

## Agenda – Pwyllgor yr Economi, Seilwaith a Sgiliau

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Lleoliad: I gael rhagor o wybodaeth cysylltwch a:  
Ystafell Bwyllgora 1 – y Senedd Gareth Price  
Dyddiad: Dydd Mercher, 25 Ionawr Clerc y Pwyllgor  
2017 0300 200 6565  
Amser: 09.15 [SeneddESS@cynulliad.cymru](mailto:SeneddESS@cynulliad.cymru)

**Rhag-gyfarfod preifat (09:15–09:30)**

- 1 Cyflwyniad, ymddiheuriadau, dirprwyon a datgan buddiannau**
- 2 Fideo: Safbwyntiau busnesau o amgylch Cymru – Seilwaith digidol yng Nghymru**  
(09:30–09:45)

Rhayna Mann, Uwch Allgymorth a Swyddog Ymgysylltu, Cynulliad Cenedlaethol Cymru

- 3 BT Group – Seilwaith digidol yng Nghymru**  
(09:45–10:45) (Tudalennau 1 – 18)

Ed Hunt, Cyfarwyddwr y Rhaglen Superfast Cymru, BT Group

Dogfennau atodol:

Y Briff Ymchwil

EIS(5)–03–17 (p1) BT Group (Saesneg yn unig)

**Egwyl (10:45–11:00)**



## **4 Sesiwn i graffu ar waith y Gweinidog – Seilwaith digidol yng Nghymru**

(11:00–12:00)

(Tudalennau 19 – 24)

Julie James AM, Y Gweinidog Sgiliau a Gwyddoniaeth

Simon Jones, Cyfarwyddwr, Trafnidiaeth ac Seilwaith TGCh

Richard Sewell, Dirpwy Cyfarwyddwr, Is-adran Isadeiledd TGCh

Dogfennau atodol:

EIS(5)–03–17 (p2) Y Gweinidog Sgiliau a Gwyddoniaeth

## **5 Papurau i'w nodi**

### **5.1 Cynllun Gweithredu Ffonau Symudol Llywodraeth yr Alban – Seilwaith digidol yng Nghymru**

(Tudalennau 25 – 30)

Dogfennau atodol:

EIS(5)–03–17 (p3) Cynllun Gweithredu Ffonau Symudol Llywodraeth yr Alban

(Saesneg yn unig)

**Ôl-drafodaeth breifat (12:00–12:15)**

Mae cyfyngiadau ar y ddogfen hon

Cynulliad Cenedlaethol Cymru / National Assembly for Wales

Pwyllgor yr Economi, Seilwaith a Sgiliau / Economy, Infrastructure and Skills  
Committee

Seilwaith digidol Cymru / Digital infrastructure in Wales

Ymateb gan BT Group/ Evidence from BT Group

Economy, Infrastructure and Skills Committee  
National Assembly for Wales  
Cardiff Bay  
Cardiff  
CF99 1NA

20 December, 2016

Dear Committee Members,

**Call for Evidence: Inquiry into Digital Infrastructure in Wales**

**What is the performance to date of the roll-out and take-up of Superfast Cymru, including the extent to which the project has been communicated to people in the intervention area and interim targets have been met?**

BT is proud to be delivering Superfast Cymru in partnership with Welsh Government. Wales is on the cusp of 90% coverage at 30mbps<sup>i</sup> when also taking into account coverage attributed to our fibre broadband commercial investments. Prior to Superfast Cymru, coverage was approximately 40%. Therefore the project has been a huge success so far, allowing benefit to be delivered to homes and businesses as the project has progressed. Ofcom's latest Connected Nations Report<sup>ii</sup> acknowledges the "good progress on the availability and take-up of communications services". Local Authorities in Wales that have had no coverage from commercial providers have seen significant uplifts in availability, such as Blaenau Gwent – was at 0% and now at over 97% coverage<sup>i</sup>. Wales has more fibre broadband as a percentage of coverage than Germany, France, Italy and Spain. Wales is also ahead of the other devolved nations.

By the end of December 2016, BT's fibre footprint through Superfast Cymru is forecast to have passed 700,000 premises. Welsh Government has verified that 620,000 premises can receive superfast speeds so far. It's worth noting that there is a lag between premises receiving a service and Welsh Government verification. There are premises in the 700,000 number that receive less than 24mbps and will not be classified as superfast - BT will be working on uplifting some of these speeds where viable.

An open access network has been put in place allowing a multitude of retail providers to offer their services. This competitive environment means ISPs are chasing business resulting in low costs for the consumer. It is important to note that BT's consumer business has equal access to the network alongside all other service providers.

The speed of rollout has been unprecedented, a fact not well understood by stakeholders. Superfast Cymru has re-used the wider UK experience of delivering high speed broadband to over 25 million premises. The equivalent of Singapore has been delivered every three months in the UK at its peak. Fibre to the Premise (FTTP) is being rolled out across rural Wales in particular. At this stage of the project with less than a year to run, very challenging parts of Wales remain to be completed. The outlook is positive and BT is committed to ensuring the schedule of work is achieved.

Superfast Cymru has a gainshare clause written into the contract which means that beyond 20% overall take-up, BT begin to return funding annually into an investment fund to spend on further broadband improvements. Take-up currently stands at c28%. BT made the decision in 2015 to bring forward £12m of this money (before even being accrued) for more coverage to be delivered earlier than otherwise would happen.

On communications, it is very difficult to predict availability dates for individual areas due to the number of factors which influence when infrastructure can be built. Factors include the ability to find power sources in rural areas that are cost effective, the need to apply for road closures that cannot be obtained immediately and land access. Land access is a particular challenge and time consuming to resolve. For example, in order to deliver 229 premises in Hirwain and 205 premises in Worthen, 11 and 10 wayleaves respectively need to be resolved. This takes time. It should be noted that BT is not contracted to deliver fibre structures by dates, it is contracted to deliver volume of premises across Wales. Whilst elected members see communication from constituents about 'delays', what they do not hear about is when service has been successfully delivered – as happens in the vast majority of cases. A recent report commissioned by Welsh Government identified that for every £1 invested, £6.70 in GVA will be delivered by 2024. With coverage on the verge of exceeding 90%, focus should be put onto driving exploitation whilst the build is allowed to complete.

