the emergency services in London. We are quite joined-up in our approach to that at the moment.

Len Duvall AM (Chair): Let us come on to the police, the Metropolitan Police Service (MPS).

Angus McCallum (Chief Information Officer, Metropolitan Police Service): Similar to what has already been said; obviously we have to do various bits of infrastructure work for the control rooms to get ready for ESN. It is supporting the project in terms of having people on the committee when we are reviewing devices and those sorts of things. The big thing is that we make sure we have no deterioration in the service that we have today in terms of coverage, covert solutions, air-to-ground solutions, in-vehicle solutions and the ability to operate in the tunnels, as well as - we call it push-to-talk - the back-to-back. We operate meetings with the

Home Office every four to six weeks where we go through these issues, where they are and what we can do to support, and make sure they understand where we see some of our risks.

Siobhan Peters (Chief Finance Officer, Mayor's Office for Policing and Crime): There are a number of ways in which we are represented on the programme. I sit on the national programme Board for the Mayor's Office for Policing and Crime (MOPAC) and the MPS and therefore obviously work closely with MPS colleagues on that. There is a newly-created police finance reference group as well, which I am also part of. Senior police officers have the opportunity to be part of a number of different reference groups, stakeholder groups and active engagement at different levels and for different purposes.

Len Duvall AM (Chair): Let us turn to TfL. You are slightly different in that you are not emergency services but you are an important player. Take us through your role.

Shashi Verma (Chief Technology Officer and Director of Customer Experience, Transport for London): The choice of technology for ESN, which is 4G, is widely available across the whole country. The chosen partner for the mobile network, EE, have an extensive network. Where the network is either weak or patchy, the programme is paying for the network to be extended. The one big area where the EE network does not have any coverage is in the Underground stations and tunnels. Therefore we are working with the Home Office to provide the network inside the tunnels and stations. That is a very complicated programme, as you would imagine. The reason we have not had 4G in the tunnels is a good one. It has always been technically challenging and this project is technically challenging as a result. We are working very closely with the Home Office to deliver that functionality inside the tunnels.

Len Duvall AM (Chair): Steven [Webb], we talk to people nationally through the Programme Board and through communications, and you have one-to-one meetings. Is there one meeting where you all come together regionally in terms of discussions or are they all separate?

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): We do. We have a pan-London group which has been in existence for several years now. I chair that at the moment. There we have the three blue lights of London plus the City of London Police, the British Transport Police (BTP), the Maritime and Coastguard Agency and representatives from some of our neighbouring forces as well. There we really are looking at how we are going to work together, particularly in terms of testing and pilots because that is something we will all be looking for the same outcomes for. We will be looking for opportunities for any joint procurement that we can do, perhaps service wraparound equipment as we get it, and also joint training opportunities as we move forward as well. We meet probably monthly at the moment with everybody. Representatives from the programme come down, usually the deputy director or director, and brief us on where we are with the programme.

Len Duvall AM (Chair): I know it is a complicated programme and you have more than enough on your plate to do, but like most politicians I just want to add one other thing. One of the holy grails in terms of emergency services is about dual control rooms. Is that coming up in any of your discussions about whether you can collaborate on the back of the change to this system? If you are changing to this system and we are testing it in control rooms, why can we

not have joint control rooms? Does that not feature in those discussions? I know it is off-piece but it does beg the question. I will not ask the Home Office view of that but if your emphasis here is being more effective and achieving savings then that must be one of the issues?

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): The communication system is only a very small part of our control room operations. It is the way that each of our services communicate with our operational colleagues out on the ground. It is not the system that we take 999 calls with and use to dispatch our resources to incidents. They are two separate things. There are perhaps opportunities going forward.

Vic Wynn (Acting Director of Information Management and Technology, London Ambulance Service): One thing I would like to say is that, particularly in the London Ambulance Service, and I believe the case is the same in other emergency services as well, the approach we are taking is not to preclude the move to joint control rooms in that we have implemented the control system through a contract that allows us to move control points very easily, as opposed to the existing equipment which is immense in size for each service. It does make us more agile, from that perspective, in the future. The thinking is built in for the time, maybe not right at the moment, to do the bringing-together. It allows us to do things in the future.

Keith Prince AM: What do the members of the panel believe are the key risks with the ESN programme and how are you seeking to mitigate them?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): It is a complex programme. The core programme is complex and there are a number of related projects. Everything has to land together. Obviously it is that mutual dependency.

We will be the first country in the world to deliver emergency services over 4G, sharing commercial networks and sharing the commercial spectrum. This is something that has not been done before, which is not necessarily a situation you would choose to be in, but because of the contract that we inherited we believe that is the best thing to do. Obviously going first has its own risks.

As I say, there is a considerable logistical challenge in a lot of areas, whether it is extending the coverage into the very remote areas of the country or buying a lot of hardware to put in the vehicles, some of which is also technically novel. Every individual part of it we are very confident can be delivered, but delivering them all together has its own risks. We are doing a lot of very intense project planning over the next couple of months to see whether we need to revisit the programme's timescales.

Keith Prince AM: We have heard questions about how it works in the Underground and on the railway network. One of my own personal experiences is in a building like this. In London we have a lot of steel-framed buildings. They act like Faraday cages. If emergency services were to attend this building, especially the Fire Brigade, they would lose all connectivity. You

cannot use your mobile phone in this building, and there are hundreds of buildings like this in London. What have you done to mitigate that situation?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): If I might pick that one up, throughout the United Kingdom (UK) there are about 340 in-building solutions for Airwave. I do not know if this building has a particular in-building solution. Perhaps others might know. What we are doing is reviewing, by survey, all 340 locations to ensure that EE's coverage penetrates those buildings. To the extent it does not, we will install special in-building solutions to replicate the same level of coverage as Airwave provides today.

Keith Prince AM: What about buildings you do not know about?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): To the extent those buildings require, for the emergency services, additional coverage, then there will be a process that we can go through with EE to install additional in-building solutions. When a new sports stadium is built, normally there is a Section 106 requirement to install communications for the emergency services. That would be then undertaken by the developer in conjunction with, in this case, EE.

Keith Prince AM: I understand that going forward but I am thinking retrospectively. You are going to have a number of these steel-framed buildings that you may or may not be aware of in relation to Airwave. Because of the frequencies, it is a slightly different problem. Are you going to do some kind of an audit of all the buildings in London and the UK? How are you going to deal with it?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): As I said just now, we would do a survey of the buildings that have been equipped with Airwave in-building solutions to make sure that we at least replicate that.

Keith Prince AM: I do not want to be rude. I heard your answer but you did not answer the question that I asked, which was about those buildings that are not currently fitted with Airwave. You have a different frequency so you have a different problem.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): I understand exactly your point and the direct answer is that we will be guided by the emergency services as to any buildings where they have a concern that the EE signal might not be able to penetrate it, such as a building like this.

Keith Prince AM: You have no plans to conduct a survey to ensure --

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): Of all buildings in London? No.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): They have no contractual rights to in-building coverage at the moment from Airwave and, as I say, there will be considerably more EE masts, five to ten times as many in London, obviously recognising we are working in a different frequency with different propagation and building penetration. Broadly speaking, we would be very surprised if you did not get much better emergency service coverage in buildings with ESN than you do with Airwave. Contractually, the programme's overall view is that we are promising to at least match what Airwave have at the moment. It will be an enormous scope thing to take it up to absolutely 100% --

Keith Prince AM: The real answer is that we are going to have to wait until there is an absolute disaster, when we send our brave boys from the Fire Brigade into a building, they lose contact and then we have another massive inquiry because we have not taken proactive steps. That is the real answer, is it not?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): I will let the Fire Service answer that one.

