Infrastructure and Capital Investment Committee

3rd Report, 2012 (Session 4)

Broadband Infrastructure in Scotland

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The Scottish Parliament
Pàrlamaid na h-Alba

Infrastructure and Capital Investment Committee

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The Scottish Parliament
Pàrlamaid na h-Alba

Infrastructure and Capital Investment Committee

Remit and membership

Remit:

To consider and report on infrastructure, capital investment, transport, housing and other matters falling within the responsibility of the Cabinet Secretary for Infrastructure and Capital Investment, apart from those covered by the remit of the Local Government and Regeneration Committee.

Membership:

Jackson Carlaw (until 16 November 2011)
Malcolm Chisholm
Neil Findlay (until 22 December 2011)
Jamie Hepburn (Deputy Convener until 23 February 2012)
Adam Ingram (Deputy Convener from 7 March 2012)
Alex Johnstone (from 23 November 2011)
Gordon MacDonald
Margaret McCulloch (from 18 January 2012)
Aileen McLeod (from 7 March 2012)
Maureen Watt (Convener)

Committee Clerking Team:

Steve Farrell
Ruth McGill
Lewis McNaughton
Lauren Spaven-Donn

Infrastructure and Capital Investment Committee

3rd Report, 2012 (Session 4)

Broadband Infrastructure in Scotland

The Committee reports to the Parliament as follows—

INTRODUCTION

Remit and approach by the Committee

1. In October 2011, the Committee agreed to undertake a scoping exercise to identify the key issues relating to broadband in Scotland. The Committee's work recognises the increasing role of broadband in enabling people to carry out a range of tasks in their private and working lives. Broadband is increasingly important both for communication and entertainment and as a means for delivering wider economic benefits.

2. The Committee's work also responds to the Scottish Government's work in developing a digital strategy and broadband infrastructure action plan for Scotland, and seeks to scrutinise this activity. The Committee hopes that its work will contribute to the Government's development of a broadband procurement package for Scotland, and to the wider discussions taking place at UK level.

3. In carrying out its work, the Committee's remit was—

- to assess the coverage, availability and uptake of broadband across Scotland;

- to consider the ways in which different local areas are working to promote access to broadband in Scotland and how good practice might be shared; and

- to consider what work is required by the Scottish Government, infrastructure providers and others in order to expand Scotland's digital infrastructure.

4. The Committee heard oral evidence from a range of public and private sector organisations in Scotland, including broadband providers, ICT academics and

experts, community groups, development agencies and local authorities, and from the Scottish Government.[1]

5.　The Committee also invited written evidence, in response to which it received 75 submissions.[2]　Many of the submissions were from individuals notifying the Committee of poor broadband connectivity in their local areas.

Summary of key findings

6.　The Scottish Government published *Scotland's Digital Future: Infrastructure Action Plan*[3] on 30 January 2011.　This document sets out proposals to deliver world-class digital infrastructure across the whole of Scotland by 2020.　Although the Action Plan was not available at the time for the Committee to question witnesses on its content, the Committee obtained views on what the Government's priorities should be and how the available resources should be allocated.

7.　The following key issues emerged from the written and oral evidence that the Committee received and form the Committee's main findings—

- **public investment should only be made where it is clear there is no potential for the market to deliver;**

- **the Scottish Government's broadband targets for 2020 must be more ambitious in order to ensure that rural areas in Scotland are not left further behind, and need to offer greater clarity to local communities and businesses about the level of broadband service that they can expect for their areas in the future;**

- **aggregation of services to make them more commercially attractive should be balanced with the need to maintain flexibility to address local requirements;**

- **the chosen infrastructure solutions must be future-proofed, and although any procurement specification should be technology-neutral, it must emphasise the need for a mixed-technology approach for Scotland;**

- **the BDUK Mobile Infrastructure Project[4] to eradicate mobile 'not-spots' and the 4G auction will be crucial and they must result in a substantial increase in mobile coverage in Scotland;**

- **to encourage innovation, any barriers created by the regulatory and planning frameworks should be identified and removed**

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[1] See Annexe B for a list of the oral evidence and associated written evidence received by the Committee.
[2] See Annexes B and C for a list of the written evidence received by the Committee.
[3] Scottish Government. (2012) *Scotland's Digital Future – Infrastructure Action Plan*. Available at: http://www.scotland.gov.uk/Publications/2012/01/1487/0
[4] Broadband Development UK (BDUK) is responsible for delivering the UK Government's broadband policies and sits within the Department for Culture, Media and Sport.

> wherever possible, and the 'seed fund' should utilise the expertise and experience of the industry; and

- efforts to increase broadband take-up should be targeted at those groups or geographical areas where take-up has so far been particularly low, such as the over-55s, small and medium-sized businesses, and parts of Glasgow; and

- the implementation and delivery of the Scottish Government's Action Plan is crucial and the Committee intends to monitor its progress.

DEVELOPING A BROADBAND INFRASTRUCTURE FOR SCOTLAND

8.   From the evidence it received, the Committee acknowledges that, to date, the development of broadband infrastructure has in the main been driven by commercial considerations. This has resulted in the more sparsely populated rural areas of Scotland (as well as some semi-urban areas) lacking sufficient broadband connectivity.[5] Installing up-to-date broadband infrastructure in rural areas in Scotland has simply not been considered to be commercially viable. In contrast, the more commercially-viable urban areas with their larger and more concentrated populations have benefited from steady improvements as broadband technology has developed

9.   The Secretary of State for Culture, Olympics, Media and Sport[6] has said that if it is left to the private sector alone then superfast broadband will not reach around one-third of UK households and businesses. Arqiva[7] cited data from Broadband Delivery UK (BDUK) which indicated that around 1.3m homes in Scotland will not receive superfast[8] broadband if it is left to the market to fund the infrastructure.

Scottish Government strategy

10.   The Scottish Government has recognised this problem and has committed a significant amount of public funding[9] to the development of a broadband

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[5] Ofcom research into broadband speeds in 2010 showed that, because of greater distances between households and their exchange in rural areas, speeds there tend to be around half of those in urban areas. Ofcom. Written submission, page 1.

[6] Rt Hon Jeremy Hunt MP, quoted in BDUK news release issued on 16 August 2011, relating to the announcement of £530m UK Government funding for superfast broadband. Available at: http://www.culture.gov.uk/news/media_releases/8388.aspx

[7] Arqiva. Written submission, page 3.