Industry commentators have lamented the fact that Wales and the UK have not aspired to full FTTP. A report by Communications Chambers<sup>iii</sup> states that the UK does have one of the lowest FTTP coverages yet average speeds in the UK are higher than Spain and Portugal which have around 60% FTTP coverage. Japan has over 90% coverage but average speeds only slightly higher than the UK's average. The report concludes that there is therefore a poor correlation between FTTP

network and actual broadband speeds. It is also BT's experience that very few customers take up high bandwidth products. The same report mentions that Norway with very high FTTP penetration has just 8% of users choosing products of 100mbps or more. This of course is the case in 2016 but our infrastructure is there for the long term and where speeds are likely to increase over time has been built with expandability in mind.

Many countries with high FTTP penetration such as Japan, Korea, Spain and Portugal correlate closely with the percentage of people living in multi dwelling units. In the case of Spain and Portugal, c50% and 60% respectively live in multi dwelling units where deployment costs are very less expensive than the distributed way people live in Wales. The UK has less than 10% of people living in multi dwelling units<sup>iii</sup> thus the cost of deployment of full FTTP from day one would have been very high.

Superfast Cymru is the right project for Wales and BT the right partner to deliver it.

### **What work can Welsh Government do to improve mobile coverage, including use of the planning system?**

Ofcom notes in its latest Connected Nations report that EE has the highest level of voice and data coverage in Wales. Nevertheless, EE has ambitious plans to go further for Welsh mobile coverage. We anticipate reaching c.90% 4G geographic coverage of Wales by the end of 2017 through upgrading our existing network and building new sites. We have also set an ambition to reach 95% geographic coverage of the UK by 2020 which will see further coverage improvement for Wales. At the end of 2015, EE won the contract to deliver a new 4G voice and data network for Britain's emergency services. The additional infrastructure being built to meet that contract will also benefit the people and businesses of Wales.

Low population density and the physical geography of certain areas of Wales make it challenging to deliver mobile connectivity. The Welsh Government can lower some of the hurdles mobile network operators face in delivering new sites by reducing capital and operating expenditures, and by amending the planning system to better reflect the importance of digital inclusion.

*Capital Expenditure:* Power is a major cost in building remote sites. Whilst costs are regulated, we would urge the Welsh Government to consider how they can contribute to the costs of laying power cables to new mobile sites, supporting the reduction of substantial cost barrier to new rural sites in particular.

The use of Government assets is a direct way in which Welsh Government can support mobile networks. The Scottish Government has already stated that the aim of initiatives to allow use of public sector assets is to improve coverage rather than generate revenue. This is a powerful statement of principle on the importance of the digital economy and we would encourage Welsh Government to match that ambition in its offer of public assets.

*Operating Expenditure:* Non-domestic rates can often have a bearing on the speed and extent of marginal sites. The Scottish Government is currently trialling rate relief on new sites in non-commercial areas, including the Isle of Arran and the Cairngorms National Park. A similar rate relief that covers new sites and upgrades to existing sites in the Snowdonia, Pembrokeshire Coast and the Brecon Beacons National Parks would improve the case for new sites in those areas, whilst not representing any loss of revenue to local authorities. Snowdonia National Park alone covers a third of the landmass of North Wales. By stimulating greater coverage, such rate relief could encourage new businesses into an area, with the associated positive impact on business rate collections overall. We also believe that a site that exists purely as a 'hop' site, to enable coverage in a more rural location and does not transmit coverage itself, should be exempt from business rates.

*Reform of the planning system:* New technology moves rapidly and with 5G deployment in the UK likely from the start of the next decade, the infrastructure that is built now will be key to how quickly 5G – and other technologies – can be rolled out in the future. It is therefore key that planning regimes and guidance meet the needs of the future, not the concerns of the past. Planning law in England has recently changed to support mobile network infrastructure and the Scottish Government has just closed a consultation on planning law in Scotland. Wales is lagging significantly behind.

The Welsh Government must implement improvements to the planning regime, including:

- Strong permitted Development Rights for small cells in protected areas
- Permitted Development Rights for upgrades to existing ground-based masts or structures;
- Permitted Development Rights for new ground-based masts
- Permitted Development Rights for emergency works.
- Addressing the issue concerning time limits to planning consents.

Moving towards the closer alignment of planning policy on fibre and mobile assets would also be welcome. Planning guidance should be technologically neutral as far as possible.

Welsh Government should also consider removing the time restrictions on planning consents. For example, in Snowdonia this is a particular problem where the planning authority seeks to add a ten year condition.

### **What has been the efficacy of the Welsh Government's other broadband schemes, such as Access Broadband Cymru and Ultrafast Connectivity Vouchers?**

Welsh Government's two schemes are the most generous in the UK. BT is not participating in ABC as the money can only be used for connection and not the building of infrastructure. Informal discussions have taken place between BT and Welsh Government on our participation, but it would require a major policy change on their part. BT runs a scheme called Community Fibre Partnerships which allow not spot communities to work with BT to define a solution. This involves the building of infrastructure and not just connection to existing equipment.

BT is currently trialling participating in the Ultrafast Connectivity Scheme.

### **What are the plans for the Superfast Cymru successor scheme?**

Welsh Ministers have announced that they will be releasing an Invitation to Tender in 2017 for a successor scheme to Superfast Cymru. This will be to address the not-spots in the last few percent of Wales.

Across other parts of the UK, Councils funded by Broadband Delivery UK (BDUK) and Local Enterprise Partnerships are requesting Ultrafast broadband, i.e. over 100mb capability and encouraging 1Gbps capability for business parks. Fixed fibre is therefore deployed to rural areas as far as possible before other solutions are considered. Wales should aspire to the same for a successor scheme and match this ambition. BT's G.Fast and FTTP solutions can achieve over 100mb and up to 1Gbps requirements respectively. BT strongly advocate taking fixed fibre as far as possible in Wales before considering other alternative broadband technologies. Developments in fibre deployment should mean fibre can go a lot further at a lower price point.

A successor scheme will only be able to intervene in the areas where Superfast Cymru has not benefitted. It is not anticipated that the 'intervention area' will be contiguous but very distributed and therefore very difficult and expensive to fill.

BT's network is open meaning retail providers can compete for business. Big names offering product bundles such as Sky, Talk Talk and BT Consumer all compete for a consumer's business. No other infrastructure provider offers such an array of retail competition. A non BT solution, would potentially see neighbours being offered a limited monopoly retail service even though the network would have to be procured as open access. It is BT's belief that customers want real and not a façade of retail choice.

BT have put forward plans to UK Government on meeting their requirement for a 10Mbps universal service obligation. We can deliver universal coverage without legislation or public funding with the right regulatory and policy environment and we are waiting for clarification from Government on how we can work together on this.

