

# Superfast broadband for Scotland

A progress update



AUDITOR GENERAL 

Prepared by Audit Scotland  
August 2016

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# Key facts

## About the contracts to deliver superfast broadband in Scotland



### Why is the public sector investing in superfast broadband?

The Scottish Government aims to extend access to the fibre network in areas which aren't reached by the market alone, such as rural and remote communities and businesses. It anticipates that improved connectivity will stimulate business innovation, boost productivity and enhance Scotland's international competitiveness.



### How much will the contracts cost?

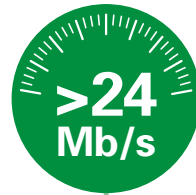
A total investment of £412 million: £146 million for the Highlands and Islands, which covers the three island councils, Highland and Moray Councils and parts of North Ayrshire and Argyll and Bute; and £266 million for the rest of Scotland.

The Scottish public sector as a whole is expected to contribute funding of £165 million. The balance will be provided by the UK Government, the EU and BT.



### What do the projects involve?

BT is looking to get the fibre network as close as technically possible to homes and businesses. Existing copper cabling will usually make the final connection to the home. In some areas, fibre cabling will be used the entire length although this is a more expensive option.



### What will the contracts deliver?

The contracts with BT are expected to deliver access to a broadband network to:

- 85 per cent of premises by March 2016
- 95 per cent of premises by December 2017.

BT stated in the contracts that it expects 77 per cent of premises to achieve speeds of more than 24 Mb/s. But due to the length of copper cabling and other geographic and technical reasons, the Scottish Government, Highlands and Islands Enterprise (HIE) and BT cannot guarantee the actual speeds premises will receive.



### What's next?

The Scottish Government has a vision for Scotland to have world-class digital infrastructure by 2020 to enable anyone in Scotland to communicate and connect instantly using any device, anywhere, anytime. To do this, it needs to enhance broadband coverage beyond that provided by the contracts. In May 2016, Scottish ministers committed to deliver 100 per cent superfast coverage by 2021.

2015
↓

### Exhibit 1: How superfast broadband reaches users

**Exhibit 1**  
How superfast broadband reaches users  
BT is replacing part of the copper network with fibre to the premises and fibre to the cabinet. However, in many remote areas FT may need to use alternative technology such as satellite to provide best broadband speeds.

Speed	2+ Mb/s	Up to 24 Mb/s	Up to 48 Mb/s	Up to 200 Mb/s
How service is provided	Service provided through satellite technology for the copper network area, but not in specialist areas.	Standard provided through the existing telephone network. Speed varies depending on technology available in the area.	Fibre runs cables from the exchange to cabinets and fibre running cables from cabinets to premises.	Fibre runs cables all the way to the premises. The number of fibre cables is dependent on the demand.
Speed of service	Speed of service varies from fibre to satellite. Limited speed of service. Limited number of fibre cables to premises.	In some areas technology is able to provide good speeds. Limited number of fibre cables to premises.	Some of the benefits of fibre to cabinets are: faster speeds for all users; ability to deliver more services; and ability to deliver more services.	Very fast speeds available to all premises. Limited number of fibre cables to premises.
Service reliability	Service reliability varies from fibre to satellite. Limited reliability of service.	Copper network is subject to weather and quality of the copper connection. Limited reliability of service.	Service reliability is high. Limited reliability of service.	High reliability of service. Limited reliability of service.

Note: In some instances providing best broadband speeds will not be used. Instead FTTP and FTTC will connect to the network through the copper network.  
Source: Scottish Government

# Key messages


- 1** The Scottish Government and HIE have appointed BT to extend the existing fibre broadband network in Scotland. The contracts are intended to make a major contribution towards achieving the Scottish Government's vision for a world-class infrastructure which would allow people to connect to the Internet anywhere, anytime, and on any device by 2020. Targets to provide access to fibre broadband to 85 per cent of premises by March 2016 have been achieved. The contracts are currently on track to provide access to 95 per cent of premises by December 2017, although the remainder of the roll-out will be more challenging.
- 2** So far, more premises connected to the network are modelled to receive speeds which exceed 24 Mb/s than is set out in the contracts. Across both contracts and areas provided through commercial coverage, the actual speeds that users receive will vary. Overall, premises in rural councils currently receive lower average speeds. The Scottish Government and HIE paid BT £156 million for work done up to March 2016. Lower than expected costs and higher than expected take-up has contributed to £23 million more being available to extend broadband coverage.
- 3** There is still much work to be done if the Scottish Government is to achieve its ambitious vision for Scotland to have world-class digital infrastructure by 2020. It needs to finalise plans to best use an additional £42 million available to extend broadband coverage and the future role of Community Broadband Scotland (CBS) in this. It also needs to define clearly what world class means and set out plans for how it will be achieved. In May 2016, it announced a new target of universal coverage of superfast broadband infrastructure across Scotland by 2021.
- 4** More could be done to address the recommendations in our previous report on the roll-out of broadband. Specifically, there is scope to enhance public reporting of performance information to help assess the success of the investment, including speeds and level of take-up achieved.