[8] Ofcom defines superfast broadband as broadband with speeds greater than 24Mbps. Source: Ofcom. (2010) *Super-fast Broadband*. Available at: http://stakeholders.ofcom.org.uk/binaries/consultations/wla/annexes/context.pdf

[9] The Scottish Government has confirmed that a total of £256m will be available for delivering the 2015 target: £78.2m allocated in the Scottish Government spending review 2012-2015 (including Barnett consequentials of £28.2m); £68.8m BDUK funding; £40m ring-fenced funding allocated to local authorities (Barnett consequentials), plus another £39m that has already been earmarked by four local authorities (Aberdeen City Council, Aberdeenshire Council, Dumfries and Galloway Council and Scottish Borders Council); £25.5m from the European Regional Development Fund; and £4.5m from Highlands and Islands Enterprise.

infrastructure, as outlined in *Scotland's Digital Future – Infrastructure Action Plan*[10].

11.   The Action Plan outlines the Scottish Government's objectives—

- by 2015, to deliver broadband speeds of 40-80Mbps (megabits per second) for 85% to 90% of premises in Scotland, and to deliver the best possible speeds for those where delivery of 40-80Mbps is not possible; and

- by 2020, to deliver world-class digital infrastructure for Scotland.

12.   The Action Plan states that the 40-80Mbps is intended to signal the extent of the step change required, rather than being a precise measure.

13.   The Action Plan sets out four programmes that the Scottish Government believes are critical in order to achieve its digital ambitions for Scotland—

- Programme 1 will address the current digital divide and put in place infrastructure in those areas that the market will currently not go, to ensure a step change in speeds by 2015: speeds of 40-80Mbps for 85-90% of premises.

- Programme 2 will deliver a longer term plan to ensure the right mechanisms, partnerships and commercial models in place to deliver world-class infrastructure, by 2020, in a sustainable way and in partnership with industry.

- Programme 3 will be targeted at promoting locally based projects and programmes and also trialling new technologies.

- Programme 4 will be targeted at raising digital participation rates (for businesses and individuals) and raising demand for services.

14.   To meet its coverage objectives, the Scottish Government plans to target the bulk of its public investment in areas where the market is inactive. The Action Plan refers to these as 'white' areas which, the Government estimates, account for around 30% of premises in Scotland.

15.   The remaining areas are defined as 'grey' areas – these are described as being where the market may, in the future, decide to deliver broadband infrastructure. The Action Plan explains that a programme of 'underpinning activity' will be undertaken in the grey areas to stimulate the market to invest.

16.   **The Committee welcomes the Scottish Government's commitment to delivering a step change in people's ability to access the internet. It considers the Action Plan to be an important part of the drive to meet that objective.**

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[10] Scottish Government. (2012) *Scotland's Digital Future – Infrastructure Action Plan*. Available at: http://www.scotland.gov.uk/Resource/0038/00386525.pdf

17. **The Committee also welcomes the Government's planned public investment to support the implementation and delivery of the Action Plan. The Committee considers that this public investment should be used strategically, with the aim of maximising private investment potential, and should only be used to develop infrastructure where there is no potential for the market to act.**

18. **It is not clear to the Committee, however, how and with what level of public investment the Scottish Government intends to underpin activity in the 'grey areas' where the market may yet decide to act. It is also concerned that, if this approach is unsuccessful in certain areas, there is a risk that they might be bypassed by both private sector investment and the Scottish Government's supported infrastructure. The Committee therefore requests further explanation of how this particular aspect of the Action Plan will operate in practice, including details of what action will be taken should private sector investment fail to materialise in respect of any 'grey areas'.**

19. **The Committee also urges the Scottish Government to continue to press BDUK for confirmation of whether additional UK Government funding will be made available to support digital infrastructure development in Scotland. The Committee also seeks further information on the extent to which further funding options may arise through the EU's Digital Agenda for Europe and requests details of what action the Scottish Government is taking to assess these opportunities.**

Scottish Government targets

20. In October 2010, the Scottish Government outlined its *Digital Ambition for Scotland*. The ambition was that next generation broadband would be available to all by 2020, and significant progress would be made by 2015.[11] This ambition was then revised in the Action Plan, as described at paragraph 11. As the Action Plan was not published until after the Committee had heard evidence from external stakeholders, witnesses did not have an opportunity to comment directly on the new 2015 and 2020 targets.

21. On the whole, evidence received by the Committee indicated that there was support for the Scottish Government's digital ambition. Specifically, witnesses said that the ambition broadly correlated with the targets set by the UK Government and the European Commission.

22. However, some evidence received by the Committee indicated that the Government's targets could be even more ambitious. For example, Arqiva – an ICT infrastructure provider active in the UK, Europe and the USA – suggested to the Committee in written evidence that "the overriding public policy objective must be to deliver universal access to broadband"[12]. It suggested that failure to do so would disproportionately disadvantage rural communities—

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[11] Scottish Government. (2011) *Scotland's Digital Future - A Strategy for Scotland.* Available at: http://www.scotland.gov.uk/Resource/Doc/981/0114237.pdf

[12] Arqiva. Written submission, page 1.

"There is an ever-greater social and economic cost to each person who falls, or is left behind on the wrong side of this 'digital divide'. Research suggests that consumers and SMEs left without broadband would be disproportionately rural.

"… in a world economy demanding that citizens, consumers and businesses are all connected – such a digital divide could even exacerbate the problems of rural drift (of both consumers and small businesses to towns).

"The real gain for UK plc is to achieve universal access to broadband – not to push fibre to 90% penetration and then stop."[13]

23.   East Ayrshire Council also highlighted the impact of fast broadband speeds on rural businesses in particular and called for the Scottish Government's target to be set higher—

"The provision of next generation broadband in East Ayrshire is considered to be a key infrastructure requirement in attracting new economic development and stimulating economic growth. The Council are of the opinion that the investment in next generation broadband should be geared towards providing enhanced speeds of 100Mbps+ to assist the Council in attracting businesses, to Kilmarnock and Cumnock for example, who require fast broadband access.