### **How could alternative technologies be used to improve superfast broadband and mobile coverage?**

Fixed Wireless solutions have been deployed by publically funded programmes in various parts of UK including Wales. BT do not have any of this type of network in any of its BDUK funded programmes anywhere in the UK as we do not see them as sustainable. The actual performance of a wireless technology is dependent on 3 key variables: Distance of the user from the cell site or mast; the number of users active in the cell at any one time; the amount of spectrum available for use at the mast.

For any particular user in a fixed wireless system, two of these variables i.e. distance from the cell site and the amount of spectrum, will be fixed but the third; the number of active users, will vary throughout the day and in relatively unpredictable and uncontrollable ways. This makes effective prediction of user performance difficult for these networks.

As an analogy we can consider delivery of NGA via Fibre (FTTP or FTTC) as like a hosepipe delivering water direct to a garden. The amount of water coming through the hose and therefore available to the user on the end of the hose is predictable although water pressure in the mains system may drop slightly at very busy times resulting in slightly reduced flow. With

fixed wireless the same hosepipe can be considered as delivering the same type of fixed flow to the radio mast (determined by the amount of spectrum available) but in this case it is delivered by a sprinkler system attached to the hose. The water is spread over a much larger area of course and is thus available to lots more parts of the garden, but the actual amount of water each part receives is only a fraction of the total. It is possible to focus the direction of the sprinkler onto one part of the garden or another but in doing so other parts of the garden must effectively go without any water. Similarly the more the water is spread over a bigger radius of coverage the less there is to go around. The same basic principle applies to the distribution of bandwidth to multiple users in a fixed wireless system.

In assessing the ability of fixed wireless to deliver an NGA service it is therefore imperative to understand how bandwidth in any system will vary with distance to the end user and the number of simultaneous users that will realistically use the service in a particular cell area. This assessment will be critical to establish the sustained rate that users are likely to experience in any real deployment.

BT does not consider these technologies have developed to an extent where they are capable of sustaining NGA capabilities in any real network scenario i.e. where there are multiple simultaneous users spread over a range of different distances from the mast. These users will receive a sustained speed significantly lower than the theoretical peak speed achievable by a single user very close to the mast typically quoted in press releases etc.

In Sweden the government has recently committed to delivering total coverage by 2025. In doing so they have recognised a geographical split between the 98% who will receive at least 100mb from a fixed solution, with the rest getting at least 30mb from a satellite as this small percentage are too remote to receive a fixed service. Wireless is not being considered therefore for the bulk.

5G is in development, not mature and not expected to be commercially available in the timeline of the successor scheme. It is BT's belief therefore that fixed fibre solutions are the best.

On the mobile front, EE continues to trial new small cell technology in communities. Our small cells solution uses the 4G network to provide inband backhaul, which means they are not reliant on fibre being present at a community. Once built, this infrastructure can be used to support future technologies and the spectrum they will use. Reform of the planning system to ensure flexibility over the number of small cells that can be deployed under permitted development, including in National Parks, would be enormously helpful to the further roll-out of this technology.

EE is also considering the use of Airmasts to provide temporary coverage. The solution is particularly good for resilience issues. Like any infrastructure, a range of external factors can impact on service – for example, flooding, extreme temperatures, arson attacks, storm damage. Having a back-up option to deploy replacement coverage quickly will make a huge difference to the customers affected.

### **How could Welsh Government learn from international examples of public sector intervention in the roll-out of broadband and mobile coverage?**

It is BT's belief that Wales is a leader in public sector intervention in the rollout of broadband. It is receiving a high performance fibre network for a low cost, less than Australia (£1,931 per premise), New Zealand (£699 p/p), France (£445 p/p) and Singapore (£355 p/p)<sup>iii</sup>. It is very difficult to run direct comparisons with other countries as their regulatory and planning systems are different.

Finally, the network being deployed in Wales by BT is competition ready and has a large and diverse ecosystem of retail providers operating on that network. Other countries have very different regulatory regimes where single national operators dominate at both a network and retail level.

Edward Hunt,  
BT Group

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<sup>i</sup> Think Broadband: <http://labs.thinkbroadband.com/local/wales>

<sup>ii</sup> <https://www.ofcom.org.uk/about-ofcom/latest/media/media-releases/2016/digital-divide-declines/superfast-broadband-in-wales>, Ofcom, 16/12/16

<sup>iii</sup> Communications Chambers, Robert Kenny, "[An Analysis of FTTP's role in UK Connectivity. The Evidence For a Targeted Approach](#)"



## Llywodraeth Cymru

### Tystiolaeth Ysgrifenedig ar gyfer Ymchwiliad Pwyllgor yr Economi, Seilwaith a Sgiliau i'r Seilwaith Digidol

#### Cyflymu Cymru

Ymyrraeth i ddarparu band eang cyflym iawn i'r ardaloedd hynny yng Nghymru lle y cafwyd methiant amlwg gan y farchnad i wneud hynny yw Cyflymu Cymru. Yn dilyn proses gaffael agored, llofnodwyd cytundeb gyda BT Group ym mis Gorffennaf 2012 i ddarparu band eang ffeibr i gartrefi a busnesau mewn ardaloedd lle roedd methiant yn y farchnad. Dechreuwyd cyflwyno'r prosiect Cyflymu Cymru dilynol ym mis Ionawr 2013. Roedd ardal ymyrraeth y prosiect yn cynnwys tua 727,000 o adeiladau.

Mae ein contract yn ei gwneud yn ofynnol i BT ddarparu mynediad i fand eang cyflym iawn o 30Mbps o leiaf i 90 y cant o'r ardal ymyrraeth. Mae hefyd yn darparu rhwng 24 Mbps a 30 Mbps i bump y cant arall o'r ardal.

Estynnwyd y prosiect hyd fis Mehefin 2017 er mwyn cynnwys 40,000 o adeiladau ychwanegol. Roedd yr estyniad yn dilyn adolygiad o'r Farchnad Agored yn 2014 a ddangosodd fod nifer yr adeiladau yr oedd angen mynd i'r afael â hwy o dan y prosiect wedi cynyddu, er enghraifft, oherwydd tai newydd neu lle nad oedd cynlluniau i gyflwyno gwasanaeth i adeiladau o dan gynlluniau'r cwmnïau telathrebu eu hunain wedi eu cwblhau.

Disgwylir cwblhau cam adeiladu prosiect Cyflymu Cymru ym mis Mehefin 2017. Fel y gwneir gyda chontractau pwysig eraill o'r maint hwn, bydd cyfnod chwe mis yn dilyn lle bydd cyfle i Openreach gwblhau unrhyw elfennau hanfodol cyn y dyddiad y daw'r contract i ben, sef 31 Rhagfyr 2017.