# Introduction

## Access to reliable and fast broadband is increasingly essential for everyday life

The Scottish Government set out its policy ambition, in January 2012, to deliver world-class digital access to all of Scotland by 2020. The interim milestone was a significant uplift in speeds for everyone by 2015, with speeds of 40-80 Mb/s for between 85 to 90 per cent of premises.

In 2013, the Scottish Government and HIE separately contracted BT to help deliver the Scottish Government's aim by extending the existing fibre network across the country. Alongside commercial coverage, the contracts are intended to provide access to fibre broadband to 85 per cent of premises by March 2016, and 95 per cent of premises by December 2017. BT expects at least 77 per cent of premises with access to the network to achieve speeds of more than 24 Mb/s.

Our report [\*Superfast broadband for Scotland: A progress report\*](#)  in February 2015 considered the progress of the two projects to date. We agreed with the Scottish Parliament's Public Audit Committee to monitor the programme until both contracts are completed in 2018.

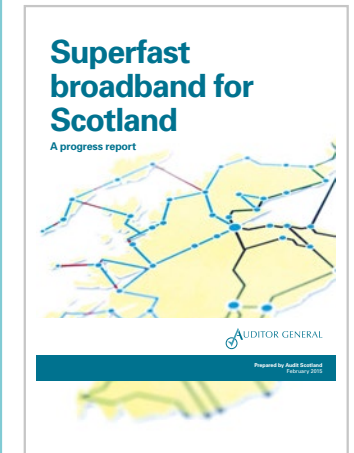
This update examines:

- what progress the two contracts have made to date in rolling out a superfast broadband network
- the Scottish Government's plans for further investment in superfast broadband
- how the Scottish Government and HIE have responded to the recommendations in our original report