"Therefore, the Council respectively suggest that the Committee look to provide the infrastructure to achieve much greater speeds throughout Scotland than those that are currently being proposed."[14]

24.   The Committee also received written evidence from Gillespie Leisure, which operates in the service and tourism sector in Scotland and is based in Dumfries and Galloway. It considered that the "unreliable and poor" broadband service that it receives was "curtailing it from investing in online booking system and forwarding out business".[15]

25.   In comparison to the Scottish Government's target, other European countries have published their targets[16], some of which are as follows—

- Luxembourg: by 2015, to provide fibre-to-the-premises (FTTP) for every household; by 2020, to provide 1 Gbps (gigabit per second) to every household

- Sweden: by 2015, 40% of households and businesses to have access to 100Mbps; by 2020, 90% of households and businesses to have access to 100Mbps

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[13] Arqiva. Written submission, pages 1 and 3.
[14] East Ayrshire Council. Written submission, pages 1-2.
[15] Gillespie Travel. Written submission.
[16] OECD. (2011) *National Broadband Plans, OECD Digital Economy Papers, No. 181*. Available at: http://dx.doi.org/10.1787/5kg9sr5fmqwd-en

- Denmark: by 2020 100% of households and businesses to have access to 100Mbps

- Spain: by 2015, 100Mbps available to 50% of the population.

26. Dr Jason Whalley, a senior lecturer in the Department of Management Science at Strathclyde University, asserted that the target speed of 40-80Mpbs did not have the same aspirational dimension as Sweden's target of 100Mbps.[17]

27. Also, closer to home, there are examples of ambitious targets being set. In relation to 4G mobile coverage, Ofcom has proposed a target of achieving 98% coverage of the UK population. Ofcom has claimed that coverage could even exceed this figure when considering the potential uplift resulting from the BDUK Mobile Infrastructure Project (MIP).[18]

28. There are also examples where superfast broadband speeds are already available in Scotland. Aberdeen City and Shire Economic Future (ACSEF)[19] highlighted the Energetica Global Hub, which is a 30-mile corridor in the North-East of Scotland, which delivers 1Gbps to a mixture of residential and business customers. ACSEF suggested that this could be a model that would attract business to Scotland and could be replicated elsewhere, making Scotland a global market force.

29. The Committee also notes that research has shown that even small increases in broadband coverage and speed can have a significant impact on the economic development of a country. Research cited by the OECD suggested that a "consensus" view was that a 10% increase in household penetration of broadband boosted GDP by 0.1% to 1.3%.[20] Other research has suggested that a doubling of broadband speed increased GDP by 0.3%.[21]

30. Research produced for the UK Digital Champion[22] has also found that the average family would miss out on savings totalling £560 a year if they did not use the internet to shop around for the cheapest deals on products such as energy, insurance and household items. Furthermore, as more and more public services become available online, such as e-health for example, broadband connectivity is increasingly important in order to avoid digital exclusion.

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[17] Dr Jason Whalley. Supplementary written submission.

[18] Ofcom. (2012) *Second consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues*, pages 8-9. Available at: http://stakeholders.ofcom.org.uk/binaries/consultations/award-800mhz/summary/combined-award-2.pdf

[19] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 23 November 2011*, Col 430.

[20] OECD. (2011) *National Broadband Plans, OECD Digital Economy Papers, No. 181*. Available at: http://www.scottish.parliament.uk/S4_InfrastructureandCapitalInvestmentCommittee/Inquiries/Ewan_Sutherland_OECD.pdf

[21] Joint research (2011) conducted by Ericsson (NASDAQ:ERIC), Arthur D. Little and Chalmers University of Technology in 33 OECD countries.

[22] Research prepared by PriceWaterhouseCoopers (2009) *The Economic Case for Digital Inclusion.* Available at: http://www.parliamentandinternet.org.uk/uploads/Final_report.pdf

31. **The Committee is particularly concerned that many rural areas in Scotland will continue to experience poorer access to broadband relative to more urban areas, making those rural parts of Scotland less attractive for businesses to operate from.**

32. **Broadband connectivity has become a necessity in both social and economic terms to the vast majority of individuals, households and businesses and current trends suggest that demands for improvements can only become more prevalent. The Committee therefore questions whether the targets set by the Scottish Government in the Action Plan provide sufficient clarity and ambition. It notes that other European countries, many of which share similar challenges to Scotland in terms of rurality and topography, have set out very clearly the high standards they aim to achieve.**

33. **Whilst the Committee accepts that, given the speed at which digital technology is developing, it is difficult at this stage to predict with certainty what types of technology will be available and what broadband speeds will be possible across Scotland, it recommends further refining of the 2020 target.**

34. **The Committee welcomes the Scottish Government's commitment to bring forward, before the end of 2012, a full plan outlining the delivery of "world-class" digital infrastructure by 2020. This clearly represents an opportunity for the Scottish Government to provide additional clarity about its target for 2020. Greater clarity would not only benefit the digital infrastructure industry, but would also offer communities and businesses across Scotland greater knowledge about the level of broadband service that they could anticipate being available in their areas in the future.**

35. **In drawing up the full plan, the Committee recommends that the 2020 target could usefully be enhanced to include the aspirational objective to deliver a world-class digital infrastructure throughout Scotland (i.e. to 100% of the population), recognising of course that a mix of technologies will be required to achieve this.**

36. **The Committee is also concerned that the Scottish Government's proposed timetable for awarding the procurement contract (i.e. within the first half of 2013) may not allow sufficient time in which to carry out the infrastructure development necessary to meet the 2015 target. The Committee would be concerned – for social and economic reasons – if the initial 2015 target is not met, and it will monitor this activity closely.**

Aggregation v. localism

37. The Committee received evidence highlighting the inherent tension between the need for digital infrastructure procurement to reach a critical population mass, thereby making it commercially viable, and the need to ensure that it includes a certain amount of flexibility by allowing local requirements to be incorporated.

38.   For example, the experience of the Pathfinder projects[23] was that in order to get the level of commercial interest necessary they needed to aggregate the needs of five local authority areas for Pathfinder North, and two local authority areas for Pathfinder South.   This provided the required population numbers to make the projects commercially viable.

39.   Ofcom also recognised that broadband coverage was driven by commercial considerations.   Vicky Nash[24] suggested that roll-out happens where there is a population centre of a critical mass.   This point was also made by Virgin Media, which considered that connecting to fewer than 1 million homes was prohibitive on grounds of cost.[25]

40.   Other witnesses warned against the fragmentation of the network in Scotland.   Brendan Dick of BT Scotland, for example, said that "it is critical to avoid a series of disparate bits of network that are owned by different people, become unmaintainable and are certainly not economic"[26].