Cafodd yr adeiladau newydd a gwmpaswyd gan yr estyniad i'r prosiect eu hymgorffori o fewn yr ardal ymyrraeth gyffredinol a lluniwyd cynllun darparu cwbl newydd i ddarparu mynediad i fand eang cyflym iawn i gymaint o adeiladau yng Nghymru â phosibl. Mae'n ofynnol i BT ddarparu'r gwasanaeth i 690,000 o adeiladau erbyn diwedd mis Mehefin 2017 ac mae'n nodi ei fod ar y trywydd iawn i gyflawni hyn. Fodd bynnag, mae'n parhau i fod yn brosiect heriol iawn i'w gyflawni ac mae'r cynnydd yn cael ei fonitro'n ofalus.

Mae BT yn darparu band eang ffeibr cyflym iawn gan ddefnyddio dwy dechnoleg, cysylltiad ffeibr i'r cabinet a chysylltiad ffeibr i'r adeilad. Mae cysylltiad ffeibr i'r cabinet yn cynnwys gosod cabinet ffeibr ar ochr y ffordd yn agos at gabinet copr presennol a chysylltu'r ddau fel bod y signal band eang yn teithio i'r cartref neu'r busnes drwy'r cebl ffôn copr presennol. Dyma'r opsiwn hawsaf, mwyaf cost-effeithiol a chyffredin oherwydd ei fod yn galluogi BT i wella'r band eang ar gyfer nifer o adeiladau ar yr un pryd.

Mae darparu cysylltiad ffeibr i'r adeilad yn broses fwy cymhleth. Rhaid gosod cebl ffeibr i'r adeilad ei hun. Mewn sawl achos, mae'n rhaid dod o hyd i atebion pwrpasol ar gyfer adeiladau unigol. Mae hyn yn ychwanegu at y gost, y cymhlethdod a'r amser y mae'r gwaith yn ei gymryd.

Hyd yma mae bron 622,000 o gartrefi a busnesau yng Nghymru wedi cael mynediad i fand eang ffeibr cyflym o ganlyniad i brosiect Cyflymu Cymru. Mae'r rhain yn adeiladau na fyddent fel arall wedi cael eu cwmpasu gan brosesau ar gyfer cyflwyno band eang cyflym masnachol gan BT, Virgin Media ac eraill.

Cynhaliwyd ymgynghoriad yn yr Hydref gyda'r diwydiant telathrebu mewn perthynas â £12.9 miliwn ychwanegol i ymestyn cyrhaeddiad prosiect Cyflymu Cymru ymhellach eleni. Dyma'r swm y rhagwelodd BT y llynedd a fyddai'n cael ei ddychwelyd i bwrs y wlad drwy gymal rhannu enillion o fewn contract cyfredol Cyflymu Cymru.

Bydd dadansoddiad manwl a deialog gyda BT yn dilyn er mwyn cadarnhau a fydd y cyllid ychwanegol hwn yn golygu y bydd modd cyrraedd adeiladau ychwanegol drwy gontract Cyflymu Cymru erbyn mis Rhagfyr 2017 ac a fydd yn darparu gwerth am arian.

Ym mis Gorffennaf 2015 cyhoeddodd y Gweinidog Sgiliau a Thechnoleg mewn datganiad llafar ei bod am weld o leiaf hanner y bobl sy'n gallu cysylltu â band eang cyflym iawn yn gwneud hynny. Ar ddiwedd mis Hydref roedd 29.9 y cant o bobl o fewn ardal ymyrraeth Cyflymu Cymru wedi manteisio ar y ddarpariaeth. Mae ymchwil annibynnol a gynhaliwyd ar ran Llywodraeth Cymru yn rhagweld ffigur o 30% erbyn diwedd 2016 a nododd fod 50 y cant yn darged realistig ar gyfer nifer y bobl sy'n manteisio ar y ddarpariaeth band eang erbyn 2023.

Yn amlwg, y nod uchelgeisiol ar gyfer pob rhanddeiliad yw anelu at sicrhau bod cymaint o bobl yn manteisio ar y ddarpariaeth â phosibl. Er bod Llywodraeth Cymru yn cydnabod bod ganddi fudd yn y broses o hybu nifer y bobl sy'n defnyddio gwasanaethau band eang cyflym iawn, a'i bod yn cyfrannu at y broses hon, dylid hefyd ystyried cyfraniad, budd a chapasiti'r diwydiant band eang manwerthol ehangach. Er bod Llywodraeth Cymru yn gallu hyrwyddo argaeledd band eang cyflym iawn mewn ardal ac yn gallu hysbysu defnyddwyr a busnesau o fanteision y band eang cyflym iawn, nid oes ganddi'r gallu i osod prisiau manwerthu, cynnig bwndeli, cynnig disgowntiau a hyrwyddo, hysbysebu a gwerthu cynigion deniadol sy'n gwneud i ddefnyddwyr a busnesau newid rhwng cynhyrchion a manteisio ar wasanaethau.

Mae darparwyr mawr gwasanaethau'r rhyngwrwd, gan gynnwys BT, TalkTalk, Sky ac ati, yn gwario miliynau lawer ar eu hymgyrchoedd hysbysebu a marchnata ac maent yn debygol o gael y dylanwad mwyaf ar nifer y bobl sy'n manteisio ar wasanaethau band eang cyflym iawn.

Fodd bynnag, mae prosesau hysbysebu a marchnata band eang manwerthol yn canolbwyntio ar garfanau penodol o gymdeithas, gan ganolbwyntio'n aml ar wasanaethau adloniant.

Ym mis Hydref, lansiodd Llywodraeth Cymru raglen cyfathrebu ac ymgysylltu ranbarthol aml-haen i godi ymwybyddiaeth o'r ystod ehangach o fanteision band eang cyflym iawn i ddefnyddwyr a'u hannog i ddefnyddio'r dechnoleg sydd ar gael iddynt. Mae'r ymgyrch yn canolbwyntio ar garfanau penodol o gymdeithas y mae marchnata torfol gan ddarparwyr gwasanaethau rhyngwrwd yn llai tebygol o ddylanwadu arnynt.

