

Digital Infrastructure Update

1.0 EXECUTIVE SUMMARY

1.1 The main aim of this report is to provide an update in relation to the digital infrastructure projects which are ongoing across Argyll and Bute. The report includes updates in relation to broadband and mobile communication improvements.

1.2 Next Generation Broadband

- BT commercial programme – Live in Helensburgh and Oban, Dunoon expected to follow in 2015.
- Highlands and Islands Programme – subsea cable work was undertaken during the summer, the first live premises are in Oban.
- Rest of Scotland Programme – Properties in the Cardross exchange area received the service in October 2014 (initial build date was 2016); other areas are expected to follow in 2015.
- Community Broadband Scotland (CBS) - CBS continue to support communities across Argyll and Bute, including the Argyll Isles project known as Giga Plus Argyll.
- New Technology – remodelling work to include Fibre to the Remote Node (FTTRN) is being undertaken and is expected to be available during 2015.
- Extension Funding - £21 million has been identified by Broadband Delivery UK (BDUK) for an extension project in Scotland subject to match funding being identified.
- Exchange Activate – Highlands and Islands Enterprise (HIE) are in discussions with BT in relation to upgrading the nine Exchange Activate exchanges in Argyll and Bute and they understand that BT are investigating what could be achieved.

1.3 Mobile Communications

- Mobile Infrastructure Plan - Site searches have commenced in relation to four locations contained within the revised National Implementation Plan, transmission issues are expected to be a significant factor in relation to deliverability.
- Scottish Government Pilot on Coll - Work on the installation of the mast commenced during the summer and the service – which is planned to include 4G – is expected to go live once connections to Mull have been completed.
- Vodafone Rural – The Isle of Luing and the Isles of Seil and Easdale were announced within the first 30 successful communities planned to receive the

equipment. Crossapol (Isle of Tiree) was announced in the second 30 communities.

- 4G Coverage – we understand 4G deployment is planned but we have no confirmation as to coverage levels within Argyll.

It is recommended that Policy and Resources Committee

1. Note the content of this report; and
2. Agree that officers write to the Scottish Government and COSLA to request that sufficient extension funding is allocated to ensure that coverage levels within Argyll and Bute match the Scotland wide action to “put in place infrastructure that will have the capacity to deliver next generation broadband to 95% of premises by 2017, and a significant uplift in speeds for the remaining areas”.

Digital Infrastructure Update

2.0 INTRODUCTION

2.1 Work has commenced on a number of programmes which aim to improve the digital infrastructure across Argyll. This report provides an update on the various projects.

3.0 RECOMMENDATIONS

3.1 It is recommended that Policy and Resources Committee

1. Note the content of this report; and
2. Agree that officers write to the Scottish Government and COSLA to request that sufficient extension funding is allocated to ensure that coverage levels within Argyll and Bute match the Scotland wide action to “put in place infrastructure that will have the capacity to deliver next generation broadband to 95% of premises by 2017, and a significant uplift in speeds for the remaining areas”.

4.0 DETAIL

The work being undertaken in relation to digital infrastructure relates to broadband or mobile communications.

4.1 Next Generation Broadband

Next generation broadband within Argyll is being delivered through one of four programmes. In some areas (parts of Dunoon, Helensburgh and Oban), it is commercially viable for BT to deliver the service at their own cost however this would only cover approximately 28% of premises across Argyll. In recognition of the market failure in relation to next generation broadband, public funding has been made available to deliver the Highlands and Islands and Rest of Scotland projects. In combination with the commercial rollout, the Highlands and Islands and Rest of Scotland projects will deliver coverage to approximately 85% of premises in Argyll. In those areas not likely to be served by any of these current programmes, Community Broadband Scotland can help the local community to deliver their own solution.