41.   However, other evidence highlighted that a one-size-fits-all approach would not work for Scotland, and that any solution must take account of local circumstances.   A straightforward example concerns what type of infrastructure to deploy in a particular area. The Committee heard that fibre optic cable – which is recognised as the best currently available future-proofed solution, i.e. one that has a lifespan of several decades and will support increasing bandwidths over time – was not a practical solution for reaching remote and rural areas due to the high costs involved.

42.   Arqiva[27] pointed out that fibre requires 50 households per cabinet to make it economic to deploy.   On its assessment, Arqiva concluded that for broadband to be provided cost-effectively, 105,000 homes in Scotland would need to be served by fixed wireless, and a further 25,000 homes (12,000 in the Highlands and Islands region) served by satellite connection.

43.   In acknowledging that specific local circumstances could have a bearing on the types of broadband services that might suit a particular area, the Committee sought evidence from community groups across Scotland that were actively involved in promoting broadband in their local areas.

44.   Whilst activity in the Highlands and Islands, South of Scotland and Aberdeen and Aberdeenshire was particularly well-advanced, there was an acknowledgement that other parts of the country were at different stages of development.

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[23] In 2004, the Scottish Executive announced funding to develop Pathfinder projects – one in the North of Scotland and the other in the South – to procure broadband network services to schools and local authority sites.
[24] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 16 November 2011*, Col 359.
[25] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 512.
[26] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 526.
[27] Arqiva. Written submission, page 3.

45.   The Aberdeen City and Shire Economic Future and Pathfinder North – two groups whose broadband plans were at the most advanced stages of development – called for a progressive procurement package, which would allow groups at different stages of development to link into the Scotland-wide network when they were ready.   Vicki Nairn, from Highland Council and was involved with the Pathfinder North project, suggested that—

> "A lot depends on how far advanced organisations are at the point at which the demand is identified; a lot also depends on the procurement arrangements that they have in place. At the moment, part of the issue in Scotland is the fact that there are a number of different procurements in place with different start and end dates. Some of those procurements may be national contracts, some may be local, and some may be aggregated. There are lots of different starting points."[28]

46.   Vicki Nash, from Ofcom, welcomed the important role that local authorities, in particular, could play in developing a Scotland-wide broadband network, given their local expertise and connections.   She concluded that an "aggregated approach that draws on local knowledge and local work is probably best"[29].

47.   The Scottish Government's approach, outlined in the Action Plan, reflects the need to combine local requirements, whilst maintaining the scale to make the procurement contract sufficiently attractive, commercially.   The Action Plan outlines the Government's intention for two separate procurement exercises – one for the Highlands and Islands (for which BDUK funding will be used and is currently at the tendering stage), and the other that will serve the rest of Scotland (which will be commenced no later than summer 2012).   Both procurement exercises will form part of the development of an overall approach for Scotland.

48.   To ensure that the local dimension is taken into account by the procurement phases, the Scottish Government intends to—

> "… work closely with COSLA and individual local authorities to ensure there is flexibility within the national approach to meet local requirements and priorities and to deliver local solutions."[30]

49.   **The challenge for the Scottish Government will be to ensure that the correct balance is achieved so that there is sufficient cohesion across the strategy, but that there is also enough flexibility to ensure local communities get the service that is right for them.**

50.   **The Committee acknowledges the proactive work that has been undertaken to develop local broadband plans. Such local initiatives are important and, through their engagement with local people and businesses, have proved successful in developing tailored plans that will meet the**

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[28] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 23 November 2011*, Col 418.
[29] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 16 November 2011*, Col 368.
[30] Scottish Government. (2012) *Scotland's Digital Future – Infrastructure Action Plan*, page 14. Available at: http://www.scotland.gov.uk/Publications/2012/01/1487/0

specific needs of their communities. Co-ordination from the Scottish Government and COSLA will be crucial in ensuring that the valuable work that has already been undertaken by local groups is not lost and the projects can be delivered as intended.

51. **The Committee recommends that the Scottish Government, in developing its procurement specification, includes a requirement to undertake programmes of community engagement to identify specific local needs in areas where digital infrastructure improvements are to be undertaken. The Committee welcomes the indication given by the Cabinet Secretary that the procurement exercise will consider how higher levels of community benefit can be obtained from the infrastructure delivered through public investment.**

52. **The Committee also recommends that the Government and its partners should introduce clear guidelines and establish standards for service delivery to be adopted across Scotland so as to avoid a patchwork of broadband services. The Committee recommends that this action is taken forward urgently in order that progress towards achieving the 2015 target is not jeopardised.**

53. **In addition, the Committee seeks details of how the Government and its partners will ensure that areas where broadband activity is at a less advanced stage will not fall through the net and to give assurances that these areas will receive the support and guidance they need to deliver the necessary digital infrastructure improvements.**

54. **Also, the Committee invites the Scottish Government to respond to the suggestion that a progressive procurement package is required to allow local areas to join the process at different stages, when their circumstances allow it. The Committee is interested in the Government's response to whether such an approach could minimise the knock-on effect of holding up the overall procurement process, where a single area encounters delays.**

Types of infrastructure

55. From the evidence that the Committee received, it is clear that the different geographical characteristics of urban, rural and island areas, as well as the growing demand for mobile technology in Scotland, point to the need for a mix of fixed, wireless, satellite and mobile broadband solutions. That said, there appears to be general agreement that fibre – as the most future-proofed solution – would be at the core of any broadband network in Scotland.

56. Professor Michael Fourman, from the Royal Society of Edinburgh (RSE), told the Committee that in his view the best approach would be, as a first step, to establish "a fibre backbone"[31] for the country. He suggested that this would provide enough backhaul capacity to enable individual communities to link to the core network, and the market would do the rest. He also suggested the creation of

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[31] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 7 December 2011*, Col 451-2.

open access hubs in communities of 2,000 people or more, which would help to extend the network.

57.   However, the two primary fibre infrastructure providers in the UK – BT[32] and Virgin Media[33] – emphasised that the bulk of the cost of taking fibre out to consumers and businesses was not primarily in the core network, but in the section that goes from the exchanges and cabinets out to properties.