Mae'n cael ei chyflwyno ym mhob ardal awdurdod lleol yng Nghymru rhwng nawr a mis Rhagfyr 2017 drwy gyfuniad o ddiwyddiadau, cysylltiadau cyhoeddus, ymgysylltu cymunedol a hysbysebu. Darparwyd pecyn cymorth i awdurdodau lleol i hyrwyddo'r defnydd o fand eang cyflym iawn yn ogystal â'n gweithgarwch ein hunain ym mhob ardal. Mae cyfleuster newydd ar wefan Llywodraeth Cymru yn cynnwys cyngor wedi'i bersonoli i ddefnyddwyr er mwyn helpu pobl i wneud dewisiadau ar sail gwybodaeth ynghylch eu band eang.

Mae'r gwaith cyfathrebu ac ymgysylltu hwn yn dilyn ymgyrch cyfathrebu a marchnata flaenorol a gyflwynwyd ochr yn ochr â'r rhaglen ddarparu. Roedd yr ymgyrch hon yn canolbwyntio ar y cynlluniau darparu ar gyfer y rhaglen gan amlygu ble a phryd y byddai band eang ffeibr yn cael ei ddarparu.

Cafodd rhaglen £12.5m newydd i sicrhau bod busnesau ledled Cymru yn manteisio i'r eithaf ar fanteision band eang cyflym iawn ei chyhoeddi ym mis Medi 2015. Wedi'i hariannu gan Lywodraeth Cymru ynghyd â £7m gan Gronfa Datblygu Rhanbarthol Ewrop, mae'r prosiect yn helpu busnesau bach a chanolig yn bennaf, i ddeall, mabwysiadu a defnyddio'r seilwaith cyflym iawn. Mae'r prosiect yn adeiladu ar wersi a ddysgwyd a thystiolaeth a gasglwyd yn dilyn prosiectau braenaru a gynhaliwyd yng Ngwynedd, Rhondda Cynon Taf, Abertawe a Blaenau Gwent.

Mae prif nodweddion y rhaglen fel a ganlyn:

- Cymorth a chynghor busnes uniongyrchol drwy Busnes Cymru. Gweithdai a chlinigau busnes cyflym iawn a sesiynau un i un lleol
- Ymchwil a gwybodaeth, gan gynnwys olrhain busnesau sydd wedi mabwysiadu a manteisio ar fand eang cyflym iawn a rhoi cipolwg ar dechnolegau sy'n dod i'r golwg er mwyn sicrhau y caiff cyfleoedd newydd eu cynnwys.
- Hyfforddiant ac achrediad i gynghorwyr busnes sy'n darparu cymorth ar lawr gwlad.
- Hyrwyddwyr ar gyfer pob awdurdod lleol a fydd yn helpu i arwain y broses ymgysylltu â'u hawdurdod a'u cymuned fusnes leol.

## **Ffonau Symudol**

Nid yw polisi telathrebu wedi'i ddatganoli i Gymru. Llywodraeth y DU ac Ofcom sy'n gyfrifol am wneud penderfyniadau allweddol i annog gwelliannau o ran signal ffonau symudol.

Daeth Llywodraeth y DU i gytundeb cyfreithiol rwymol gyda Gweithredwyr y Rhwydwaith Symudol i fuddsoddi cyfanswm o £5 biliwn (a ariannwyd yn breifat) gan warantu 90% o gwmpas daearyddol (yn cynnwys Cymru) i ddarparu signal dibynadwy ar gyfer llais drwy dechnoleg 2G, 3G neu 4G, a'r cyfan erbyn 2017. Mae'r Adran dros Ddiwylliant, y Cyfryngau a Chwaraeon wedi datgan y bydd y mesurau hyn yn gwella cwmpas daearyddol cyfun y gweithredwyr o 69% i 85% ar draws y DU.

Mae'r drwydded arwerthiant sbectrwm 4G a ddyfarnwyd i Telefónica O2 yn cynnwys rhwymedigaeth i gwmpasu o leiaf 95% o boblogaeth Cymru erbyn diwedd 2017.

Mae Llywodraeth Cymru yn gweithio gyda'r diwydiant ffonau symudol ac Ofcom i archwilio'r dulliau sydd ar gael i Lywodraeth Cymru greu amgylchedd yng Nghymru sy'n denu buddsoddiad pellach er mwyn ymestyn signal ffonau symudol.

Un o'r dulliau sylfaenol sydd ar gael yw'r system cynllunio. Comisiynwyd ymchwil gan y Gweinidog Sgiliau a Thechnoleg i edrych ar newidiadau a newidiadau arfaethedig i'r system gynllunio yn Lloegr a'r Alban o ran seilwaith ffonau symudol, sut i'w cymhwyso yng Nghymru a dulliau amgen sy'n briodol i'r topograffi a dwysedd y boblogaeth yng Nghymru.

Comisiynodd y Gweinidog hefyd ymchwil i gostau gweithredu seilwaith symudol yn cynnwys edrych ar lefel y cyfraddau annomestig yn ogystal â'r defnydd o asedau cyhoeddus i gynnal seilwaith ffonau symudol. Bydd canfyddiadau'r tri darn o ymchwil yn ffurfio rhan o'r drafodaeth yn y cyfarfod bord gron.

Bydd y Gweinidog yn cynnal cyfarfod bord gron yn ddiweddarach y mis hwn, a fydd yn cynnwys cynrychiolwyr o Ofcom a'r diwydiant i drafod sut y gellir gwella cysylltedd ffonau symudol yng Nghymru. Yn ogystal â chanolbwyntio ar gynlluniau'r diwydiant i ehangu signal ar gyfer ffonau symudol a'r capasiti, bydd y drafodaeth hefyd yn ymchwilio i'r dulliau hynny sydd ar gael i Lywodraeth Cymru fel y nodwyd uchod.

Mae'r diwydiant ffonau symudol yn aml yn nodi bod cynllunio yn allweddol. Cyfarfu'r Gweinidog ag Ysgrifennydd y Cabinet dros yr Amgylchedd a Materion Gwledig yn yr Hydref i drafod materion cynllunio sy'n gysylltiedig â gwella'r seilwaith telathrebu symudol.

Mae swyddogion cynllunio wrthi'n archwilio'r cyfleoedd i wneud newidiadau i'r Gorchymyn Hawliau Datblygu a Ganiateir yn y dyfodol a fydd yn cynnwys archwilio'r angen i ddiwygio'r hawliau presennol hynny ar gyfer cyfarpar telathrebu symudol.