2015



Superfast  
broadband for Scotland:  
A progress report  
February 2015



### Links



Progress against 2015  
recommendation



PDF download



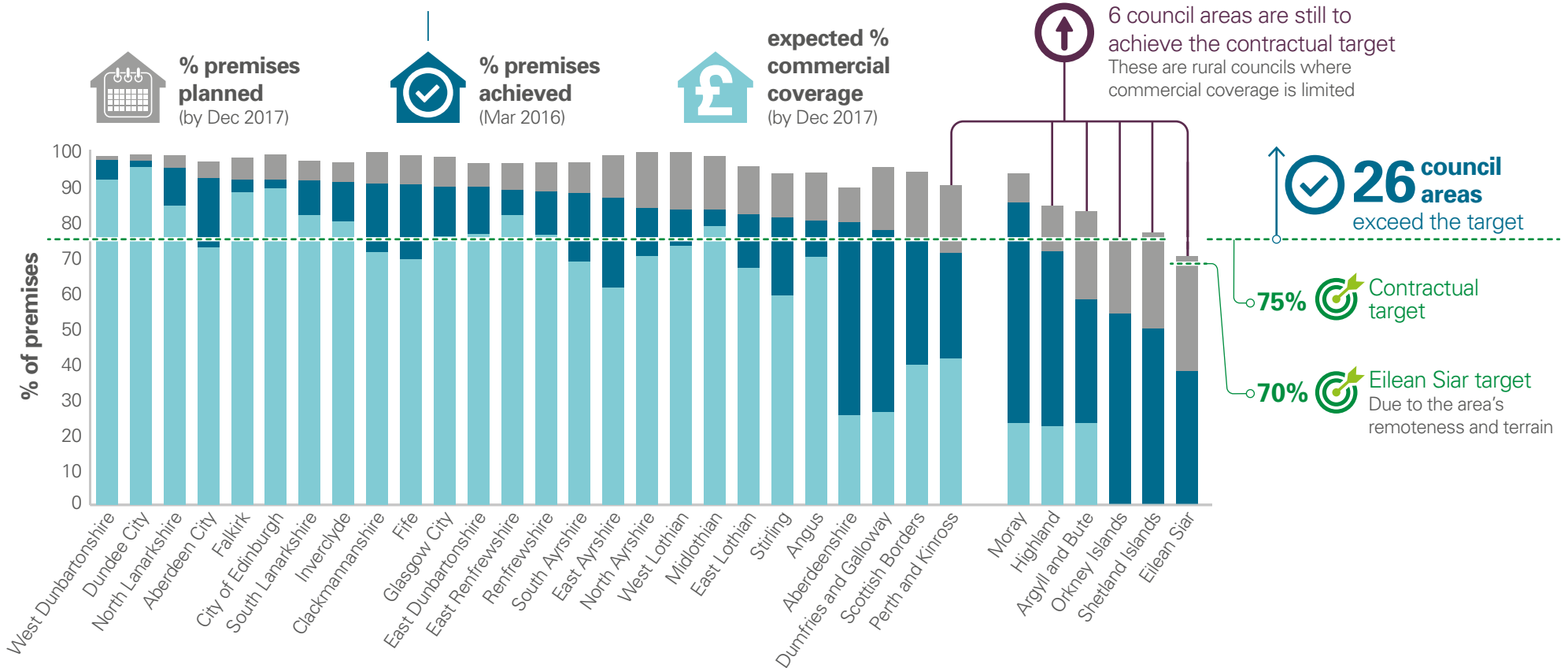
Web link

# Progress

The Scottish Government achieved its target to provide access to fibre broadband to 85 per cent of premises by March 2016

**March 2016**  
**2.2m premises** out of 2.6m (86%) have access to fibre broadband

**500,000 premises** have been provided with access through the contracts

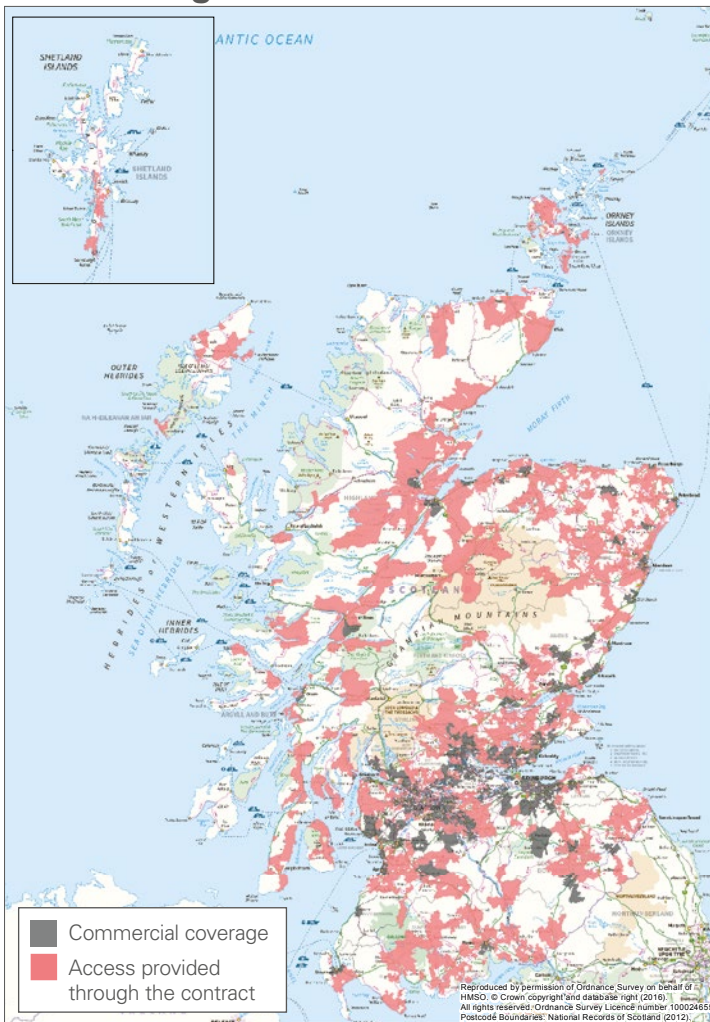


Source: Rest of Scotland contract award recommendation report, HIE board papers and Scottish Government's project monitoring files



# The projects are currently on track to provide access to 95 per cent of premises by December 2017, although the remainder of the roll-out will be more challenging

## Coverage to March 2016



  
**95%**  
coverage

Assuming both projects continue to meet their contractual targets, the Scottish Government can expect to achieve its 95 per cent coverage target by December 2017.