58.   The RSE also called for an open-access network reaching every community in Scotland. In written evidence, the RSE suggested that an open-access network would maximise economic and social benefit and would "enable a variety of organisations – including small businesses, community enterprises and local authorities – to innovate and compete to provide local distribution and services"[34]. Other witnesses also supported the creation of an open-access network. For example, David Byers, from Scottish Enterprise and was involved with the South of Scotland Next Generation Broadband Project, commented that where "operators could trade bits of networks between themselves, we would have a much more efficient way of rolling out the infrastructure around the country"[35].

59.   Ofcom data[36] shows that there is a growing demand for mobile technology in Scotland, reflected by the smartphone revolution and an increasing number of mobile-only households. Ofcom has also published data that shows that 2G (and 3G) mobile coverage is not as extensive in Scotland as it is in England. In Scotland, 2G services are available to 85% of the population, whereas this compares to 96% for the UK as a whole and 99% for England. Wales has a poorer level of 2G coverage at 84%, and Northern Ireland has 87%. Based on this data, the Scottish Government "expects Scotland to derive an appropriately significant share"[37] of the benefits from the BDUK Mobile Infrastructure Project (MIP), which aims to eradicate not-spots across the UK.

60.   Concerns were raised in evidence to the Committee about the delayed 4G spectrum auction, and the extent to which the auction is being co-ordinated, at UK level, with BDUK's £150m MIP. Two mobile operators, Three[38] and Everything Everywhere[39] (which incorporates Orange and T-Mobile services), told the Committee that the release of the new spectrums as part of the 4G auction would be crucial in meeting the demands of increased broadband usage in Scotland. In particular, the low-frequency spectrum (800MHz) was seen as most suited to

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[32] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 522.

[33] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Cols 522-3.

[34] RSE. Written submission, page 1.

[35] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 23 November 2011*, Col 424.

[36] Ofcom. (2011) *Communications Market Report: Scotland*. Available at: http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr11/CMR_2011_Scotland.pdf

[37] Scottish Government. (2012) *Scotland's Digital Future – Infrastructure Action Plan,* page 12. Available at: http://www.scotland.gov.uk/Publications/2012/01/1487/0

[38] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Cols 511, 517-8 & 530.

[39] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Cols 531 & 537.

delivering broadband to rural areas – based on its ability to transmit over long distances – and so could form a key part of the broadband infrastructure in Scotland. The mobile operators commented that the release of the spectrum had been delayed to the extent that, in Europe, only Greece was further behind the UK in terms of readiness, and that further delays could hamper economic development.

61. Three and Everything Everywhere also called for the 4G auction to be properly co-ordinated with BDUK's MIP. Julie Minns, from Three, told the Committee that these two processes were "not quite in sync"[40]. She explained that—

> "there will be a significant uplift in coverage as a result of the release of the new spectrum [800MHz as part of the 4G auction] … However, that will come after the UK Government has spent the £150 million, so there is a risk that some of that subsidy will go into areas that could get a significant increase in coverage just from the spectrum auction.

> "There are some questions to be asked about how the UK Government is plotting its coverage. Is it based on current not-spots or projected ones, post-auction? For Scotland in particular, which has a higher proportion of not-spots, that is a critical question."[41]

62. The Scottish Government's Action Plan suggests that a two-pronged approach will be required to deliver a step change in broadband access across the whole of Scotland. It suggests that its focus will ensure that Scotland's core, or backbone, digital infrastructure is fit for purpose; and that mobile coverage is also improved across Scotland.

63. The Cabinet Secretary accepted that there are places in Scotland, particularly in the remoter rural areas, where it will not be possible because of the costs to provide a fibre-optic connection. He estimated that there will be "somewhere between 5 and 10 per cent of premises in Scotland, for which the solution will be alternative technologies … such as wireless, wi-fi and satellite"[42].

64. In relation to mobile coverage, the Action Plan states that the Scottish Government has submitted a proposal to Ofcom that the 4G auction should include an increased coverage obligation of 98% of the population and that this should apply to each region within Scotland[43]. It also confirms that the Scottish Government will "continue to press for this as the auction continues" and "will also

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[40] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 514.
[41] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 514.
[42] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 22 February 2012*, Cols 708-9.
[43] Ofcom's initial 4G auction consultation (launched in March 2011) proposed population coverage of 95% of the UK as a whole. A subsequent Ofcom consultation (launched in January 2012) gave two options: to set a UK coverage target of 98%; or to link the 4G coverage target to the MIP so that a licence holder would be obliged to provide 4G broadband at a level comparable to that of 2G. Source: www.ofcom.org.uk

press for alignment between the MIP and the roll out of 4G to ensure that coverage for Scotland is maximised".[44]

65.   **The Committee welcomes the Scottish Government's intention to adopt a mixed-technology approach, incorporating fixed and mobile broadband platforms, and for the network to be open-access. The Committee believes that this approach is best suited to Scotland given its particular topography.**

66.   **The Committee agrees with the Scottish Government's approach of taking a technology-neutral approach to the procurement strategy, but awaits the announcement of the detailed specifications and funding pans. In particular, the Committee will be interested to review these plans to consider the Government's proposed model of public/private investment.**

67.   **The Committee also recommends that as part of the outcomes from the procurement exercises under Programme 1 of the Action Plan, a comprehensive delivery plan should be published. This should include – for each area – a timetable for the delivery of infrastructure as well as details of the technology solution to be applied.**

68.   **The Committee recognises that Scotland has a shortage of 2G and 3G coverage. The Committee hopes that the BDUK's Mobile Infrastructure Project (MIP) will eradicate the substantial number of not-spots in Scotland and that it will also provide a platform for 4G coverage.**

69.   **The Committee believes that it is also important that Scotland fully benefits from the 4G auction. The Committee urges Ofcom to ensure that the winning operator(s) will be required to meet the same challenging coverage targets for the Scottish population as they will for the UK population. The Committee, therefore, provides its full backing to the Scottish Government's position and will notify Ofcom accordingly.**

70.   **The Committee is concerned about the suggestion that the MIP and 4G auction are not sufficiently co-ordinated and could result in public subsidy being allocated to areas that could be covered by the 4G auction. The Committee intends to seek details from BDUK about how it intends to allocate the MIP funding and, specifically, whether its map of not-spots takes into account the uplift likely to be achieved by the later 4G auction. The Committee urges the Scottish Government to continue to press for greater involvement in the MIP and 4G auction processes in order to ensure that Scotland's interests are taken into account during these discussions.**

Innovation and new technologies

71.   The Committee also received evidence that highlighted possible low-cost innovative solutions for delivering broadband infrastructure. Examples included running fibre through the sewer network as a cheaper alternative to digging up the roads; utilising overhead cable infrastructure such as telephone and electricity

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[44] Scottish Government. (2012) *Scotland's Digital Future – Infrastructure Action Plan,* page 12. Available at: http://www.scotland.gov.uk/Publications/2012/01/1487/0

networks; and using the public sector's property portfolio as an incentive for wireless operators to deploy base stations in public buildings.