Bydd rhaglen cyfathrebu symudol y gwasanaethau brys (ESMCP) yn darparu system gyfathrebu'r genhedlaeth nesaf ar gyfer y 3 gwasanaeth brys (gwasanaethau'r heddlu, tân ac achub ac ambiwlans) a defnyddwyr gwasanaethau diogelwch cyhoeddus eraill. Dyfarnwyd y contract i ddarparu elfennau seilwaith y rhaglen i EE. Fodd bynnag, mewn rhai ardaloedd, gan gynnwys Cymru, mae'r Swyddfa Gartref yn darparu cyllid i godi mastiau lle nad yw'n bosibl i EE wneud hynny.

Mae Llywodraeth Cymru yn gweithio ar y cyd â'r rhaglen i edrych ar sut y gall mastiau symudol newydd a ariennir gan y Swyddfa Gartref gael eu diogelu ar gyfer y dyfodol, lle yr ystyrir y gellir darparu manteision ehangach. Gallai hyn gynnwys adeiladu sylfeini mastiau a mastiau mwy o faint y gellir eu hystyng yn hawdd dros amser. Byddai hyn yn galluogi nifer o gwmnïau ffonau symudol i osod eu hoffer trawsyrru er mwyn darparu signal mewn ardaloedd anghysbell lle nad yw'n fasnachol ymarferol i godi mast.

### **Cynllun Allwedd Band Eang Cymru a'r Cynllun Taleb Gwibgyswllt**

Mae Cynllun Allwedd Band Eang Cymru yn ariannu (neu'n ariannu'n rhannol) costau gosod cysylltiadau band eang newydd ar gyfer cartrefi a busnesau yng Nghymru.

Mae 2 lefel o gyllid ar gael yn dibynnu ar anghenion y defnyddiwr a'r cyflymder sydd ei angen, sef £400 ar gyfer cyflymder lawrlwytho rhwng 10 a 20 Mbps, ac £800 ar gyfer cyflymder lawrlwytho o 30Mbps ac uwch.

Ers cyflwyno'r newidiadau i feini prawf cymhwysedd ddechrau mis Ionawr 2016 cafwyd 722 o geisiadau. Cafodd 128 ohonynt eu cymeradwyo a chwblhawyd y broses osod, a chynigiwyd cyllid i 302 o geisiadau eraill. Ymhlith y rhesymau cyffredin dros beidio â pharhau â chais mae'r ffaith bod band eang cyflym iawn wedi dod ar gael neu bod cyflymder eu band eang traddodiadol wedi gwella.

Bydd cynllun Allwedd Band Eang Cymru yn parhau gydag £1.5 miliwn pellach dros y ddwy flynedd nesaf er mwyn sicrhau bod y gwasanaeth hollbwysig hwn yn gweithredu ar y cyd â Cyflymu Cymru a phrosiectau olynol gan sicrhau bod cyllid cyfatebol ar gael am ddwy flynedd arall y tu hwnt i 2018.

Mae'r Cynllun Taleb Gwibgyswllt ar gael i fusnesau ledled Cymru i helpu i dalu costau cyfalaf cychwynnol yr aethpwyd iddynt wrth osod gwasanaethau band eang gwibgyswllt. Ceir sefyllfaoedd yn aml lle bydd y broses osod yn golygu gwaith palu sylweddol a all fod yn gostus. Caiff y gost hon ei throsglwyddo i'r cwsmer busnes. Mae'r cynllun hwn yn anelu at chwalu'r rhwystr hwnnw. At ddiben y cynllun, diffinnir band eang gwibgyswllt fel gwasanaeth sy'n fwy na 100Mbps tuag at y cwsmer, a mwy na 30Mbps oddi wrth y cwsmer. Ar hyn o bryd rydym yn ymchwilio i a oes angen addasu'r trothwyon hyn. Y grant mwyaf sydd ar gael yw £10,000. Bydd yn darparu 100 y cant o gyllid ar gyfer y £3,000 cyntaf a 50 y cant o gyllid rhwng £3,000 a £17,000. Bydd disgwyl i'r busnes ddarparu arian cyfatebol ar gyfer y 50% sy'n weddill ac unrhyw gostau pellach dros £17,000.

Ers dechrau'r cynllun derbyniwyd 50 o geisiadau. Cafodd 8 eu cymeradwyo a'u cwblhau, a chynigiwyd cyllid i 12 o geisiadau eraill.

Cynhelir adolygiad o'r Cynllun Taleb Gwibgyswllt yn fuan a'r nod yw asesu a ellir cyflwyno lefel wahanol o gyflymder at y cwsmer ac oddi wrth y cwsmer. Mae rhai busnesau wedi datgan nad oes angen y cyflymder a nodir yn y cynllun arnynt, a bod cost y llinell a logir sy'n ategu'r cyflymder yn afresymol.

Ar y cyd â'r cynlluniau taleb hyn, rydym hefyd yn ystyried cyfle i gymryd rhan yng nghynllun talebau Darpariaeth Band Eang y DU ochr yn ochr â'r Alban a Gogledd Iwerddon. Bydd hyn yn rhoi'r hyblygrwydd mwyaf posibl i ddefnyddwyr a busnesau yng Nghymru a'r dewis i ddefnyddio'r cynllun taleb sy'n gweddu orau i'w hamgylchiadau a'u hanghenion penodol.

### **Cynllun Olynol Cyflymu Cymru**

Bydd contract Cyflymu Cymru yn dod i ben ym mis Rhagfyr 2017. Mae'r gwaith paratoi yn mynd rhagddo eisoes i sefydlu prosiect olynol ar gyfer buddsoddi mewn band eang. Mae Adolygiad o'r Farchnad Agored yn mynd rhagddo i nodi ym mha adeiladau y darparwyd band eang cyflym iawn a ble mae'r farchnad yn bwriadu buddsoddi dros y tair blynedd nesaf. Mae'r broses hefyd yn ymwneud ag ymgysylltu â'r farchnad delathrebu er mwyn helpu i lunio a llywio maes ymyrraeth a strategaeth gaffael newydd. Bydd unrhyw gynllun olynol yn canolbwyntio ar y meysydd hynny lle nad oes ymyrraeth wedi'i gynllunio gan y farchnad.

Yn dilyn yr Adolygiad o'r Farchnad Agored, y gobaith yw lansio proses gaffael ym mis Chwefror 2017 er mwyn dyfarnu contract ym mis Ionawr 2018.