4.2 Next generation broadband will utilise a completely new infrastructure network with new fibre backbone extending out to the islands and peninsulas of Argyll. Some of the difficulties experienced during the rollout of next generation broadband are indicated in Appendix 1 The Deployment Story. Whilst telephone exchanges will continue to provide a service in relation to telephone calls only a

handful of exchanges will handle next generation broadband services, new access cables running from these “headend” exchanges will run directly to new communication cabinets within communities. For example, within the Helensburgh and Lomond area services will be provided by either the Alexandria or Arrochar exchange, current services within Helensburgh and Cardross are being delivered from Alexandria.

4.3 BT commercial programme

The commercial rollout by BT is expected to bring next generation broadband to some premises in Helensburgh, Oban and Dunoon where it is commercially viable for them to do so. The commercial rollout does not extend to the rural areas or cover those premises which are connected directly to their local exchange (known as exchange only). The first 1,500 premises in Helensburgh gained access in May 2014 with Oban following in September 2014. Work is continuing in relation to Dunoon which is expected to have coverage during the first half of 2015. The commercial rollout is expected to be completed during 2015.

4.4 Highlands and Islands Programme

The Highlands and Islands programme relates to the Bute and Cowal, Mid Argyll Kintyre and Islands and Oban, Lorn and the Isles areas of Argyll and Bute and is being led by Highlands and Islands Enterprise (HIE). It will seek to cover as many premises as possible in those parts of BC, MAKI and OLI which will not benefit from commercial coverage. It is currently expected that coverage will be in region of 83% of premises when taken with the commercial rollout.

4.5 During the summer, the main element of activity has been in relation to the laying of subsea cables which will extend the fibre backbone network across the islands and peninsulas (previously there was no infrastructure in the west of Scotland). The final subsea cable work was completed in November 2014.

4.6 The first live premises in relation to this programme were in Oban in September with coverage expected to follow for the Ledaig (Benderloch) and Taynuilt exchange areas in early 2015. Deployment to Balvicar, Connel, Dalmally and Kilmelford Exchange Areas was formally announced in the October 2014 press release and coverage is expected within approximately 6 months of the announcement.

4.7 The following changes have occurred in relation to anticipated dates for deployment within exchange areas:

- The Craignure Exchange Area, also originally targeted for deployment in 2014, is now showing for coverage during the first half of 2015.
- The Campbeltown Exchange Area (which was originally shown for 2016) is now expected to get coverage during the latter half of 2015.

4.8 Rest of Scotland Programme

The Rest of Scotland Programme relates to the Helensburgh and Lomond area of Argyll and Bute and is being led by the Scottish Government. Like the Highlands and Islands programme it aims to extend coverage to as many premises as possible. It is expect that coverage will be around 92% of premises when the commercial coverage is included.

4.9 Cardross exchange area was the first area to be targeted through the Rest of Scotland programme within Argyll and the first premises were able to access the service during October 2014 (initial build date was 2016). The following exchange areas which were initially programmed for 2016 are now expected to progress during 2015:

- Arrochar (Jul-Dec 15)
- Clynder (Jul-Dec 15)
- Garelochhead (Jul-Dec 15)
- Helensburgh (where not covered by the commercial rollout) (Jan-Jun 15)
- Kilcreggan (Jul-Dec 15)
- Rhu (Jan-Jun 15)

4.10 Community Broadband Scotland

Despite the programmes of works being undertaken, some premises (approximately 15% across Argyll) will be unable to connect to the next generation broadband infrastructure. Community Broadband Scotland (CBS) operates to support communities in taking forward their own broadband solution.

4.11 The most substantial project that CBS are supporting is the Argyll Isles project (now known as Giga Plus Argyll) which is seeking to provide superfast broadband to all premises on Colonsay, Jura, Iona, Lismore, Luining and parts of Mull, Islay and the Craignish Peninsula. The area is home to around 3,300 people living in approximately 1,400 properties. There are also 120 businesses in the project area.