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): Can I just add on that one that the Fire Service use a different system for fire-ground communications? We do not use Airwave for that, we use analogue radios at present, which is a totally separate system. The very reason why we are keeping it, in fact, is that when we come into a building like this we can communicate within the building. We are not connected to a network outside. I just thought I would clarify that point for you.

Keith Prince AM: We will just have to hope that the MPS and the London Ambulance Service are OK as well, then.

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): It depends on their operational requirements.

Keith Prince AM: My concern is for all the services being exposed and the fact that we are not taking pre-emptive action to prevent it. I do not really want to relate it to any other incidents recently but after the event it is a bit too late, is it not? Anyway, can I just move on then, please? Can you tell me when you are expecting London to begin the transition to ESN?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): On the current timescale, which, as I say, is currently under review, we would be looking at September 2018 through to the end of 2019. As I say, we will be reviewing that over the next few months in the light of development in the trials. That is the slot. We are working with TfL as well to get coverage into the stations by the beginning of 2019 and then the tunnels by mid-way through 2019.

Keith Prince AM: Will you be publishing a new timetable?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes. As we do the work and as we then some external assurance and validation of it, yes, we will be going public.

Keith Prince AM: When can we expect the first iteration of the new timetable, do you think?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): In the autumn.

Keith Prince AM: In the autumn, lovely. Thank you. Finally, the Public Accounts Committee [PAC] has warned that unless a solution is identified the emergency services may not be able to communicate with each other between March 2020, when Airwave is scheduled to stop working, and September 2020. How likely do you think it is that that risk will materialise?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): It will not. There will be no break. This is basically a question of the relationship between Airwave's existing supplier and one of their key subcontractors, who are withdrawing a particular service in March 2020, as is their right. The particular service could be replaced in a number of ways. There are other suppliers out there who would offer the same service, or you could run it over 4G. We understand there are commercial discussions going on between Motorola and various people. We are very confident that will be resolved. We bought Airwave as a service. It is Motorola's and Airwave's job to ensure that they can deliver it.

Keith Prince AM: There can be a fix but I suspect there will be a price attached to that.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): As I say, in our view that is an issue between them and their subcontractors. We have a contractual price for the overall service.

Len Duvall AM (Chair): You will be overseeing that to ensure that Motorola have a back-up?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes. We are keeping a very close eye on it and talking to them. Just to give an example, this is called TDM, time-division multiplexing. It is an old-ish technology but the Norwegians have just rolled out their national system and it is still using it. It is not defunct technology that will not work. As I say, they may continue with that or they may replace it in another way but that is really a technical and commercial call for Airwave/Motorola.

Len Duvall AM (Chair): Assembly Member Sian Berry.

Sian Berry AM: Thank you. I think these questions probably go to Gordon [Shipley]. They are more about the specification and things like that. My questions are about bandwidth, because I understand it is piggybacking on the commercial network. You said earlier that it was going to be up to twice as fast as the commercial networks. When I go into a large crowd, which I do quite often, my bandwidth goes right down and I cannot even imagine operating anything, even at double that speed. It just becomes impossible to even send a Tweet. Is that

going to be enough when there are big crowds around for the emergency services? I have seen many situations where the emergency services and big crowds are going to mix.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): Sure. Where there are big crowds, EE will have to satisfy that for their commercial needs. EE are providing priority access for the emergency services over their network, which means, as more and more people pile into a limited number of cells, the quality of service will reduce. However, voice on ESN using the technology that underpins 4G will provide many, many more voice channels than you would get with Airwave today. Therefore, not only will the emergency services get priority over the general public, there is considerably more capacity to absorb both the general public and the emergency services' needs in the event of a major crowd or even a major incident.

Sian Berry AM: This is for voice, you say?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): Ultimately that is what it will reduce down to, voice channels. Therefore you may not be able to upload your photographs or your video to Facebook, and that will be a decision by the operator, in this case EE, to restrict that to ensure that everyone gets at least some quality of service.

Sian Berry AM: Thank you very much. The other question is about data, because we have been talking to the police about their technology and new things that they are doing in terms of providing tablets to officers. They will be using more data for that, potentially more Cloud and app-based systems rather than getting rid of XP and all of those issues. I think there is going to be quite an increase in the amount of data that the emergency services are going to be using, particularly the police, who will want to be exchanging pictures and things. Is that built into the spec as well? Is it going to be able to increase to meet that need?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): When we went out to market we projected our data consumption over time, and we have anticipated. In practice of course we do not know exactly what the consumption is going to be with things like body-worn video and so on and whether that is locally recorded or transmitted back to the control room. However, EE's business is based upon selling more and more data and therefore they are building the capacity in their network for the general public who are significantly more than the emergency services in almost all situations. We are following on the coat tails of what EE will be doing for the general customer and that will increase the amount of capacity over time.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): It is a very attractive data package in price terms. Also, I think there is an interesting comparison there with a report the Assembly did after 7/7 where it was saying that senior officers were often using mobile phones to communicate in voice and that was a problem when the network came under strain. Increasingly we are probably reaching a stage in some areas where people are using their personal devices to communicate in data as well. Forces are increasingly bringing their own data, but, even when they are bringing their own data solutions out, they are still

relying on the same service that the rest of the public gets. I think the ability to have that same level of priority and pre-emption is going to become more and more mission-critical and that is what ESN will provide.

Sian Berry AM: Can I check that with Angus and also ask, I detected a little bit of a doubt there about whether it could handle body-worn video?

Angus McCallum (Chief Information Officer, Metropolitan Police Service): We are sending more and more data. At the moment, body-worn does not stream live. In the end this would be an option we may look at. As Stephen [Webb] alluded to, it all has a cost, the more the more data you ship. Something like body-worn will be a choice whether we want to in the future get cameras that could stream live for everyone or a subset. In terms of data, yes, we are looking to use much more data on mobile devices when people are out in the field and we hope the solution coming will be much more cost-effective than signing deals with current suppliers.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes, I think most forces are feeling for body-worn that it would just be an enormously expensive process and that in non-emergency circumstances it would make more sense to store it locally and then use Wi-Fi or something to upload it when you get back to the station. That is what most forces are doing. However, ESN does at least give you the opportunity. If there is an emergency and you need to get that footage back to a control room, it would give you a potential way of doing that.

Sian Berry AM: Thank you. We have had separate discussions in the Police and Crime Committee about the practicalities of going back to the station and how that is a restriction.

Navin Shah AM: I want to continue our discussion about technological risks with the programme. I understand that increasing and reliable connectivity is at the heart of the ESN programme. London Assembly only recently has published a report on broadband connectivity, which is absolutely shocking for London. What the report clearly indicates is that London is ranked in the bottom five for coverage and 4G covers less than 7% of the capital. My question is for the Home Office representatives. Is this not worryingly less for ESN and does it not pose some serious problems, both for emergency services and also the safety of Londoners?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): EE is rolling out 4G across the country and they have achieved about 84% of the rollout on to 4G. London, they tell us, is now complete in terms of 4G rollout. Therefore I cannot disagree with your point that, if it is as low as it is, then there is a major issue. However, we have bought from EE a very comprehensive coverage solution, which we will be testing, both in terms of 4G and then when EE is rolled out, because EE goes a little bit further than the cell edge where a commercial customer would drop off. EE does go beyond that. We will be carrying out a thorough coverage assurance, not just of London, but through the whole country.