The contractual target is the minimum number of premises that BT must provide with access to the network each quarter to be paid for the work it does.



So far, the roll-out has concentrated on the easier to reach areas. The areas that remain are more remote and likely to need more complicated and costly engineering solutions. Project teams are monitoring what this means for the rest of the roll-out.

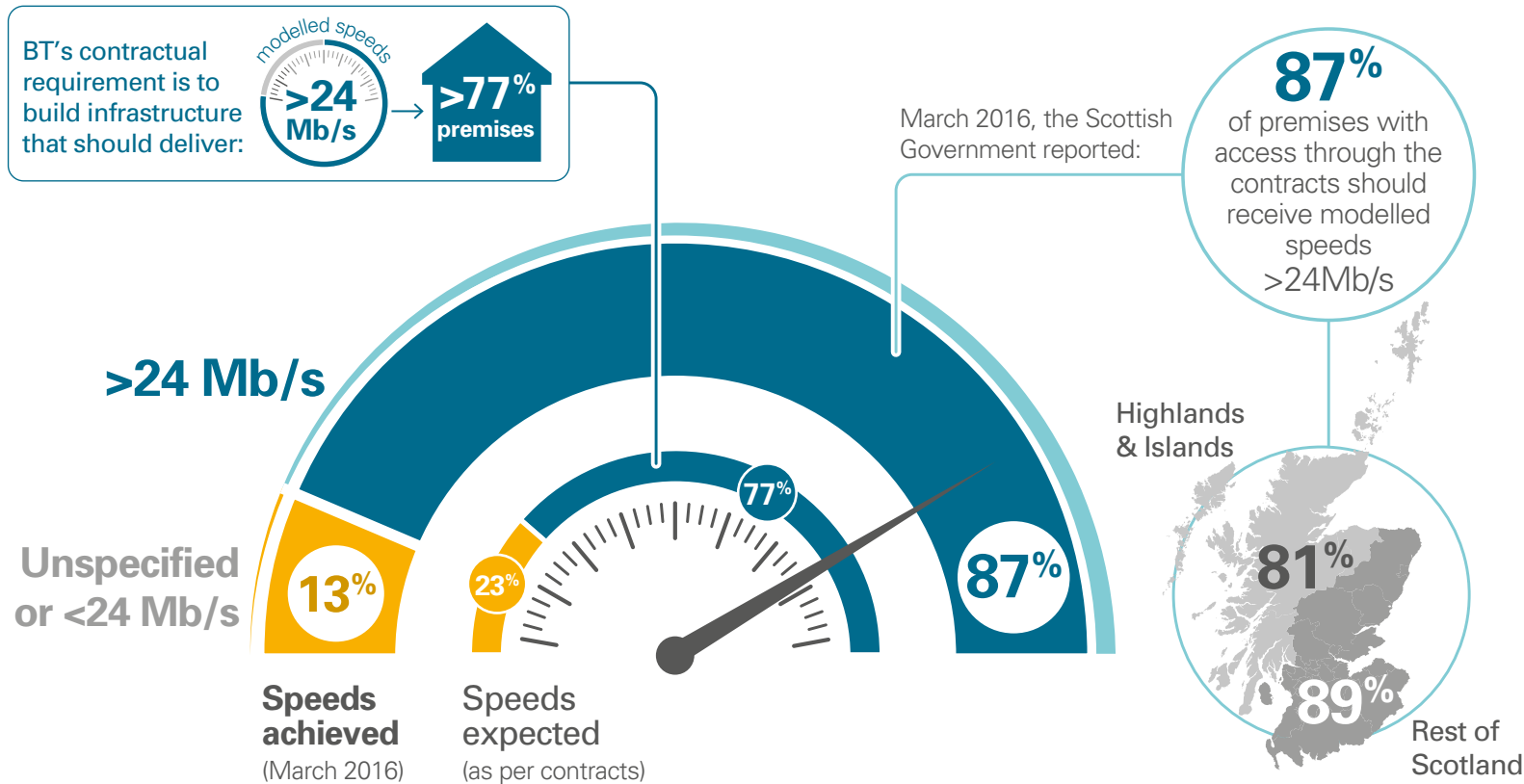
  
**£1,700**

There is a cap of £1,700 on how much BT can spend on each premise. When it costs more than £1,700 to make a connection available, BT may be allowed to proceed depending on value-for-money considerations, including levels of existing coverage and the availability of other technical options.