4.12 Giga Plus Argyll will be a new community body leading the programme which includes the following seven community groups Mull and Iona Community Trust, Colonsay Community Development Trust, Jura Development Trust, Craignish Community Company, Lismore Community Council, Islay Broadband Group and Atlantic Islands Trust (Luining).

4.13 The project aims to deliver superfast broadband to 100% of the Argyll Isles project community by 2015. The tender to see if a solution can be procured ran until 6 November 2014 and CBS are following up on the expressions of interest received. They hope to be able to make an appointment in spring 2015.

4.14 **Other broadband issues**

New Technology

Whilst work has been ongoing on the ground, BT and other technology providers have been testing new technologies to establish whether they are suitable for commercial deployment.

4.15 Currently the programmes utilise the following technology to deliver superfast broadband:

- Fibre To The Cabinet (FTTC) where fibre optic access cabling is taken to a new street communications cabinet (Digital Subscriber Line Access Multiplexer or DSLAM) which then links into the existing copper cable network via an existing communications cabinet (Primary Cross-connection Point or PCP). This is the most cost effective solution where communities of

approximately 50+ premises are within approximately a kilometre distance of the PCP via existing copper cables. Premises close to the cabinet could receive speeds of up to 80mbps but this will decrease as the distance from the cabinet increases. It is expected that after approximately 1-1.5km the speed will have dropped to 24mbps (the threshold for superfast broadband), beyond this the speed will continue to fall although for many it could offer a better service than they currently receive.

- Fibre to the Cabinet Exchange Only Lines (FTTC EO) uses the same technology as FTTC but for premises which are not currently connected to a PCP, a new PCP is also required. There are a high number of exchange only lines across the highlands and islands. This solution requires an additional site to be identified for the PCP which will need to be in a location which is suitable for being connected into the existing copper cabling and is therefore usually close to the telephone exchange. As with FTTC the speed of broadband received will depend on the proximity of a premise to the new PCP and DSLAM.
- Fibre to the Premise (FTTP) takes the fibre optic access cabling directly to individual premises, it can offer the highest speeds as the broadband speed does not drop on the fibre optic in the same way as it does on the copper cables but it is also the most expensive and difficult to deploy option, it will not be widely used. Currently premises connect via FTTP could expect to receive up to 330mbps.

4.16 New technology, Fibre to the Remote Node (FTTRN), is being tested by BT. The Remote Node is essentially a smaller cabinet and therefore works in a way similar to the FTTC solution but is suitable for deployment in smaller communities of around 10-15+ premises; it is believed that this could be significant in rolling out next generation broadband to our smaller communities at a cost which is much lower than the FTTP solution.

4.17 At the start of the project BT went through a modelling exercise which indicated which exchange areas they thought could be covered with the money available. The model produced maps of those exchange areas which were expected to be covered and when, these have now been superseded by the map included as Appendix 2 which feeds in up to date information in relation to the rollout in the form of an interactive map at www.digitalscotland.org/whereandwhen. The modelling exercise is currently being undertaken again but this time it should include FTTRN technology. The details of this work are expected to be available during 2015.

4.18 Extension of Funding

Broadband Delivery UK (BDUK) has indicated that a further £21 million has been identified to extend the Highlands and Islands and Rest of Scotland projects subject to match funding being identified. There are no indications currently as to how the additional funds will be split between the Highlands and Islands and Rest of Scotland areas or the implications it could have for Argyll. It is recommended that we write to the Scottish Government and COSLA to request sufficient funding be made available to deliver additional coverage across Argyll with a preference that the additional coverage brings Argyll up to the Scottish wide target which states that the Government aims to “put in place infrastructure that will have the

capacity to deliver next generation broadband to 95% of premises by 2017, and a significant uplift in speeds for the remaining areas”.

4.19 Exchange Activate

When broadband was initially rolled out across the highlands and islands there were insufficient funds to upgrade all exchanges. In response to this, BT provided a solution which would give broadband speeds of up to 0.5mbps to the remaining exchanges; this is known as Exchange Activate.