Caiff unrhyw gynllun olynol ei ategu gan gyllideb sector cyhoeddus o hyd at £80 miliwn a fydd, yn ei dro, yn defnyddio arian cyfatebol o'r sector preifat i ymestyn y gwasanaeth band eang ymhellach i'r adeiladau anoddaf eu cyrraedd ledled Cymru erbyn 2020. Mae hyn yn cynnwys hyd at £50 miliwn o gronfa fuddsoddi Cyflymu Cymru sy'n seiliedig ar 50% o ddefnydd ac £20 miliwn dros y pedair blynedd nesaf o gyllideb Llywodraeth Cymru. Mae swyddogion hefyd wedi dechrau trafod â Swyddfa Cyllid Ewropeaidd Cymru i sicrhau £20 miliwn arall o Gronfeydd Strwythurol i barhau â'r broses o gyflwyno band eang cyflym iawn.

## **Technolegau Amgen**

Mae Llywodraeth Cymru wedi arddel barn gyson niwtral o ran technoleg drwy gydol ei hymyriadau band eang. Mae'r prosiect Cyflymu Cymru a ddarparwyd gan BT wedi gweld defnydd helaeth o dechnolegau Ffeibr i'r Cabinet a Ffeibr i'r Adeilad. Mae cynllun Allwedd Band Eang Cymru wedi ariannu datrysiadau sy'n cael eu llywio gan ystod o dechnolegau o Ffeibr i'r Cabinet ynghyd â datrysiadau diwifr sefydlog, lloeren a symudol.

Mae'r prosiect mewnlenni band eang Busnes a ddarparwyd gan Airband Community Internet wedi darparu seilwaith diwifr sefydlog sy'n gallu darparu gwasanaethau 30Mbps a 100Mbps i oddeutu 2,000 o adeiladau busnes a pharciau busnes ledled Cymru.

Mae'r diwydiant hefyd yn weithredol yng Nghymru gan dreialu a darparu datrysiadau arloesol. Er enghraifft, mae EE yn treialu technoleg celloedd bach yn Nyffryn Teifi i ddarparu cysylltedd symudol i gymunedau anghysbell. Mae technoleg celloedd bach hefyd yn cael ei defnyddio i ddarparu signal i Faes Awyr Llanbedr.

## **Engbreiffiau rhyngwladol**

Mae swyddogion yn sicrhau eu bod yn cael y wybodaeth ddiweddaraf am ddatblygiadau yn y ddarpariaeth ffonau symudol a band eang mewn ardaloedd eraill yn y DU a thramor drwy fynychu cynadleddau, drwy lenyddiaeth sy'n canolbwyntio ar y diwydiant a chyfarfodydd â chynrychiolwyr o'r diwydiant. Bydd adolygiad o arferion gorau mewn gwledydd eraill yn llywio'r broses o ddatblygu'r prosiect a fydd yn olynu Cyflymu Cymru. Fodd bynnag, bydd angen i unrhyw gynllun ar gyfer ddarpariaeth symudol neu fand eang fod yn briodol i dopograffi, dwysedd poblogaeth, marchnad a system reoliadol Cymru.

## SCOTTISH GOVERNMENT – MOBILE ACTION PLAN

June 2016

### Introduction

Ensuring high quality digital connectivity across all of Scotland is a priority for the Scottish Government (SG). We have set out an ambition for the availability of world class digital connectivity across Scotland, and we recognise that improved mobile connectivity is an integral part of delivering that ambition. SG has been working with the Scottish Futures Trust (SFT) to determine how we can most effectively support industry to deliver a 5G-ready infrastructure across all of Scotland.

The UK mobile network operators (MNOs) have demonstrated a clear commitment to maximise coverage, not least by investing substantial sums in rolling out 4G networks across the country. Significant progress is being made towards meeting 4G coverage obligations and the 90% geographic coverage agreement. Nevertheless, we collectively recognise that once commercial deployment is complete, coverage gaps will still remain in some of the most rural and remote areas.

SG also recognises that the costs of deploying new infrastructure to address mobile notspots is often prohibitively high, particularly when set against the limited revenues that can be generated where there are relatively few users.

### Objective

**SG and the mobile operators are committed to working together on a range of measures aimed at improving mobile coverage across Scotland.**

We will identify where the gaps will be after commercial rollout and jointly design technology solutions and business models that will allow services to be delivered by operators in a sustainable way.

This action plan sets out tangible steps that will be taken by SG, alongside public sector partners, to support that ambition. These will aim to take costs out of operators' business models in non-commercial areas and will range from interventions such as business rates relief through to more direct interventions, such as investing in the construction of new or enhanced infrastructure.

It also sets out the steps that operators will take; to help design and shape these interventions and to make them as effective as possible. A key action is for operators to share future network deployment plans, to enable SG action to be targeted on the areas that it is most needed. We are jointly committed to building on the positive industry engagement to date and learning the lessons from failed projects elsewhere. Public sector interventions to improve mobile coverage in Scotland will be the product of genuine collaboration between industry and the Scottish Government.

## Strategy Development: Partnership Approach

SG is committed to using any and all devolved powers to help overcome barriers to investment. We will also continue to make representations to the UK Government and Ofcom to ensure that the UK-wide legislative and regulatory environment supports mobile deployment in Scotland.

SG works closely with the Digital team at SFT, who provide technical, practical and policy support. This has involved developing and delivering technology/commercial pilots in conjunction with industry (such as the Coll project); leading our analysis of potential infill requirements; and engaging with Home Office and others to understand, and maximise, the impact of the Emergency Services Mobile Communications Programme (ESMCP) in Scotland.

Highlands and Islands Enterprise (HIE) is another key partner, liaising with operators and planning authorities to ensure that commercial rollout across the Highlands and Islands proceeds as smoothly as possible. HIE's work capitalises on local contacts and knowledge of some of Scotland's most remote and rural areas. This type of engagement is also taking place with local authorities elsewhere in Scotland, including those in the south of Scotland.

## Key areas of activity & collaboration

SG is ready to intervene to make it easier for operators to deploy new infrastructure and deliver services to mobile notspots. We are committed to developing a package of measures, some of which could focus on reducing operating costs; others on capital funding requirements. All of these will be designed in collaboration with industry, recognising that operators cannot be expected to deliver services in non-commercial areas without the support of public sector partners.

There are 7 key areas of immediate action:

### 1. Non-Domestic Rates

Non-domestic rates are often cited by industry as bearing on the viability of marginal sites – estimated in many cases as around a third of the opex of a new mast.

**From 1 April 2016, SG has offered non-domestic rates relief for new masts in non-commercial areas, initially as a pilot scheme on parts of Arran and Cairngorm.**<sup>1 2 3</sup>

This is being taken forward as a pilot at this stage, pending forthcoming availability of data on future coverage, which will enable definition of a Scotland-wide intervention area. Our intention is to widen the scheme across Scotland if the pilot is successful, and if an intervention area can be accurately defined.