 **150**

So far, solutions have not been found for 150 premises, out of the 4,600 premises which have breached the cap (3.3 per cent).

# So far, more premises with access to the network are modelled to receive speeds exceeding 24 Mb/s than set out in the contracts



## Progress against 2015 Recommendation 1

The Digital Scotland website gives details on whether a premise has access to fibre, and if not, its current status.

If fibre access is planned within the next six months, this will be specified. Timescales beyond six months are not shared publicly as the Scottish Government and HIE are not able to commit to these, until BT has completed its survey work.

The website also gives a range of speeds premises can receive if they have access to the fibre network.



The Digital Scotland website:

[www.scotlandsuperfast.com](http://www.scotlandsuperfast.com)

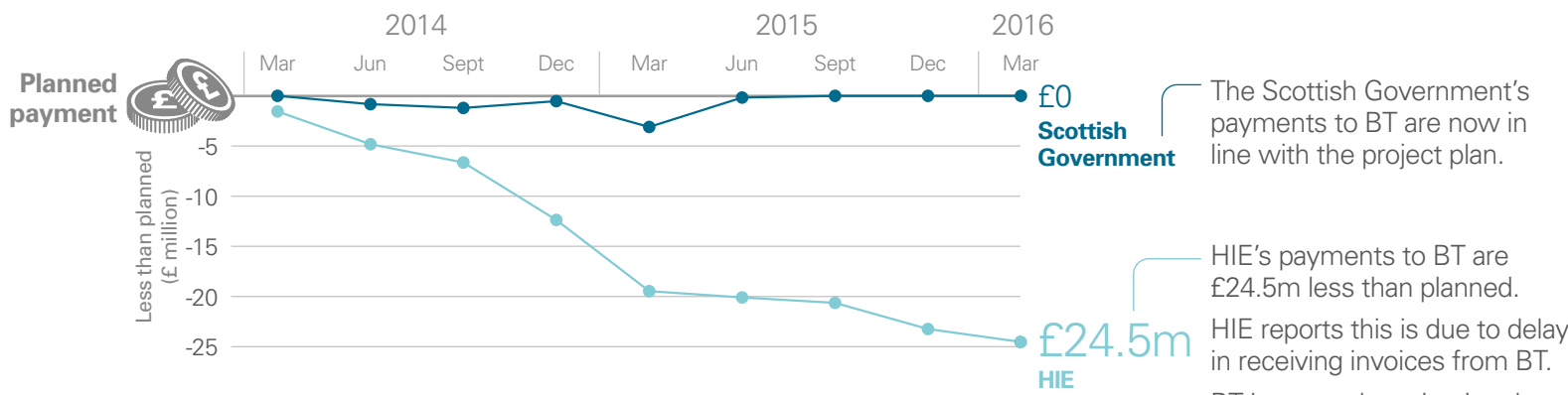
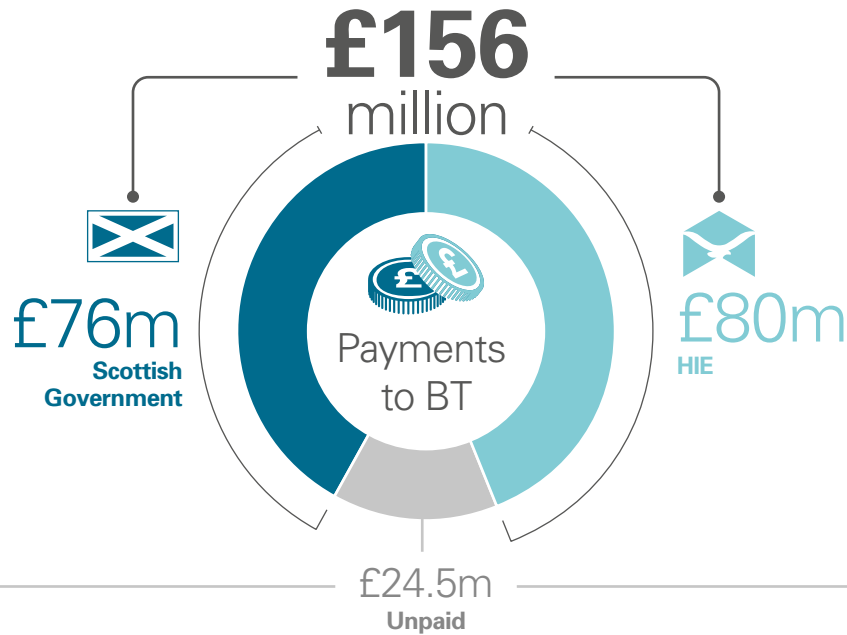
Source: Speed coverage templates in both contracts and contract monitoring documents