4.20 There are currently nine Exchange Activate exchanges across Argyll, two of which are programmed to be improved as a result of the next generation broadband projects. Issues have been raised by communities in relation to the Exchange Activate equipment which gives what is now a poor broadband speed and is inflexible in terms of the number of users who can access a broadband service.

4.21 HIE are in discussions with BT in relation to upgrading the Exchange Activate exchanges and they understand that BT are investigating what could be achieved. The Council has written to HIE to support them in this regard.

4.22 **Mobile Communications**

Mobile Infrastructure Plan

The Mobile Infrastructure Plan (MIP) is the main government mechanism for the delivery of improvements to mobile infrastructure across the UK. The £150m project aims to address “not spots” where there is currently no mobile coverage from any operator and to provide voice coverage. The Department for Culture, Media and Sport (DCMS) have been working on delivery of the MIP with their agents, Arqiva.

4.23 Using data from the mobile operators they have identified not spots but as there is insufficient funds to cover all not spots a prioritisation process has been undertaken. The method used to select not spots for inclusion within the National Implementation Plan has not been shared with the Council. It is our understanding that to date two new mobile masts have been delivered through the MIP in Devon and North Yorkshire.

4.24 During 2013, the Council was notified of a number of sites included within the National Implementation Plan for MIP but which required release from the Implementation Panel before site searches could be undertaken.

4.25 In the interim period we were notified that due to inconsistencies between the data held in relation to mobile coverage and that on the ground, there was typically better coverage than expected, a review of the plan was being prepared. The review has now been undertaken and we met with DCMS and Arqiva at the beginning of October 2014 to receive an update on the National Implementation Plan.

4.26 The MIP is tasked with providing mobile coverage where there is none and we are informed that where previous sites have been excluded from the plan this is most likely due to there being better mobile signal available within the locality than

originally anticipated. Arqiva are unable to confirm details regarding any changes to specific sites.

- 4.27 The main issue in relation to the delivery of sites is the requirement to connect into the existing mobile operators' networks, i.e. there must be a direct line of sight from the new mast to existing masts for each of the four main mobile operators. Without this link to the existing network calls could not be connected. The technical difficulties in making these connections within Argyll may have serious implications for the delivery of any MIP masts.
- 4.28 To date four sites have been released to allow the site search to be undertaken and MIP personnel were accompanied by a development management planner to provide on the spot feedback on the potential sites. Transmission requirements will be key in identifying a location for sites however landscape impact is also an important consideration which could impact the ability to deliver the sites. We have no confirmation to date as to whether these sites will proceed.
- 4.29 Scottish Government Pilot on Coll
At the same time as the MIP has been developing, the Scottish Government have been working with the community on Coll to deliver mobile phone coverage for the island. The Scottish Government has led the development stages of the project and provided the capital for the mast. Development Coll has agreed to take ownership of the mast and pay for its maintenance. Development Coll have sought support for this from public sector bodies, including the Council which has agreed to make a contribution for the first 5 years of the pilot.
- 4.30 Work on the installation of the mast commenced during the summer and the service – which is planned to provide 4G – is expected to go live once the connection to Mull has been established.
- 4.31 Vodafone Rural
During Autumn 2014, Vodafone sought communities interested in receiving their Open Sure Signal product. Open Sure Signal boxes connect to the internet (minimum 4mbps required) and provide a 3G mobile coverage for Vodafone users within approximately 500m radius (reducing where trees, buildings etc. block the signal). The competition required communities which currently have no or very poor mobile coverage to identify appropriate sites for the equipment to be located and to agree to cover the electricity costs (currently estimated at approximately £30 per annum per box). Vodafone would cover the costs of the equipment and broadband connections.
- 4.32 Notification of this opportunity was sent to all Councillors, those community councils which were most likely to fit the criteria in terms of broadband speed and current mobile signal and through the Council's Funding Alert. The Isle of Luing and the Isles of Seil and Easdale were included within the first 30 successful communities announced in early November 2014. Crossapol (Isle of Tiree) has been announced in a second round.
- 4.33 Other Mobile Issues
Alongside these programmes, O2 have been awarded the contract for delivering

4G across the UK, this contract includes a stipulation that 95% of premises within Scotland receive coverage. It is understood that 4G deployments are planned but it is not yet known which premises within Argyll will benefit.