Navin Shah AM: This really needs to be done absolutely thoroughly and properly because the report further shows that 4G relies entirely on signal capacity. When we look at London we

have large chunks of areas that are digital deserts, large chunks of Southwark for example, where you have connectivity which is like 0.26 Mbps compared to what you have in Paris or acceptable areas of around 80 Mbps. This is really most appalling. You need to make sure that it can deliver a 4G capacity, which does the business for ENS. Also, because technology has moved on with fibre connectivity, pure fibre connectivity is also part of the solution because there may not be just one silver bullet. You need to look at both aspects, or aspects like these.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): I would prefer to write back to you with information on 4G coverage provided by EE. I would make the point that we are talking mobile coverage, not necessarily fibre-based broadband, which is another aspect of digital connectivity.

Navin Shah AM: Given that it gives you secure, faster and better connection of tall buildings.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): I absolutely understand your point --

Navin Shah AM: It certainly can play a big role where you have such problems of connectivity.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): Sure. I will take a commitment to write back to the Committee with EE's coverage of London and the predicted capacity that the 4G system will provide.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): I think you can imagine, everywhere we go in the country, this is the number one issue for the emergency service users. Is this going to replicate Airwave coverage? In terms of geography Airwave goes much further than any mobile signals we have at the moment. The sort of work that Gordon [Shipley] is talking about was buying a coverage assurance tool where we can put something in vehicles as they go around their ordinary business, making calls, making data. Therefore you will have a really very detailed coverage map that builds up over the last couple of months of this year that will give people, "This is what coverage looks like on the roads in your areas".

Tom Copley AM: If, for whatever reason, it is not possible for the ESN to connect to EE, but there is another mobile phone provider within range, is it possible for it to connect to that and go over that?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): The short answer is no unless it is a 999 call, which does roam. I think it was about 18 months or two years ago that the Cabinet Office was proposing national roaming to allow you to flip between different networks. That never happened. A deal was done in exchange for 90% geographic coverage by each of the four operators. Therefore, if you come in from abroad, you can roam on to different networks, but if you are a national then you cannot.

Tom Copley AM: Would that give you extra resilience if you were able to connect to different --

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): It would do, but the mobile operators will not support it.

Tom Copley AM: They will not support it, all right.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): That is the specific software, the mission-critical push-to-talk stuff. It is going to take quite a while before that is all standards-based and supported on a number of different networks. The idea is ultimately we would get there, however it is quite a long way off. At the moment we are having to rely on one provider to deliver that coverage and hence all the work we are doing on ensuring the levels of resilience that again matches the Airwave system at the moment.

Tom Copley AM: What came first then? I did not quite get this from the conversation earlier. Were EE going to increase their coverage anyway or are they increasing their coverage because they are doing ESN?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): A bit of both, I think. They all have to reach 90% anyway, but then there is the additional bit on top.

Tom Copley AM: The additional amount, OK.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): There are two bits of increased coverage beyond what they would have done commercially. We are paying them to build out another number of sites, about 500 in rural areas, and beyond that, in very rural areas, we are building another 300 over which EE will extend their network. However none of that applies to London because you are very well covered in the number of sites you have, which is about 16.

Len Duvall AM (Chair): You mentioned something earlier, in answer to one of the questions about whether emergency services have a priority. One of the lessons in 7/7, rightly or wrongly, was that I think a senior officer in the City of London Police decided to cut the mobile network. We are sharing the commercial airspace, or whatever you call it technically. Will emergency services still be able to operate if you decide to switch the commercial off for whatever reason during an emergency?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): I do not know why you would want to switch the mobile network off that provides you with the communications --

Len Duvall AM (Chair): At the time there were some questions raised. However, one of the issues could be mobile devices being used to trigger explosions: that is why you would do it. It was criticised at the time in the aftermath. However, judgement call; he thought he was doing the right thing.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): If a remotely-controlled improvised explosive device (IED) was a concern and the local commander wanted to switch the service off to the general public that could be done while the emergency services still continue to use ESN's network because ESN is in effect a virtual private network that runs over EE's infrastructure. We have a separate code, as it is called, to identify ESN users differently from the general public. Again I will confirm that in those circumstances we could restrict access to only the emergency services.

Tom Copley AM: On that specific point, presumably there would be a possibility that terrorists could tap in to the Application Security Manager (ASM) network.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): You are correct. Of course, any network is capable of being intercepted. We have end-to-end, as we refer to it, encryption applied to the network to provide a level of protection from eavesdropping or interference in the delivery of that service.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Given this is part of the critical national infrastructure, as you can imagine, we are working very closely with the National Cyber Security Centre to ensure the overall architecture is robust.

Sian Berry AM: I have some questions about accountability and risks from the user perspective. First of all I would like to ask the Home Office, how accountable will EE be to the Home Office and the wider service-users' body?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): Accountability in terms of legal accountability or commercial accountability? We have a contract with it for a provision of service. There are incentives in that contract to keep them incentivised to continue to provide the service throughout the term of the contract. Is that an answer to the question?

Sian Berry AM: Yes, it is about performance.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): We have set pretty high levels both in terms of performance, availability and coverage. Those will be continuously monitored through the term of the contract to ensure we get what we paid for.

Sian Berry AM: Each of the services using it will be able to inspect that performance? They will have full access to the information about how well it is performing?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): Yes. We will maintain the network for the services. The services will have access. We will report, as we do with Airwave today, on the performance of the network compared to the commercial performance that we have contracted for.

Sian Berry AM: Can I ask the service users if they have raised any issues about performance, accountability and things that are not currently in the specifications that they would like to be in there and reported on?

Angus McCallum (Chief Information Officer, Metropolitan Police Service): In the same way we independently check Airwaves' coverage we will be doing a similar thing with EE. Regularly we drive around and assess, and make sure we are getting the coverage we are paying for. We will continue to have that service as we go forward and that will get fed back through.

Sian Berry AM: You will be independently checking the service that you have?

Angus McCallum (Chief Information Officer, Metropolitan Police Service): Yes. I know there are a lot of questions around coverage. In the same way around coverage, once we get the maps which we are getting shortly, and what EE thinks of the coverage we are doing some testing around that.

Sian Berry AM: Are the other services planning to do the same?

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): The Fire Service do not do independent testing but we are represented on the National Emergency Services Strategic User Group that looks after Airwave at the moment. It will morph into an ESN group. On a bimonthly basis, six-weekly, they meet at a senior level and get feedback on the network performance so we understand any issues that are coming out of it that may impact on users. If we have had any impact locally we feed that back up through that some route.

Vic Wynn (Acting Director of Information Management and Technology, London Ambulance Service): Equally with the London Ambulance Service we, at the moment, rely on our end-users identifying areas, if there are areas, where there is a degradation of coverage. However, for the new contract we will be partaking in the pan-emergency service testing so we move into the contract with the coverage being verified from a user perspective. Effectively we are users doing that testing and doing that independent verification.

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Certainly testing and trials is a big concern to us, probably more on a national basis than in London. I have already described how the facility is based on road coverage and Airwave extends further with its current mast. Making sure that coverage meets our requirements is going to require us putting coverage devices on engineering trains to check the whole network. The broader trials, as I have probably already described, is about more penetration and coverage in tunnels and interdependent projects. They will be the areas we will want the most focus on. As part of that, working with joint emergency service colleagues in exercising what happens should we have an incident that is in those locations.