72.   One example of an innovative solution was provided by ACSEF who, as a result of carrying out an infrastructure audit in the Aberdeen and Aberdeenshire area, identified an under-utilised stretch of fibre-optic cable running the length of the A90 and A98. Rita Stephen[45] from ACSEF explained that they were able to negotiate an agreement with the owner of the cable that it could be incorporated into their local broadband plan.

73.   The Committee also heard about some specific projects that were being developed by operators in the UK. For example, BT and Virgin Media have both been involved in wireless city projects. Matt Rogerson, from Virgin Media, explained that Virgin's metro wireless networks "sit between fixed connectivity and wireless connectivity in that they use the power of our fixed-line fibre broadband network to connect to small cells that sit out on the street and provide ubiquitous connectivity"[46].

74.   Also, Everything Everywhere said it was—

> "currently trialling a 4G pilot in Cornwall with assistance from BT that is already demonstrating clear benefits to those trialists – both consumers and small businesses – who are using it. We will learn a lot from that experience, which will help us to understand more succinctly how 4G can be applied to rural environments in particular, in terms of allowing much broader and wider coverage."[47]

75.   Witnesses stressed that for these innovations to be possible, the regulatory and planning frameworks were critical and needed to be responsive to their demands. Richard Rumbelow from Everything Everywhere said that in the past, the planning system in Scotland had been resistant to new build such as new masts and new infrastructure. He suggested that these issues needed "to be reflected in how quickly the infrastructure and service can be deployed, whether that is across Scotland or the rest of the United Kingdom"[48]. There was also support for utilising the regulatory framework to compel contractors to include telecommunications ducts in new housing and other civil building projects, such as transport infrastructure.

76.   The Action Plan acknowledges the importance of developing innovative solutions to broadband delivery. The Scottish Government will encourage the growth of initiatives that demonstrate viable next generation solutions with the potential for large scale roll out in the short to medium term. To support this drive,

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[45] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 23 November 2011*, Cols 424-5.
[46] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 526.
[47] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 512.
[48] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 527.

the Government plans to invest £5m over three years in a 'seed fund' to provide funding to grow these projects.

77. **The Committee welcomes the Scottish Government's commitment to encouraging the development of innovative solutions and its aim of involving local communities in this process.**

78. **The Scottish Government, together with COSLA and individual local authorities, must ensure that all local communities, not just those that are already active in developing broadband plans, have the chance to benefit from the seed fund.**

79. **The Committee also considers that the Government's approach to encouraging innovation should more proactively seek to utilise the vast expertise and experience of the industry. For example, this could involve the facilitation of contact between companies and local community groups where relevant and where shared interest are identified.**

80. **The Committee recommends that the Scottish Government and COSLA work with operators and industry professionals to remove any barriers to innovation posed by the regulatory and planning frameworks.**

81. **The Committee also urges the Scottish Government to work with infrastructure owners and providers to identify any under-utilised infrastructure, such as that identified by ACSEF, which has potential to make a contribution to the development of Scotland's network.**

Take-up and engagement

82. The Committee also received evidence about the importance of encouraging take-up of broadband. Increasing take-up was highlighted as being a crucial part of any digital strategy. Not only would increases in demand stimulate private sector investment, but it would also promote the online provision of public services.

83. Ofcom data for 2011[49] reflects that Scots are less likely than people in the rest of the UK to take up broadband, and that the gap is widening. Compared with 2010, take-up of fixed and mobile broadband in Scotland in 2011 remained at 61% of the population, whereas figures for the UK as a whole show an increase from 71% to 74% from 2010 to 2011. Breaking down the UK figures shows that broadband take-up in England, Wales and Northern Ireland has continued to increase whereas in Scotland it is static.

84. Scotland's poor take-up rate was explained by particularly low figures compared with the UK among those aged 55+ and low-income groups (take-up in Glasgow is particularly poor at only 50% in 2010). Take-up in Scotland among those aged 16-34 was also shown to be lower than the overall UK figure.

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[49] Ofcom. (2011) *Communications Market Report: Scotland*. Available at:
http://stakeholders.ofcom.org.uk/binaries/research/cmr/cmr11/CMR_2011_Scotland.pdf

85.   Vicki Nash[50], from Ofcom, suggested that a possible cause for the low take-up in Scotland was that households were increasingly going mobile-only. She suggested that the lower take-up of personal computers in Scotland was clearly driving the lower take-up of broadband. However, other evidence from the Broadband Stakeholder Group[51] highlighted that because mobile broadband services support pay-as-you-go they could offer users more control over their expenditure.

86.   There is also an issue with low take-up of broadband by SMEs in Scotland. Research commissioned by the Scottish Government and published in 2011[52] indicated that 25% of the 1,000 SMEs surveyed did not use the internet at all, with many of them believing it to have little relevance to their business. From an economic development perspective this is a particularly worrying trend. However, there is debate about whether the situation is quite as bad as that – written evidence from the Federation of Small Businesses Scotland[53] cited results, published in 2010, from a survey of its members which found that around 90% of Scottish businesses used broadband for business purposes.

87.   Whilst the issue of cost can be a barrier for many, particular the elderly, the Committee heard that if people better understood the benefits of broadband then take-up levels would increase.   Fiona Ballantyne from the Communications Consumer Panel said—

> "If people see a reason for having access to the internet and appreciate that it will do something for them, the issue of price becomes far less significant.

> "Understanding all the benefits of being online is what makes people willing to pay the money, as they consider them to represent value for money."[54]

88.   A number of community broadband projects explained to the Committee what they were doing to target people in their local areas who were not online. For example, Digital Fife[55] has worked with older residents in sheltered housing as well as with parents in low-income families by giving them a chance to use the technology. To specifically engage with SMEs, ACSEF[56] has developed business support programmes ranging from one-to-one support to seminars and workshops, as well as providing web-based support and practical advice.