- 4.34 The Department for Culture, Media and Sport carried out a consultation on Tackling Partial Not-Spots in Mobile Phone Coverage during Autumn 2014, the Council made a response supporting action to tackle partial not-spots. We also responded to the Ofcom consultation Communications Services and SMEs.

5.0 CONCLUSION

- 5.1 Superfast broadband is being delivered across Argyll and Bute and will pick up pace over the next twelve months. The extension funding offers an opportunity to secure coverage for additional premises and we propose writing to the Scottish Government and COSLA in relation to this. Excluding the extension funding and coverage through community projects, 85% of premises are expected to benefit from connection to next generation broadband infrastructure.
- 5.2 Progress on mobile coverage has been slow and whilst the MIP appears to be moving forward there are still substantial, mainly technical, issues which need to be overcome before any improvements can be secured for Argyll. The 4G rollout has the potential to make some improvements but we need to understand further how far this will reach across Argyll and Bute. As an indication, figures from the Scottish Government estimate that voice and data coverage by 2017 should be available to approximately 83% of premises (2012 – voice was 62% and data was 46%).

6.0 IMPLICATIONS

- 6.1 Policy – the Single Outcome Agreement (SOA) and Economic Development Action Plan support improvements in the digital infrastructure.
- 6.2 Financial – Across Scotland funding of £410m has been committed to the next generation broadband project across Scotland (including a contribution from COSLA on behalf of all local authorities). A further £42m is anticipated. £150m has been allocated to the MIP project. No direct financial implications to the Council at the present time.
- 6.3 Legal – none.
- 6.4 HR – None.
- 6.5 Equalities – the differing nature of the deployment of new technology has the potential to lead to inequalities in terms of access to internet and broadband services including those which support business and personal development.
- 6.6 Risk – there is a risk that those areas which do not benefit from next generation broadband will become undesirable locations within which to live and work which could have implications in relation to the SOA objective of growing the population. There is a risk that communities progressing through the

Community Broadband Scotland route may be less able to sustain a community based next generation broadband solution. There is significant risk that the technical, transmission related issues surrounding the Mobile Infrastructure Project sites cannot be resolved and that the improvements for these areas will not be delivered.

- 6.7 Customer Service – improvements in broadband and mobile technology improve the opportunities for customer service via these technologies.

Appendices

- 1 The Deployment Story
- 2 Broadband leaflet (correct at December 2014, updates will be available from <http://www.argyll-bute.gov.uk/superfast-broadband#leaflet>)

See also <http://www.argyll-bute.gov.uk/superfast-broadband>

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APPENDIX 1 The Deployment Story - <http://www.digitalscotland.org/superfast-broadband/deployment-story/>

It's frustrating when you check out the map and discover that where you stay isn't going to be getting fibre for a while longer – we know, some people in the deployment team are also waiting to get fibre broadband.

Why is this, and why sometimes do you see a cabinet being stood but then find out that you still can't get fibre broadband?

There are a number of stages that each exchange area has to go through to deliver the fastest speeds to the most amount of people.

To stand one cabinet can take 10- 15 months – here's why.

Currently there are three types of technological solution we can provide. A lot depends on where you are in the country and what services are already there.

There is FTTC (fibre to the cabinet) this uses fibre-optic cables throughout the network right up to the green street cabinet. It then uses existing copper wires to connect the cabinet to homes and businesses. FTTC provides download speeds up to 80Mbps and upload speeds up to 20Mbps – this is usually our preferred choice.