Sian Berry AM: Am I right in thinking that you are not expecting 100% coverage inside the tunnels when it starts?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): That is the pledge and the promise. At the moment it has limitations with Airwave. We have to operate within that parameter now. We want to be sure though that it is no worse than we already have. Incidents are very unpredictable for anywhere. If they are in the middle of a deep tunnel underground that is going to have difficulties. Mitigating that is what we are trying to do through the trials that have been described. The TfL project is extremely complicated. It is how we link into that and make sure we have understood where we are going to have limitations. Hence the comment earlier about having the push-to-talk or back-to-back facility that then allows us to still operate. Similarly, the Fire Brigade use different services that we can jointly utilise if necessary.

Sian Berry AM: Is back-to-back operation part of the current specification. Is that something that has been developed?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): It is something we currently use with Airwave. As I understand from the Project Board last week it is in development for the new devices. If it is not available at the time of transition there is a workaround, I am told, that we will want to try to test before we could sign up to transition.

Sian Berry AM: I will keep a close eye on that, I think. In terms of ongoing performance management we have all talked about the testing period, will there be continued meetings and continued ability for users to raise snags and issues?

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): As John [Anthony] has already indicated, we meet on just over a monthly basis with Airwave. We would continue doing that through transition when both networks will operate together. From business as usual we will continue to provide a forum for users to be briefed on performance and to raise any issues or concerns they have for us to manage. We will jointly manage the network in a more coherent way than Airwave has done because it was bought in different sections by the individual services. Next time we will deal with it in a more joined-up way.

Sian Berry AM: That is great. Can I ask each of the users - I know you have just raised one particular thing - whether there are any other key risks you are keeping an eye on to do with the programme?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): There are probably four main areas. I have already discussed the coverage. As I have said, probably many of these relate to our national functions rather than London in particular. Keeping track of the interdependent programmes: the TfL one is, of course, the largest one but we have about ten other areas of special coverage that we are monitoring managing. The timeframe: we welcome sight of that revised plan in the autumn so that we can co-ordinate alongside it. I understand from the MPS perspective - and Angus McCallum may be able to comment - transition really should only be comfortable during January to June to avoid transition during the period of carnival and New Year's Eve. There are only two timeslots for that between now and full implementation date. Particularly for BTP, because we are not part of the Home Office, it is the

cost. We have heard about assurance around Airwave coverage but we would probably - I think undoubtedly - have to pay for that continued coverage, which could be quite a significant impact should we need to have this alternative function or sustain Airwave at a time when it is not normally available.

Len Duvall AM (Chair): Can we just pause there. Could you explain the cost aspect for BTP? You are partly funded by the rail organisations, are you not?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Wholly. Funding for the force comes from franchise agreements that are leveraged through the Department for Transport (DfT). That funding is then dispersed by the Police Authority to us.

In terms of how we fund the whole programme, we have a combination of options. (1) We create efficiencies from the current force functions to free up the funding. (2) There is some Government support for this national programme, which is a conversation we are having with DfT currently. (3) We leverage the costs to industry, which is an enormous impact on our funders. It will undoubtedly be a combination of those three options that will allow us to fund the programme. At the moment though we do not have full clarity on what that cost will look like. The easiest way of describing it is we have almost like an enrolment fee, a charge to the force to pick up some of the development costs that have been absorbed by the Home Office for the other police forces and services that fall under the Home Office. We do not have that advantage so we will have to pay back some of that development cost.

Len Duvall AM (Chair): No doubt the DfT might join you in this great project of yours at the Home Office.

Sian Berry AM: Can I move on to the London Ambulance Service and ask about the key risks that you think there are in the project currently, apart from coverage because I think we have covered that now?

Ian Hough (National Service Director, Ambulance Radio Programme): From a national perspective there has been quite a lot of mention of the complexity of the solution and the number of different moving parts. What that boils down to is the importance of testing, trials and pilots. What Stephen [Webb] has mentioned in terms of looking at the 'refresh' of the plan, if that is the right phrase, is really important - and we have already started work on this - that we are all working together to make sure that built into that plan is adequate time to make certain that each of those moving parts is in place and that we have tested to make sure it is operationally robust.

Vic Wynn (Acting Director of Information Management and Technology, London Ambulance Service): From a London Ambulance perspective we have a traditional risk register with a lot of the things we have already spoken about. However, there is one that is almost a strategic risk that comes from a number of them - because we do have national contingency plans that involve other ambulance services - so London does not become an outlier in terms of timing. That would cause, in itself, an additional risk. Whilst we believe the possibility of that at the moment is low, it is another risk that we are absolutely keeping our eye on, both from a

hazardous area response team perspective, as an example, and also from a mutual aid position. We are fairly well joined-up in the ambulance sector and we do provide mutual aid to each other on a fairly regular basis.

Sian Berry AM: That must be true of the other emergency services as well though in terms of mutual aid.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We have an interworking solution that will enable conversations to happen with some people on ESN and some people on the Airwave solution. That is really designed to deal with those problems.

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): I would say one of the risks for us at the moment is actually understanding that interworking solution. I am very keen to see that so we can actually test it very carefully to make sure the transition is seamless between the two.

The other thing that concerns me is the delivery of actual devices, not just the mobile devices but vehicle devices. They are not due to be available in the catalogue until mid-2019 now. That is the current plan; we know what happens to plans.

The other things for risk for London Fire Brigade is obtaining the mode of connection, ensuring the security around our internal infrastructure is secure enough to enable us to connect to ESN. We are undertaking a plan of work. We started in April and it is a two-year plan of work on the current scope. Our current plan shows us transitioning sometime around 2020/21 at the moment because of the work we need to do. That is a plan the Home Office has had since the middle of last year.

Angus McCallum (Chief Information Officer, Metropolitan Police Service): You mentioned coverage. It is the specialist coverage around it. You mentioned what we would call surge capacity. We need to be able to check that and be satisfied with that. The other big risk is the in-vehicle, just because there are constraints in garages on how many vehicles they can manage a week. We know that from work we have done. Therefore the vehicle programme will take about 18 months for it to be into all our vehicles potentially. We are working with the Home Office on that. The earlier we get sight on designs means that when we get new vehicles or vehicles go in for service we can start doing that remedial work and almost have a box that stuff can be dropped in.

You alluded to January as an optimum time for us to go live. We do want to be able to fully test it before that and have another full scope before us. As timelines slip that is going to slip out. The big risk associated with timelines moving is, obviously, we have to maintain a lot of our TETRA radios and things. That is of some concern as they approach end-of-life and the project slips out. Again, we are looking at solutions of leasing where we are able to swap out a Tetra radio for a new ESN radio. We are starting to look at how we can mitigate those sorts of risks.

Caroline Pidgeon MBE AM: Just to clarify from the Fire Brigade, you said you are not expecting it to be implemented until 2020/21?

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): Our current planning shows we will not be able to. We will not be ready to because our infrastructure will not be in place. The vehicle devices will not be available for us to purchase until mid-2019. We are very much a vehicle-based radio system rather than hand-held for us so we need those, we need to understand what those devices are, be able to test them, procure them and then fit them into our programme of vehicle maintenance to have them installed. We are buying a lot of new fire appliances at the moment, it would be great if we knew the specification but we do not -- even if we could fit the aerials to them at the moment. We had a specification came out, we hope to be able to use that so we could fit them, they are very cheap, easy to fit, during production but that was withdrawn, I believe, so we still do not know things like that. If we knew them then we could actually move ahead to start bringing the plan forward but it is a lack of information really, a lack of detailed information.

Caroline Pidgeon MBE AM: How does that fit with the Home Office saying that you expected the rollout for London currently to be between September 2018 and December 2019?

Stephen Webb (Director, Law Enforcement Programmes - Home Office): That is the current -- yes.