The infrastructure that BT is building will not provide speeds of 40-80 Mb/s to all premises. It will deliver these speeds to some premises and improved speeds to others.

The Scottish Government, HIE and BT believe this can be built upon in the future to deliver world-class infrastructure.



# The Scottish Government and HIE have paid BT £156 million for work completed by March 2016



## BT's spend compared to project plan



### Highlands and Islands

BT is modelling how it can use this money to extend coverage.

### Rest of Scotland

The Scottish Government considers this is a result of providing access to premises in easier-to-reach areas with simpler technology than previously modelled. It expects BT's contribution to increase as the roll-out reaches more difficult areas. The Scottish Government is monitoring the spend and if this money is not needed, it could be used to further extend coverage.

The Scottish Government's payments to BT are now in line with the project plan.

HIE's payments to BT are £24.5m less than planned. HIE reports this is due to delay in receiving invoices from BT. BT is currently reviewing the financial model.

# More money is available to extend broadband coverage, due to lower than expected costs and higher than expected take-up



BT is currently modelling how to extend coverage, using £27 million for the rest of Scotland and £10 million for the Highlands and Islands.

£23 million of this is from lower than expected costs and higher than expected take-up; £14 million is from conditions in the contract.

Rest of Scotland  
£27 million

Sources of funding

Highlands & Islands  
£10 million



The use of different technologies and **lower than expected costs** mean BT can deliver more than expected in the Highlands and Islands.

BT originally expected that 20 per cent of premises would take up superfast broadband by the end of the contracts in December 2017. As **take-up** has been higher than expected (around 24 per cent of premises had connected by the end of June 2016), BT offered to release early a share of the additional income generated, to be used for reinvestment. BT now expects take-up to be 30 per cent. If take-up exceeds 30 per cent then this will trigger BT's release of further funding for reinvestment.



Both contracts include **innovation funds** intended to extend coverage beyond that which could be modelled in 2013. The Scottish Government has used some of this money to make up a shortfall in ERDF funding. HIE has allocated £0.05 million of this money to satellite broadband provision. The remainder will be used to extend coverage.



The rest of Scotland contract allows 21,000 premises to be provided with standard broadband (speeds of at least 2 Mb/s) using **non-fibre technology**. These premises can now apply to the Better Broadband Scheme as an alternative. So far, only 500 premises have applied and 50 have taken up the offer.



HIE paid BT an **advance payment** of £20 million as part of contract negotiations. The interest on this advance payment will be spent on backhaul and extending coverage.