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<sup>1</sup> <http://www.legislation.gov.uk/ssi/2016/122/contents/made>

<sup>2</sup> <http://www.legislation.gov.uk/ssi/2016/129/contents/made>

<sup>3</sup> <http://www.gov.scot/Topics/Economy/digital/Publications/NDR-maps>



The MNOs commit to sharing with SG (either directly with SG or via Ofcom, and under a Non-Disclosure Agreement if appropriate) their future network planning information by the end of 2016, and regularly updated information thereafter. This will enable SG to target a range of interventions on specified non-commercial areas.<sup>4</sup>

## 2. Planning

The Scottish planning system is established as having a key role to play in supporting SG's wider digital connectivity ambitions. In 2014, we legislated to extend permitted development rights for telecommunications infrastructure, removing the need to make a planning application in a wider number of cases.

However the industry has called on us to go even further. In recognition of this, we have commissioned and published new research which, amongst other things, contains evidence-based recommendations on the scope for further legislative change. **SG is committed to further reform of the planning system and later this year we will consult on detailed legislative proposals for the further relaxation of planning controls to support commercial investment in digital connectivity. We will also work in collaboration with the industry and other key stakeholders to prepare new online advice on planning for telecommunications.**

## 3. Public Sector Assets

We recognise that improved access by the telecoms industry to public sector assets has the potential to be a valuable part of a package of measures to improve the commercial viability of network deployment. It also offers another opportunity by which the public sector can accelerate mast development through means other than direct subsidy.

We are exploring a number of opportunities in this area – for example, around land owned by the Crofters Commission and Forestry Commission in rural areas. We are also engaging with the Cabinet Office to learn from its experience of having opened up public sector assets in England. While a ratecard system for valuation of assets may be useful, we want to ensure that the driver for any initiative in this area is improved coverage rather than revenue generation.

We are also looking at how we could provide industry with access to the ePIMS Lite property database that holds high-level property information on the estate portfolios of local authorities, NHS Boards and the Emergency Services. This data could help MNOs plan network deployment by identifying potential new sites.

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<sup>4</sup> This data will be made available to the Scottish Government solely for use in its policy development. Mobile coverage data for public use is available at <http://maps.ofcom.org.uk/check-coverage>.

**SG will engage with industry and other stakeholders to understand how industry “asks” and priorities in this area can be taken forward to align with SG’s digital priorities (short, medium and longer term).**

#### **4. Innovative Mobile Solutions**

We are keen to trial new ways of extending mobile coverage across Scotland. In 2015, SFT successfully implemented a pilot project on Coll, in partnership with Vodafone, which has delivered mobile services to the island for the first time and is testing the concept of a community-owned mobile mast. Vodafone is the core tenant, currently delivering services to the Coll community, whilst other MNOs are now engaged with us with view to using the mast to provide services. The mast is open to all operators but, unlike the UK Government’s Mobile infrastructure Project, there is no requirement for all four MNOs to deliver services.

**Additional projects in Arran, Tiree and Cairngorm are currently being developed and SG is keen to take these forward with industry partners now. The MNOs will consider their potential involvement as an anchor tenant for these projects and discuss these opportunities with SG/SFT.**

Furthermore, SG is keen to position Scotland as a testbed for new technologies and business models; making connections with our thriving academic community and supporting operators’ research and development agendas. We are already in discussion with EE as to the development of a project in Scotland and we keen to explore with industry how any opportunities could be maximised.

**The MNOs will seek opportunities to locate in Scotland technology or other trials which may be in the pipeline, and discuss any such opportunities with SG/SFT.**

#### **5. Emergency Services Mobile Communications Programme (ESMCP)**

The Extended Area Services (EAS) project within the wider ESMCP will deliver new publicly funded mobile infrastructure in areas where the emergency services need coverage but which fall outside commercial rollout. **SG is determined to maximise the wider coverage benefits of this new infrastructure; and to ensure that, where possible, these new masts are future-proofed and open to all operators.**

SG and SFT are working in collaboration with ESMCP to look at how we could future proof new masts being built as part of EAS, where it is considered that wider benefits (such as coverage to nearby premises or areas with high tourism footfall) could be delivered. This might allow us to fund enhancements to the specification of masts, where necessary, making them taller or more robust to enable the sharing of the site by multiple operators. We have assessed proposed EAS sites on an individual basis to identify opportunities for future proofing and SG welcomes further dialogue with the MNOs on this issue.

**When details of new EAS infrastructure becomes known, the MNOs will assess the viability of using these sites in their network deployment.**

## **6. Mobile Infill**

Current industry investment in 4G infrastructure rollout is expected to significantly improve coverage across Scotland, however we recognise that there will remain some areas where it will not prove commercially viable to deliver services.

SG is keen to explore the potential for a national 4G infill initiative – focused on delivering new masts and enhanced backhaul connectivity.

For SG, a pre-requisite of any such scheme is the need for it to be designed in conjunction with industry; also taking into account lessons we have learned through our previous experience with the Coll project and from the UK Government's Mobile Infrastructure Project.

With regards to the latter, SG recognises that, in some circumstances, requiring all MNOs to deliver a service from each site may affect the overall viability of a proposed site. We would therefore propose that any new infrastructure subsidised by SG and its partners would not have such a requirement but perhaps be taken forward with one or two MNOs initially. However sites would remain fully open access and available to all MNOs on equivalent terms.

SG is committed to working with industry to develop an infill proposal in a way that enables MNOs to deliver services on as close to a cost-neutral basis as possible.

Potential options might include:

- Publicly owned masts;
- Community-owned masts;
- Joint Venture arrangements; or,
- Private sector delivery – but with public subsidy via grant or another funding mechanism.

**SG sees development of this project as being vital to extending coverage; but we realise that it will only succeed if designed in partnership with industry. We, therefore, see collaboration on this project as a key early action.**

## **7. 5G-ready infrastructure**

SG continues to collaborate with SFT to scope what infrastructure will be required over the longer term to support world class digital connectivity in future; and how the public sector can most effectively intervene to stimulate and accelerate the necessary private investment.

This will include gaining a clearer understanding of what additional rural backhaul capacity may be required in Scotland to underpin longer term investment by the MNOs and also the capacity requirements to make Scotland “5G-ready”.

**SG and SFT will jointly hold a workshop later this year to explore, with industry, these issues.**

**Scottish Government  
Digital Directorate  
June 2016**