Caroline Pidgeon MBE AM: They are saying they cannot physically do it because of all these things. The new timetable presumably is going to be, I do not know, early/mid-2020s before this is rolled out.

Stephen Webb (Director, Law Enforcement Programmes - Home Office): We are looking at the plan generally and so we will come back in the autumn to see if there is any slippage. We will also look with the users and, say, as John was saying, there are circumstances where all those could be brought forward, the users have got some plans and some assumptions. We think it could probably be done a lot quicker than that. When we have re-based our plan fully we can then work with the users to see what can be done to speed up their implementation process and we are confident it can be.

Caroline Pidgeon MBE AM: It is not going to be in London by December 2019, is it?

Stephen Webb (Director, Law Enforcement Programmes - Home Office): It is challenging. As I say, we lost a little time in testing so there is likely to be a little slip anyway and then the users had some requirements of their own, particularly the fire ones, but we can work with those plans and bring them a lot closer.

Caroline Pidgeon MBE AM: OK, but with the logistics of getting vehicles through garages to be kitted out and so on it sounds to me like that is going to slip considerably.

Stephen Webb (Director, Law Enforcement Programmes - Home Office): We will work with fire and other colleagues with that. We think it can be done a lot quicker than 2021 but we will see.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme (ESMCP) - Home Office): Can I just make a couple of points on that? Firstly, we are going to start the procurement for the vehicle devices next month. We will go out to market. The development time, because there is no such device available in the marketplace, is between 12 and 18 months, so worst case would take you into mid-2019. What we are anticipating is control rooms being upgraded and health checks, which I think John [Anthony] was referring to, as taking a lot longer for fire because they are coming from a slightly different position compared with ambulance and police so there is more work for them to do but we, as a programme, are going to support where we can to try to bring forward those dates so that they align more correctly with the sorts of dates that Steve has just covered.

Caroline Pidgeon MBE AM: Thank you.

Dr Onkar Sahota AM: What role does TfL play in the delivery of ESN in London?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): This is a Home Office project and it is nationally a Home Office project. That is the way it is. However, we understand that in our environment the first thing is that nobody can access our environment without our permission, and the second thing is that in terms of specialist knowledge about our environment, that is with us. It is not with anyone else. We know that delivery of ESN in London will require a lot of help and support from TfL and we are providing that help and support.

As I said at the beginning, this is an incredibly challenging programme. The reason that we do not have 4G in the tunnels right now is that the space in the tunnels is incredibly confined. With advances in technology it is now possible to do something of that kind but it is not easy, it is not cheap and it is not something that can be done quickly. We have been working with the Home Office for quite a while now, mainly trying to figure out what the right option is for delivery. Is that through a re-use of existing infrastructure, keeping in mind that we do have connect radios in the tunnels right now? That infrastructure is now quite old. It works perfectly fine but that infrastructure is quite old. It is also delivered through a very complicated private finance initiative (PFI) contract and as we all know, trying to get things done through a PFI contract is not the easiest thing.

Should we be building new infrastructure? There is a set of complexities on one side to do with a very complicated PFI contract and there is a completely different set of complexity on the other side of putting new infrastructure into the tunnels. It has taken quite a long time to get to the right kind of options and the right kind of designs but we have now decided on what option we are going to make, and in fact we got that signed off between us and the Home Office only yesterday. We have the option signed off now but there is much more work to be done in getting the design signed off and various other things signed off before we can start construction. I have to say we are fully committed to this programme. Although this is a Home

Office project we are very mindful of the fact that the emergency services having access to the tunnels is important to the safe running of the Underground and we will carry on supporting the Home Office in delivering this project.

Dr Onkar Sahota AM: When can we expect the business case for ESN in London?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): The business case is fundamentally a Home Office business case because it is a Home Office funded thing and it is the Home Office that will be putting together the business case. Now, we do have to take this through our own internal governance and we were expecting to do that in July but this has taken longer than we expected.

On our side we have made quite big changes to the project. Last month the Commissioner made a change in moving this project over from other parts of TfL in to me and that is to reflect the fact that this is now aimed delivery and it needs very focused attention and delivery. We are working through the business case, as I said that is a Home Office business case not a TfL business case because this is Home Office funding, but in the next few months we will take this through successive approvals within TfL and that requires offsetting the whole process of how this programme is going to get conducted.

Dr Onkar Sahota AM: Good. I understand that you have been running a pilot of six stations on the ESN.

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): That was the proposal at one point when the design option was different. That was one where the design was led by EE and the delivery would have been led by EE. There was a plan at that point to run a pilot through six stations. We are not doing that pilot any more. We are working on a more limited pilot on the Waterloo and City line but the main purpose of the pilot is not to test the technology because we do not have any concerns about the technology working. There are many other difficult aspects of this programme, including figuring out the construction rates that we can achieve, which is very important for cost and scheduled planning. That is one of the reasons why the pilot is being conducted on the Waterloo and City line.

Dr Onkar Sahota AM: That pilot you are telling us has been stopped now or has come to an end?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): The six-station pilot was stopped and it was stopped quite a long time ago. It stopped last year.

Dr Onkar Sahota AM: I am talking about the one on the Waterloo and City line. That was finishing in August, was it not?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): It is not started yet.

Dr Onkar Sahota AM: It has not started yet?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): No, the construction activity is still going on that one. Again, as I say, the principal purpose of that pilot is not to figure out whether this technology will work or not because we are convinced it will work. It is to test the construction rates that we can achieve so that we can do a proper cost and schedule planning.

Dr Onkar Sahota AM: Have you been able to find any particular suppliers of ES on the underground?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): There is no supplier of ESN there is only one supplier which is the one that the Home Office have contracted with which is EE. Our role in this is not to supplant the supplier that the Home Office have selected; it is to provide the infrastructure on where EE can place an ESN service. Our job is to find suppliers who can do the construction activities and suppliers for the equipment that we will have to place into both our stations and at those secure locations, but as far as the ESN service is concerned it will be an EE service only.

Dr Onkar Sahota AM: Thank you.

Len Duvall AM (Chair): Inevitably some of the timing is going to be down to you in TfL and how fast you move on whether these pilots and finding some of these suppliers, is that not the case?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): Absolutely.

Len Duvall AM (Chair): Fine. How does the Home Office then, in a national programme, hold you to account?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): How does one public sector organisation hold another one to account?

Len Duvall AM (Chair): It is easier with the emergency services, I suspect, but you as a transport provider.

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): Chair, let me be clear, there is no lack of commitment within TfL to get this project done and the changes that have been made inside the organisation about delivery of this programme are especially to meet those goals. I do not think we need to be told or reminded by anyone that this programme is important and is essential because we rely upon the emergency services to keep the underground safe and running. This project has all the visibility and importance that anyone can accord to any programme in TfL.

Stephen Webb (Director, Law Enforcement Programmes - Home Office): In regular meetings between the Permanent Secretary and the TfL Commissioner they are getting regular reports. We have got a sort of project meeting that meets pretty regularly between the two sides so we are in a position now where we are confident. While we go through the final work on the business case we have agreed the process by which we can actually crack on with the things that are going to be necessary, whichever option we take, so we are not losing any time while we finish the business case.

Len Duvall AM (Chair): When you come to provide the various providers for what you need in TfL, will you be publicising those contracts?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): We have a policy to publish any contracts above £5,000 and that will happen here as well.