Then there is FTTP (fibre to the premise) this means fibre-optic cables run from the exchange right to the door of each house. It provides download speeds up to 330Mbps and upload speeds up to 30Mbps.

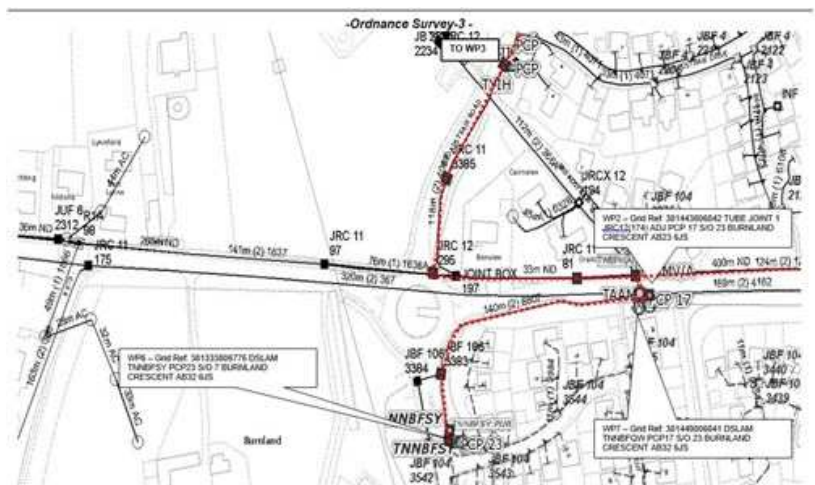
Finally we have EO (exchange only) lines. These are connected directly to the local telephone exchange rather than passing through the green cabinet. These lines are generally either very close to the telephone exchange or very remote from it. EO lines can be fibre enabled by building a new cabinet close to the exchange and using FTTC or by using FTTP.



Pre-planning

To begin with, the most important thing is to know is what the current picture is like in an exchange area.

Our engineers do a full assessment of the existing infrastructure already in the ground to provide



accurate, up-to-date information. This allows them to decide what service is best suited to the area and includes:-

- Planning and surveying the area to check capacity, condition of existing infrastructure and establish what work needs to be done
- Planning how the main fibre cable (the spine) will be laid to the exchange and out to the areas that the exchange serves
- Surveying existing cabinets, and working with power companies, highways agencies and conservation officers to agree the location of new cabinets. There is a lot to do and discover. New cabinets require planning permission, which usually take 28 days to be approved, if in a conservation area take 56 days.

Preparing the exchange

We then agree and plan where the new equipment goes. Once the equipment is ordered and built, we install everything and upgrade the power facilities within our exchange building.



If FTTP is to be installed then surveyors walk the route of existing telegraph poles and cables to plan how the fibre cable can be run to the most suitable point to serve the properties.

Where we build new cabinets, wayleaves are often required. A wayleave is the consent that allows work to be carried out on privately-owned land. It's a written legal agreement between ourselves and the land/property owner that grants us access to install, maintain or repair the network equipment to use private land if needed.

Installation

The final stage is building from the exchange to new street cabinet locations that have passed the planning stage.

- Laying fibre duct and fibre to the exchanges through underground ducts. Often this stage can be difficult as engineers discover blockages along the ducts – on average around 3 per km. The process can take a while depending where we are in the country with challenges on busy roads and ground conditions such as granite
- While the majority of network will be underground, there will be sections of overhead network in the more rural areas, particularly with FTTP solutions. New telegraph poles may need to be put up in these areas and will be part of normal planning applications.

- If FTTC, we install new fibre cabinets, connect them to the power supply and connect the cabinets to the fibre network.

To do this we have to co-ordinate with power companies to get power supplied, agreeing a time, date and cabinet to be powered up.

- Testing the cabinets and FTTP network points to make sure they are delivering the best speeds possible



After all of these procedures are complete, the cabinet is ready. The team can then tell customers that fibre broadband services are available, ready for them to order from their supplier.