89.   The Committee also heard about the work that operators and providers of broadband services were doing to drive take-up. For example, at its Greenock

[50] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 16 November 2011*, Col 357.

[51] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 7 December 2011*, Cols 448-9.

[52] Scottish Government. (2011) *Research on Broadband and Business in Scotland.* Available at: http://www.scotland.gov.uk/Resource/Doc/342391/0113934.pdf

[53] FSB. Written submission, page 1.

[54] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 7 December 2011*, Cols 468 & 470.

[55] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 23 November 2011*, Cols 434-5.

[56] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 23 November 2011*, Col 432.

contact centre, Everything Everywhere[57] holds open days and sessions at which the local community can come in to see what goes on there and to engage with technology and see how it works. On a bigger scale, BT's Get IT Together[58] campaign involves 7,000 BT employees in Scotland working in their communities, often with children, to help people such as grandparents to become more familiar with the internet and to get value from it.

90. Virgin Media also described a trial that it was running in Tower Hamlets in London with a business incubator called The Cube that supplies "very high-capacity"[59] broadband connection for use by start-up businesses. Matt Rogerson from Virgin Media explained the advantage for start-ups was that they could access broadband without having to sign up to a 24-month contract: "they can pay for it for an hour, a day or a week, and it helps to support their business, especially as they do not know whether they will be there in two or three months"[60].

91. However, as witnesses acknowledged, more needs to be done, in particular, to co-ordinate the individual projects and initiatives that operators were running, as well as those being run by local community groups. Dr Jason Whalley[61] and Stuart Gibson[62], both experts in the field of ICT, suggested that business representatives such as CBI, together with Scotland's economic development agencies, must be engaged in the process. This view was supported by Brendan Dick[63], of BT Scotland, who suggested that getting to the SME base can be quite challenging.

92. Whilst industry providers and operators were becoming more open to working together to co-ordinate their efforts, the strong message was that their engagement activity required strong leadership from the Scottish Government. For example, Brendan Dick told the Committee that such leadership will be critical "because only the Government here can bring together the industry, the Government itself, public bodies such as local authorities and other interested parties"[64].

93. The Action Plan describes a substantial package of activities that seek to engage the public, private, academic and third sectors. This package adopts a co-ordinated approach and focuses particular measures to drive take-up in the key groups: individuals, SMEs, education providers and the public sector.

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[57] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 540.

[58] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 538.

[59] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 511.

[60] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 511.

[61] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 16 November 2011*, Cols 376-7.

[62] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 16 November 2011*, Col 381.

[63] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 533.

[64] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 14 December 2011*, Col 531.

94.   In addition to the Action Plan, the Scottish Government recently launched the *Digital Participation Charter*[65], to which over 30 leading private firms, academic institutions and charities have signed up.   The Charter takes a collaborative approach and aims to support a commitment to share information and align resources and efforts to deliver shared digital participation outcomes in Scotland.

95.   A number of witnesses welcomed the Charter.   For example, Ofcom described it as a positive step as there was now a sense that "we are starting to engage with those at the front line in looking at take-up"[66].

96.   **The Committee welcomes the Scottish Government's plan to work to increase take-up and engagement with digital services in Scotland.   This reflects evidence received by the Committee that establishing digital infrastructure was only part of the picture, and that people needed to be encouraged to use broadband.   The Committee recognises that increasing broadband take-up will help to make more areas commercially viable, attracting service providers and driving competition, all of which should benefit the consumer.**

97.   **The Committee recommends that in taking this forward, effort is targeted at those groups and geographical areas where take-up is particularly low, such as the over-55 age group, SMEs, and parts of Glasgow.   Clearly, it would be beneficial for these activities to be co-ordinated so that activity to target, for example, businesses in Glasgow could also include work targeting other demographic groups in the same area at the same time.   As mentioned earlier in this report, the Committee recommends that this action is taken forward urgently in order that progress towards achieving the 2015 target is not jeopardised.**

98.   **The Committee heard evidence about work by the Communications Consumer Panel and the Royal Society of Edinburgh in the field of broadband take-up[67] and recommends that the Scottish Government taps into this expertise and knowledge when it is developing its own work.**

99.   **The Committee recognises the key role that local community groups will have in leading awareness-raising and driving take-up in their areas. Such local action and buy-in will be crucial.   The Committee recommends that the Scottish Government, COSLA and local authorities incorporate this objective in the other work that they will be doing in relation to the development of local broadband plans and encouraging innovation.**

100.   **The Committee adds its support to the Government's Digital Participation Charter, which seems to be an effective method for driving take-up.   The Committee urges the Government to continue to maintain a**

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[65] *Scotland's Digital Participation Charter*. Available at: http://www.govcampscotland.com/charter
[66] Scottish Parliament Infrastructure and Capital Investment Committee. *Official Report, 16 November 2011*, Cols 356-7.
[67] Professor Michael Fourman, The Royal Society of Edinburgh, told the Committee that his interests would now turn to issues relating to broadband take-up. Fiona Ballantyne, Communications Consumer Panel, said that the Panel was carrying out research aimed at trying to understand what the issues are for low-participation groups and will include work in Glasgow.

strong leadership role in this process, which the clear governance structure outlined in the Action Plan should support.

Conclusion

101. As discussed earlier in this report, the Committee welcomes the Scottish Government's commitment to delivering a step change in people's ability to access the internet. The Action Plan is an important part of the drive to meet that objective.

102. It will be crucial, however, that the Scottish Government, in collaboration with its local authority partners, gets the implementation and delivery of the Action Plan right.

103. The implementation and delivery of the proposals outlined in the Action Plan will require careful evaluation as the procurement phase and project development begins. The Committee intends to take a keen interest in monitoring these processes and welcomes the Cabinet Secretary for Infrastructure and Capital Investment's offer of providing regular written and oral updates over the course of the Parliamentary session.

ANNEXE A: EXTRACTS FROM THE MINUTES OF THE INFRASTRUCTURE AND CAPITAL INVESTMENT COMMITTEE

5th Meeting, 2011 (Session 4), Wednesday 5 October 2011

Broadband Infrastructure in Scotland (in private): The Committee agreed its approach to the inquiry.