Tom Copley AM: I do not want to turn this into a Transport Committee but will the 4G network you provide be available to customers on the Tube as well? Is that envisaged?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): One of the reasons to look at new infrastructure is that making any intervention in the tunnels and stations is quite a big exercise and therefore we want to do it in such a way that there is the highest possible re-use potential of any infrastructure that we are creating and that is the goal here. Having said that, I would say that given the challenging timescales for ESN we are completely focused on the delivery of ESN, while being mindful of creating infrastructure that has the potential for being re-used. Yes, the aim is that this should eventually be re-used for providing a public cellular network in the underground stations and tunnels but the first phase of this is very much on ESN and that is where the delivery focus is right now.

Caroline Pidgeon MBE AM: Installing this infrastructure is very challenging. Will you be having to close parts of the tube network to install this or are you looking at being able to do it in those few hours at night?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): The plan is entirely to do this within engineering hours and it can be done within engineering hours. Now, there are of course many scheduled closures of the underground over weekends and where possible we will be using and maximising the potential to use those. There is no special closure needed for the installation of this.

Caroline Pidgeon MBE AM: Helpful to know that.

Steve O'Connell AM: I would like to continue drilling down on ESN on the London Underground and I obviously have no doubt around the commitment. 'Commitment' is, after all, a kind of given, and a word in and of itself, but Shashi [Verma], twice you have mentioned the words 'incredibly challenging' and 'incredibly difficult'. This really is of some concern, and

concern is shared by the House of Commons PAC. The rolling out of ESN has been described as a significant and imminent risk that was open to interruption. I would also refer you - this is in the context clearly of terrorist attacks and preparedness - to Lord Howe, which you will understand and be aware of. His report notes he is very concerned that this new system, ESN's new system, may not operate effectively on the Underground system.

I have not heard any great reassurance other than the fact that you are committed. I get that but we want to drill down a little bit more deeply around that. Bearing in mind Airwave gets unplugged March 2020 and we are now in July 2017, there is not long to go and I know how long these things can take. You mentioned yourself that you have got to go through various referral hoops, various boards of TfL and all that sort of stuff. We need to perhaps drill down a little bit so I will repeat the question, particularly to you, Mr Hanstock, because your boys and girls are tasked with keeping Londoners safe in the Underground. What confidence do you have that ESN will be delivered on time and to sufficient quality? I will ask you two colleagues first and then others may have a keen interest on it.

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): Let me unpick that question and answer that in bits.

Steve O'Connell AM: Yes, please do.

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): The first question is, "What confidence do we have that ESN will work in the tunnels and the stations?" The answer to that is we are confident it will work.

Steve O'Connell AM: You are confident?

Shashi Verma (Chief Technology Officer and Director of Customer Experience - Transport for London): We are confident it will work. There is nothing in this technology that is sort of out of the ordinary. There are other systems around the world that use 4G telecoms not for emergency services but for public cellular and it works perfectly fine. In our case the confined nature of the tunnels makes it particularly challenging but it is not something that is unusual. The question of on time partly depends upon what time we are shooting for here. Our aim is to try to get the stations ready by January 2019 and as much of it done as possible by January 2019, with the aim to complete the rest of the tunnels in the months after that. I have to be honest and say that that is a very challenging timescale. That is something we are working very closely with the Home Office on and with colleagues in the emergency services.

If I were to reword your question and say, "Are we absolutely confident that all of this can be done for January 2019?" the answer is no, we are not confident that this can be done for January 2019. If the question is, "Can we give enough to the emergency services for them to start testing the capability that is going to be provided in the tunnels?" then the answer to that is yes. Although we have not focused on the transition as much right now, the transition is not a one-day activity. It has to start with the services getting comfortable that, first and foremost, the capability works in a limited environment before we approve that in the full environment.

We are fully on track to try to deliver that capability, so that the emergency services can start testing this by January 2019.

Steve O'Connell AM: Does TfL - this is no comment on yourself, Shashi [Verma] - have sufficient technical skills in and of themselves to deliver an IT project of this significance?

Shashi Verma (Chief Technology Officer and Director of Customer Experience, Transport for London): This is a very specialised activity. It is very clear that we do not have all the skills that are needed to deliver this. That is why we rely upon suppliers for design, for design assurance, for construction and for service operations, and we will have to put those contracts in place to get the right capability in. That is the story with all projects within TfL and certainly with all IT projects that I have run over the years. If the question is, "Do we have the capability to manage that sort of process within TfL?" the answer to that is yes, we do.

Steve O'Connell AM: I will bring in Mr Hanstock. You are looking at 2019, having the capability to be testing. Your aspiration, if all goes well. We in this building will track it all the way through, without a shadow of a doubt. Then Airwave may get unplugged in March. There is a risk of a gap, is there not, or a blind spot? How would your boys and girls handle that if that happened?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): If I may, two things. On the latter point, we are already working with the national programme and with the Home Office for the contingency on that. As I have already said, the challenge is the cost of that continued service after its intended close-down date. Shashi [Verma] has really covered the biggest issue for us, which is timeframes to allow us to test. The transition will take some time. We have already mapped the network. We know where we have our challenging locations already. Being able to test in those would be a bonus and a priority. Being able to assure the service is the thing that we need the most. Having some capability to get down there, to use it and to see if there are any limitations, so that we can work on those before the rollout, is our big challenge. Building in sufficient time capacity to do that in a meaningful way adds to that challenge of delivery.

Steve O'Connell AM: You are giving us, from your operational point of view, a reassurance that you would ensure that your officers would have capability in the Underground tunnels should there be either a terrorist attack or you are just managing football fans going on their normal way? You would be confident that those officers will have the capability, notwithstanding TfL's ability to deliver the project?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): That is a requirement for us to agree to the transition. We could not transition if we did not have that reassurance of that capability. Similarly, working with the MPS and other partners at times of the most extreme incident would be part of that transition readiness. That has been clear throughout, that we want that assurance that we would maintain current functionality before we move to a new system.

Steve O'Connell AM: My last point really is that it is one thing to give an assurance, because assurances are words. At the end of the day this is immensely important to Londoners. Would the people being given those assurances be capable of delivering them? That is what this Committee is interested in.

Adrian Hanstock (Deputy Chief Constable, British Transport Police): When I say 'assurance' that is tested assurance, not just a verbal, "Yes, we think it will work". It is being able to test it in live operational terms before we say, "Yes, we are satisfied that this provides the level of operational coverage that we need to operate in an extreme incident and day-to-day business".

Steve O'Connell AM: Indeed. Good. That is reassuring. There was someone who was signalling?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes, just to stress there will be no gap. There will be no turning off of Airwave until the users are ready to take ESN on.

Sian Berry AM: Just a quick question, probably for the Home Office, about who is responsible for other tunnels, the ones that are not on the Underground. It is quite impressive to hear TfL have quite a significant project going to fill their tunnels with the right technology. What about Network Rail tunnels? Are there other places, like sewers and places like that? Are there other separate projects to fill in underground capacity?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): It is quite complicated. Some of the things are part of the core contract. For example, the Tyne and Wear Metro and the Glasgow Metro are covered and EE are delivering that as part of the standard contract. London is a little different, partly because it was a different contractual relationship with the connection that was put in in the first place. Then we have a whole bunch of areas of special coverage that EE are responsible for, which include some of those unusual locations.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): We have a part of requirements that lists where Airwave was put into tunnels, mainly for British Transport operations. We are replacing and in fact are part-way through completing, or EE is for us, the installation of communications for 4G in those tunnels. Where Airwave is today, we will replicate that communication service for ESN users.

Sian Berry AM: That is EE who are responsible for that, not Network Rail?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Happily, I think.

Gordon Shipley (Programme Director, Emergency Services Mobile Communications Programme, Home Office): In some cases Network Rail are providing the infrastructure but it is EE's responsibility to make the arrangement. Either they do it or they arrange that the landlord does it, and then they extend their network into that tunnel.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Happily, TfL is the only one where we almost have to have a separate project. As I say, it is an artefact of the way the contract works.