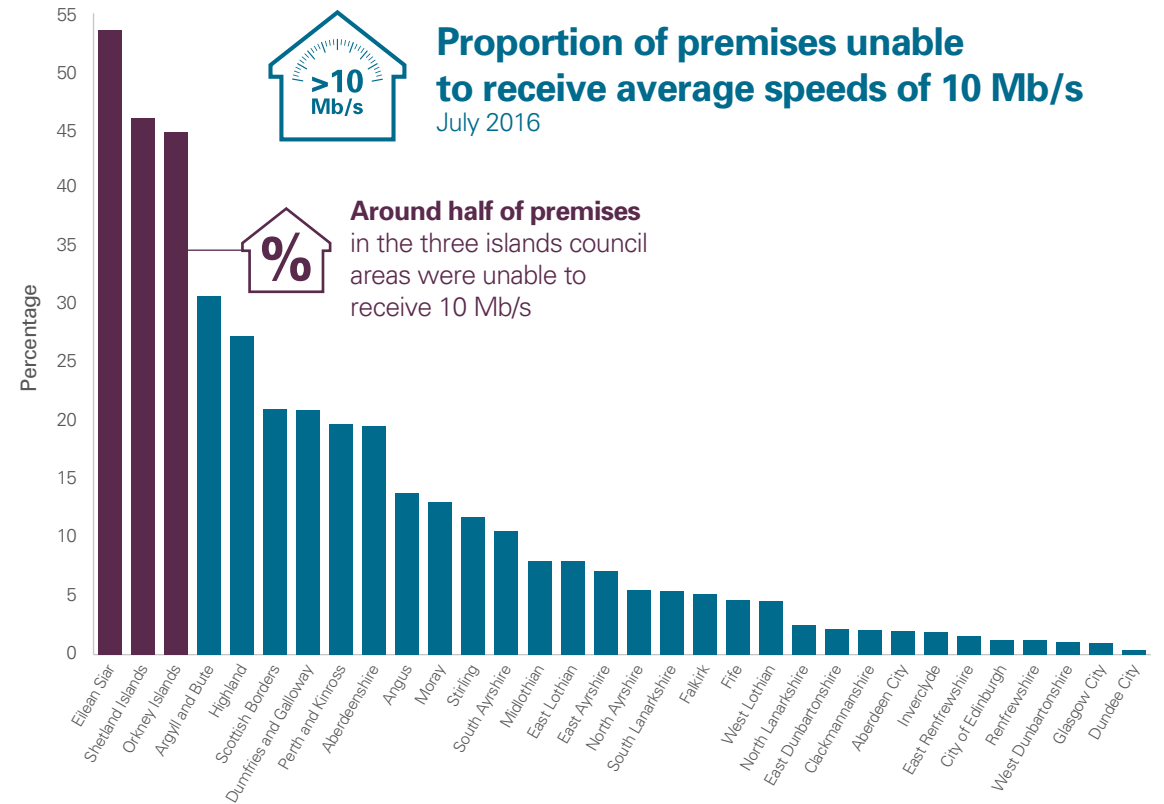
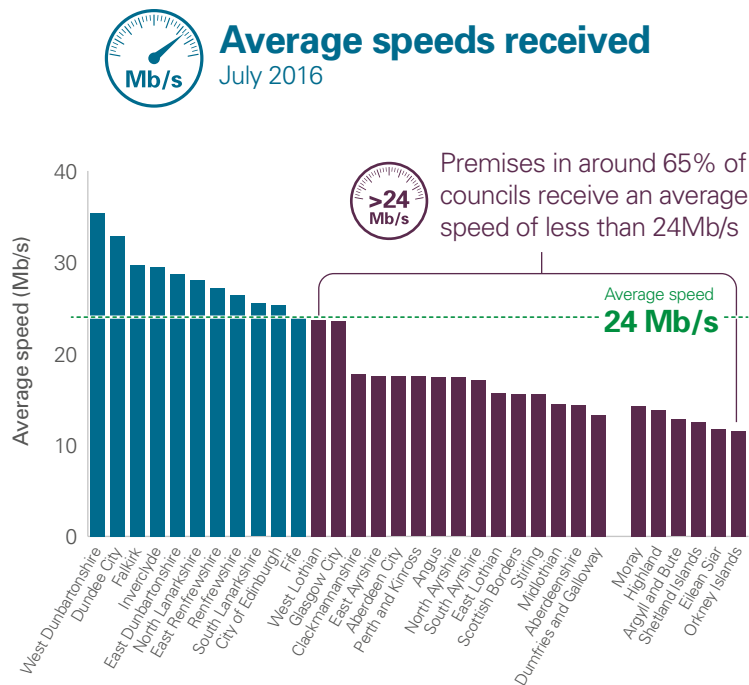


# Overall, premises in rural councils currently receive lower average speeds

People’s experience of broadband speeds varies across Scotland. The actual speeds that premises receive are dependent on a number of factors, such as:

- the package bought from Internet service providers
- the number of people connecting to the Internet at the same time
- the quality of the copper connection and the internal wiring of properties.

In November 2015, the UK Government announced that it would introduce a universal service obligation to ensure all premises can receive a minimum of 10 Mb/s from their broadband provider. Ofcom has reported that currently 14 per cent of premises in Scotland cannot receive 10 Mb/s. Most of these premises are in rural areas, where this figure rises to 57 per cent of premises.