9th Meeting, 2011 (Session 4), Wednesday 16 November 2011

Broadband Infrastructure in Scotland: The Committee heard evidence from—

Vicki Nash, Director of Ofcom Scotland, and Matthew Conway, Director of Regulatory Development and Nations, Ofcom;

Dr Jason Whalley, Reader, University of Strathclyde;

Ewan Sutherland, Research Fellow, LINK Centre, University of Witwatersrand, Johannesburg;

Stuart Gibson, Consultant to Reform Scotland.

10th Meeting, 2011 (Session 4), Wednesday 23 November 2011

Broadband infrastructure in Scotland: The Committee heard evidence from—

Stuart Robertson, Head of Broadband and Digital, Highlands & Islands Enterprise;

Roddy Matheson, Industry Sector Manager, Aberdeenshire Council, and Rita Stephen, Development Manager, Aberdeen City and Shire Economic Future (ACSEF);

David Byers, Team Leader, Scottish Enterprise, and Duncan Nisbet, Project Director, South of Scotland Next Generation Broadband Project, South of Scotland Alliance;

Ged Bell, Head of Information Technology, Dundee City Council;

Geoff Hobson, Director and Secretary, Angus Broadband Cooperative;

Vicki Nairn, Head of E-Government, Highland Council, Pathfinder North;

Dr Andrew Muir, Director, FarrPoint Limited, Community Broadband Scotland;

Sheena Watson, Project Manager, Digital Fife.

11th Meeting, 2011 (Session 4), Wednesday 7 December 2011

Broadband infrastructure in Scotland: The Committee heard evidence from—

Peter Shearman, Head of Infrastructure Policy, Broadband Stakeholder Group;

Fiona Ballantyne, Member for Scotland, Communications Consumer Panel;

Prof Michael Fourman, Chair of the Digital Scotland Working Group, Royal Society of Edinburgh.

12th Meeting, 2011 (Session 4), Wednesday 14 December 2011

Broadband infrastructure in Scotland: The Committee heard evidence from—

Richard Rumbelow, Head of Corporate Affairs, Everything Everywhere;

Brendan Dick, Director, BT Scotland;

Matt Rogerson, Head of Public Affairs and Policy, Virgin Media;

Julie Minns, Head of Regulatory and Public Policy, Three.

4th Meeting, 2012 (Session 4), Wednesday 22 February 2012

2. **Broadband infrastructure in Scotland:** The Committee heard evidence from—

Alex Neil, Cabinet Secretary for Infrastructure and Capital Investment, Mike Neilson, Director, Digital, and Trudy Nicolson, Team Leader of Innovation and Digital Economy, Scottish Government.

7. **Broadband infrastructure in Scotland (in private):** The Committee reviewed the evidence heard during the meeting and in previous sessions.

5th Meeting, 2012 (Session 4), Wednesday 7 March 2012

Broadband infrastructure in Scotland (in private): The Committee agreed a draft report.

ANNEXE B: ORAL EVIDENCE AND ASSOCIATED WRITTEN EVIDENCE

9th Meeting, 2011 (Session 4), Wednesday 16 November 2011

Oral evidence
      Ofcom
      Stuart Gibson
      Ewan Sutherland
      Dr Jason Whalley

Written evidence
      Ofcom
      Ewan Sutherland
      Dr Jason Whalley

Supplementary written evidence
      Ofcom
      Ewan Sutherland
      Dr Jason Whalley

10th Meeting, 2011 (Session 4), Wednesday 23 November 2011

Oral evidence
      Highlands & Islands Enterprise
      Aberdeen City and Shire Economic Future
      Scottish Enterprise
      South of Scotland Alliance
      Dundee City Council
      Angus Broadband Cooperative
      Pathfinder North
      Community Broadband Scotland
      Digital Fife

Written evidence
      Highlands & Islands Enterprise
      Aberdeen City and Shire Economic Future
      Scottish Enterprise
      South of Scotland Alliance
      Digital Fife

11th Meeting, 2011 (Session 4), Wednesday 7 December 2011

Oral evidence
      Broadband Stakeholder Group
      Communications Consumer Panel
      The Royal Society of Edinburgh

Written evidence
      Communications Consumer Panel
      The Royal Society of Edinburgh

12th Meeting, 2011 (Session 4), Wednesday 14 December 2011

Oral evidence
    Everything Everywhere
    BT Scotland
    Virgin Media
    Three

Written evidence
    Everything Everywhere
    BT Scotland
    Three

Supplementary written evidence
    Three

4th Meeting, 2012 (Session 4), Wednesday 22 February 2012

Oral evidence
    Scottish Government

ANNEXE C: OTHER WRITTEN EVIDENCE

Organisations

- Arqiva
- Consumer Focus Scotland
- Department of Enterprise, Trade and Investment, Northern Ireland Executive
- Drumoig Residents Association
- East Ayrshire Council
- Far Horizons Holiday Cottages
- Federation of Small Businesses Scotland
- Forbes Homes Ltd
- Gillespie Leisure
- Glasgow City Council
- Highland Council
- North Kincardine Rural Community Council
- Orkney Islands Council
- Scottish Chambers of Commerce
- Scottish Council for Development and Industry
- Scottish Countryside Alliance

Individuals

- Faheem R Awan
- Dr Raj Badial
- Alastair Black
- Charlie Brown
- John Bruce
- Robert Buchan
- Andrew Buckle
- Anne Carmichael
- Chris Chilcott
- Adam Clarkson
- Lindsay Cowie
- Neil M Craig
- Mike Crochart MP
- Andrew Davidson
- D Paton Dunlop
- Mark Elder
- Ali El-Ghorr
- Jon Fowles
- David Fyfe
- Enid and Keith Harding
- Tony Hawkins
- Andrew Hayward
- David Higgins
- Nicola Kay
- Hanneke Klep
- Patricia Lagrem

- David and Mary McIlvenna
- Ruaraidh McMahon
- John McMillan
- A Douglas Molyneux
- Max Oakes
- Colin Pike
- Maggie Ping Dong
- Brian Porteous
- David Shearer
- Douglas Skelton
- E. Coral Smith
- Amanda Stafrace
- Ruth Stevens
- Douglas Tait
- Lorna Walker
- Les Watson
- Peter Watson
- Ian Williams
- Hazel Witte
- Dr Steve Yule

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