Gareth Bacon AM (Deputy Chairman): Initially to Mr Webb and Mr [Gordon] Shipley, how is the ESN programme being funded?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): It is a shared programme across the three emergency services and the devolved governments of Scotland and Wales. It is being funded pro rata by the users. In the police area, for example, the current Airwave contract is paid for out of the main police settlement and the change, the money that is going in to build ESN, is also being paid for out of the police settlement. Basically, the emergency service users are paying for it.

Gareth Bacon AM (Deputy Chairman): It is coming out of the grants that you pay to the emergency services. In your case, to police and fire.

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes. Effectively a reallocation or a top-slice before it goes out to the services, yes.

Gareth Bacon AM (Deputy Chairman): Is the programme on schedule?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): As I say, we are doing some replanning. We have had some pressures in testing. We will take as long as we need in testing and later in the autumn we will have a sense of whether we are going to need to push things back a little further.

Gareth Bacon AM (Deputy Chairman): The Public Accounts Committee expressed concern on this particular point because Airwave is due to be switched off in 2020. You just said in answer to Assembly Member [Steve] O'Connell that you will not just switch it off, which is good, but the PAC also estimated that for every year it is delayed it would cost around £475 million. I think that came from the National Audit Office, actually, that finding. Is that a figure you recognise?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We understand how they got to it. It is not quite how we would calculate the numbers ourselves. It is to do with the whole cost of the programme and whether you then take into account people's existing data services. The core thing is the actual cost of the service and the annual extension will be up to £360 a year, for the Airwave. That would be for every single part of the country to extend and that would be for a whole year.

Gareth Bacon AM (Deputy Chairman): That is a national figure for the whole year?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): And you can do it regionally and month-by-month. We have a fair bit of flexibility to extend. What is fair to say on the programme, and it has caused us some presentational challenges, is that we deliberately

went for a very aggressive timescale. We went for the fastest possible timescale that we could deliver it because we had a contract that was flexible enough to enable us to buy the precise amount of delay that we needed. If we had built a load of time contingency in, it might have reduced the momentum of the programme but, if we had not needed it, we would have spent that money anyway and we would not have been able to get it back. We went for a very aggressive timescale but we were always very clear that we would let it slip if it was necessary in order to deliver a fully working and safe system. That is what has happened. As a result of that, I suppose it looks like the programme has been more delayed than you would like to see.

Gareth Bacon AM (Deputy Chairman): I understand the need to keep momentum going forward. I am interested though, particularly from a London perspective, on the implications for particularly the emergency services and how they would fund any extension. How would they fund it? Would they just carry on paying as they are at the moment?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes. Broadly speaking, the main impact of an extension or slip in the programme is that the point at which they start getting significant savings slips to the right. In 2019, 2020 or particularly potentially in 2021, at the moment there are significant and increasing savings as time goes on because this system will be very much cheaper. For all the users nationally, £350 million cheaper, when you add all the various things together. Obviously most of all we would like the emergency services to get that functionality as soon as possible because it will be better and it will help public safety but it will also help them in their fiscal challenges. The quicker we can do it, the more they get their savings. Otherwise, for as long as Airwave is going it is a service that most service-users receive and they will continue to pay for.

Gareth Bacon AM (Deputy Chairman): Am I correct in paraphrasing what you have just said as that there might be some short-term additional costs but it will be made up in subsequent years by savings on a cheaper system?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): The overall net present value of this programme is very significant, £2.7 billion, largely because of the cash savings but also from some of the enhanced operational benefits that we have sought to quantify. It would potentially reduce that but overall it is a large positive number even if it slips a little bit.

Gareth Bacon AM (Deputy Chairman): OK, but there would be some upfront additional cost, potentially, for the users, subject to delay?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Yes. What generally seems to be happening is that the cost of what we are delivering in the programme is more or less what we predicted but the delays are obviously leading to higher costs in the existing contracts. Those are largely costs in that period a little down the track when the users would otherwise be hoping to benefit from the savings. There are cost pressures as well in some areas but the main cost pressures are from the extension.

Gareth Bacon AM (Deputy Chairman): The next question is for the emergency services in turn.. Do you expect to pay for ESN and, if so, do you have adequate resources to cover the bill?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): BTP is in a slightly unusual position. We are a non-core contributor to the programme so we do not benefit from the Home Office underwriting of the other forces. It is a concern, as I think I outlined earlier. We are already having complex discussions with DfT, our home body, the authority and industry as to how we manage to do that. We know it will cost us more in the short term. We have to pay for - we have described it as enrolment costs - a proportion of the development fund so that we can join the programme. That will be significant. How we do that, whether that is a one-off payment or a spread payment over a number of years, again is part of the debate.

Similarly, with Airwave, we have benefited from a subsidy from the Home Office that will not exist in this. As Stephen[Webb] described, in the life of the project and the extent of the project we are probably just one small portion that is slightly disadvantaged in that regard. We will have to work out how we mitigate that. Overall, the project will be more effective and more efficient, for us, in the longer long-term.

Gareth Bacon AM (Deputy Chairman): You are confirming my assumption that there might be some short-term for a longer-term gain.

Adrian Hanstock (Deputy Chief Constable, British Transport Police): Exactly.

Gareth Bacon AM (Deputy Chairman): Same question to the Ambulance Service.

Ian Hough (National Service Director, Ambulance Radio Programme): It is slightly different for the Ambulance Service in that, as I think I mentioned earlier, there is a national programme funded through the Department of Health. That is both in terms of contribution towards the Home Office ESMTTP programme and also the cost of change to bring the new systems in. One of my jobs is writing business cases for the Department and, yes, I am confident about this with funding.

Gareth Bacon AM (Deputy Chairman): You think you are going to be OK?

Ian Hough (National Service Director, Ambulance Radio Programme): Yes.

Vic Wynn (Acting Director of Information Management and Technology, London Ambulance Service): Sorry, there is some marginal cost for the Ambulance Service in terms of the transition but that is seen as being offset by the eventual business gain by a more effective service.

Gareth Bacon AM (Deputy Chairman): The same point, a little bit of short-term gain for longer-term gain.

Vic Wynn (Acting Director of Information Management and Technology, London Ambulance Service): Absolutely.

Gareth Bacon AM (Deputy Chairman): Fire Brigade?

John Anthony (Programme Director for Emergency Services Network Transition, London Fire Brigade): We are in a slightly different position in that when we agreed to go over to ESN, chief officers have done so on the basis that the costs of transition are being funded directly. It was by the Department for Communities and Local Government (DCLG), it is now by the Home Office. We are receiving grants for the project team, the IT upgrades that we need and control room upgrades. That money is being provided directly to us by grant funding at the moment. The business case as it stacks up at the moment shows that for London Fire Brigade there should be a slight saving perhaps over the cost of Airwave. We receive a grant at the moment, a subsidy from the Home Office for Airwave because of the way we transitioned onto Airwave going back several years ago, and that formula is still carrying on now. Once that grant funding is removed there might be a slight net gain for the Fire Service in London.

Gareth Bacon AM (Deputy Chairman): MPS?

Angus McCallum (Chief Information Officer, Metropolitan Police Service): As I said, we are getting funded for the work that we are having to be ESN-ready through the control room. In terms of the extension of Airwave, we have not built in the savings that ESN will bring yet because we do not know the timing and what those savings exactly will be. The biggest financial risk is probably if we end up replacing a lot of TETRA radios in order to stay on the Airwave system and then have to effectively change over in a very short time.

Gareth Bacon AM (Deputy Chairman): Thank you. Finally, to TfL, are you receiving adequate funding to cover the costs of the implementation?

Shashi Verma (Chief Technology Officer and Director of Customer Experience, Transport for London): All of our work is funded directly by the Home Office.

Gareth Bacon AM (Deputy Chairman): Everything is covered? If there is a delay, you will be covered as well?

Shashi Verma (Chief Technology Officer and Director of Customer Experience, Transport for London): Yes.

Gareth Bacon AM (Deputy Chairman): That sounds very encouraging.

Tom Copley AM: I have some questions on the Mayor's role, the first of which is: what involvement does the Mayor have on the ESN programme?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): Obviously a number of the users here, the fire, the police and TfL, are all part of the Mayor's family so it is very important and hopefully you have seen there are good co-operative relationships with the

emergency service users. We are very confident now we are working with TfL that the programme is going in the right place. It is challenging but we understand what we are trying to do and we believe that TfL have the capability to deliver that. I think the Commissioner, when he met the Permanent Secretary, mentioned the personal interest the Mayor has taken in this and the commitment he had shown to it. We are in a good place on that.

Tom Copley AM: It is slightly unclear what the Mayor's involvement is. Is he in conversations with the Home Office or is it done mainly through the other agencies of the Greater London Authority (GLA)?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We have obviously worked closely with MOPAC, with TfL and with a number of the other agencies. We have not yet had a meeting at a political level on this subject. We would obviously be keen to do so if there were a need but at the moment things seem to be heading in the right direction. I am sure Shashi can comment more.

Shashi Verma (Chief Technology Officer and Director of Customer Experience, Transport for London): From a TfL perspective, the Mayor is also Chairman of the TfL Board. This requires the Mayor's support and endorsement, which we have, but it does not require the Mayor to do anything beyond that. Repeating what I have said earlier, this is a Home Office project. In terms of getting approval from the TfL Board and so on, I am absolutely sure that we will get those approvals when we approach them.

Tom Copley AM: There is no requirement of him but from the emergency services point of view, is there anything you think the Mayor should be doing in order to keep the pressure up, particularly in terms of the timetable of this programme?

Adrian Hanstock (Deputy Chief Constable, British Transport Police): It is nothing that has not already been said. It is the pressure around the timeframes, the testing and the assurance of the compatibility of the coverage. We are repeating earlier discussion points. We all want assurance on those elements on it. I would make it clear, Chair, that we are all working closely together on this. It is not isolated concerns, these are very much shared concerns and we are collaborating to see how we can all work through them.

Tom Copley AM: The answer seems to be that there is not particularly very much the Mayor needs to be doing at all. Is that the impression shared across the panel?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): We would welcome him keeping a very close eye on the TfL program and ensuring the rollout because that is critical, and obviously it is an expensive programme that has essentially been funded by users throughout the country. They are going to be very careful. They will want to make sure that London does this key programme on time.

Siobhan Peters (Chief Finance Officer, Mayor's Office for Policing and Crime): In terms of through MOPAC and through the Deputy Mayor for Policing and Crime [Sophie Linden], we are keeping the Deputy Mayor and the Mayor briefed on what the implications are for policing.

Where we think we need to flag risks or concerns then we do so, but we have a good and mature dialogue with the Home Office on this.

Tom Copley AM: Is there anything he needs to do to reassure Londoners about this changeover, that they will not be put at risk?

Shashi Verma (Chief Technology Officer and Director of Customer Experience, Transport for London): The fact is that nobody is going to be put at risk because nobody is going to go live with the ESN service until everyone is convinced that it will work. This is not something on which anyone is going to take risks about it not working.

Len Duvall AM (Chair): We are in the last phase, you will be happy to know, in terms of this questioning. Over to me. When we talk about testing, I get a vision of two lots of testing. We get product testing, which is really in your domain, and then we get on-the-ground testing within the service. If someone were to ask me, when I walk out of this building in hopefully about half an hour's time, "What was that all about? What are you telling me?" I think we have a project that is still on the core mission, the core aims to be delivered.

There is - drift is not the right word - a reprofiling of the time and delivery issues, partly due to testing and partly because we cannot give some answers to some end users because of that product testing. We want to get that bit right before it is passed to that next stage. There will be an extension. Your reprofiling exercise this summer, internally in the Home Office, will come out with some new project milestones. I think you said, Angus [McCallum], that you are still waiting for some specification details. That would enable you to move on from your bit in terms of meeting some of your delivery issues. That is probably the same for all of you.

I am well aware of the PAC but because it is a managed approach, we are not drifting. This project is not drifting, it is being planned. There are some good reasons for the delays that we are seeing and the movement of some key milestones. Even though we are seeing those issues, we are still mindful about the finances on there. Your problems in the BTP are there in terms of financing but the rest of you can accommodate some of these maybe increased costs. As my colleague said, more pain to go before we get the gain. Angus?

Angus McCallum (Chief Information Officer, Metropolitan Police Service): On the financing, on an individual basis, have we baked in the savings for ESN into medium-term plans? No. What we have done at the higher level, at the police grant level, we do not know. How that impact might flow down, as yet, we are unsighted. You asked us on an individual basis rather than how it is looked at from a collective basis. I would just like to bring that out.

Len Duvall AM (Chair): I am grateful for that. Up and coming milestones, then, in terms of where we think we are with some of those. What should we be looking out for? For us on the outside looking in as you go on over the coming months and years, are the key milestones still the same but they are just shifting, or are there other issues?

Stephen Webb (Director, Law Enforcement Programmes, Home Office): There are obviously a lot of internal stages of testing that we are going through. Those milestones will

probably be quite hard to communicate because they are very technical. There are a lot of big external procurements that we hope to be able to announce, whether it is handheld devices or vehicle devices. We were recently able to down select to a very reputable group of suppliers for the handheld devices, which means that we should quite soon be able to give users a touch and feel of what the kind of devices they will be using will have.

We have steady progress on the coverage. As Gordon [Shipley] said earlier, we have probably gone from 70%-odd 4G coverage by geography up to about 83% at the moment, on track to ultimately reaching about 97%. There are a lot of milestones there that are gradually being achieved. Obviously the work with TfL, getting the business case approved and starting the process of going through the tunnels. There are lots of projects. There are the main projects, a lot of related projects, a lot of milestones, but we would be very happy to come back and report on progress.

Len Duvall AM (Chair): We are very grateful for that. Maybe in terms of the respective reports that you give to your organisations you could copy us in so we can keep an eye on it, whether those reports go to TfL, the Fire Authority or whatever, just to keep us abreast of that. Maybe immediately after you come to reprofile it, you would write to us and say, "This is where we think we are". We will keep a watching brief. I want to reassure you, I know when you people come before politicians you think we are all going to jump, rush and claim horror, doom or gloom. Yes, there is a tendency to do that from some of us but from this Committee and from our conversations earlier on, we are just very keen to see how you proceed with this project and the implementation of it. We know ultimately it is about the safety of Londoners. That is what is driving us and our motivations as people. We are asking questions, "Why are we doing this?" and all the rest of it. We want to see this project go on and I think we understand the complexity of it and the management of it. We might come back with some more questions once we have, as I said, considered the transcript and considered some of your answers.

At this stage I just want to say, while we have you all here, respectively, all your organisations, from TfL, who keep people moving around London, hopefully safely, and the Home Office, you are all playing a role in keeping London safe. We would like to thank you for that and also thank you for the way you have answered the questions this morning.