Note: These figures relate to premises with access provided by both commercial operators and through the contracts.  
Source: thinkbroadband website

# What comes next?

The Scottish Government is still to finalise plans to best use an additional £42 million available to extend broadband coverage outside the contracts

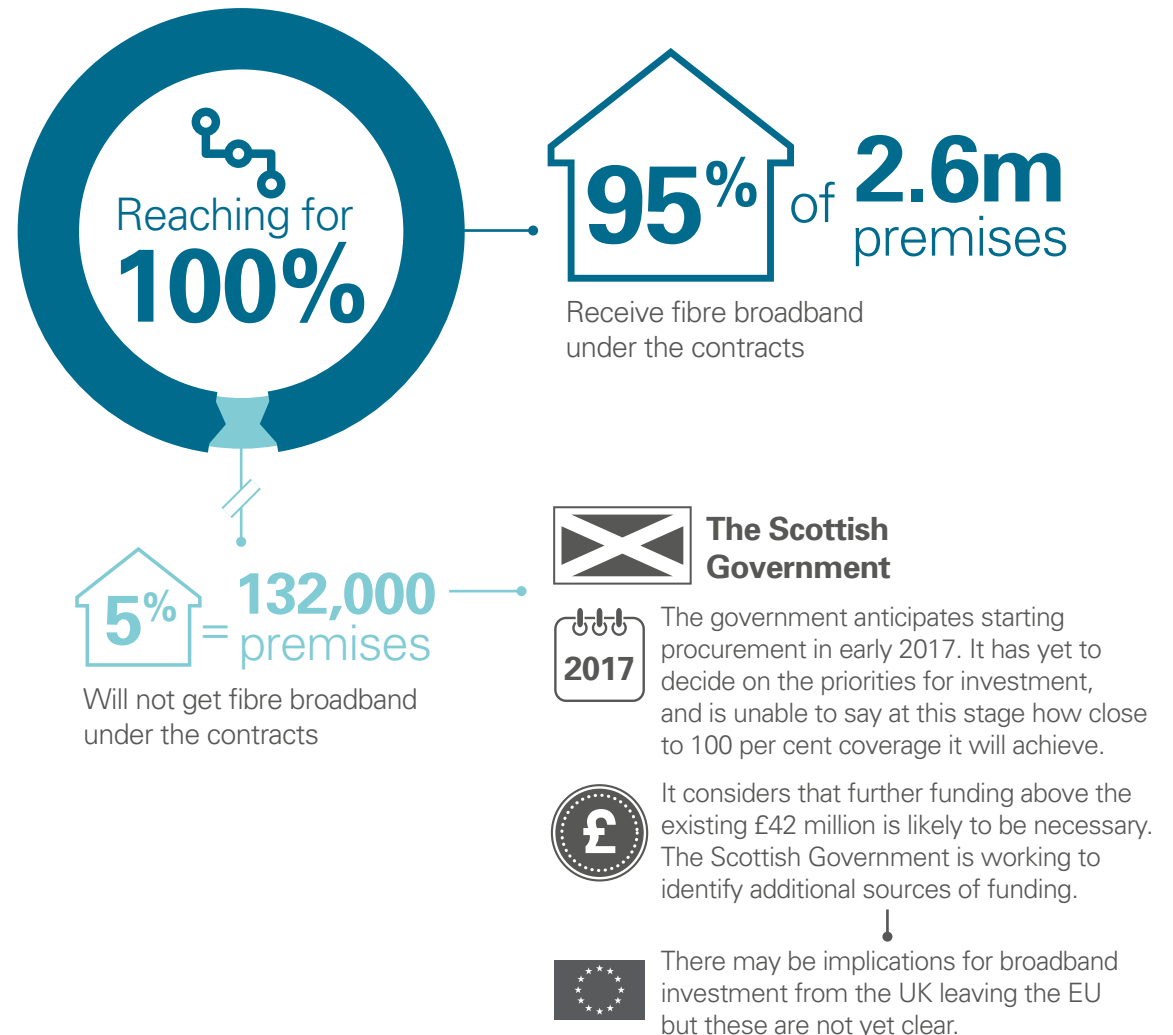


The Scottish Government established a 'reaching for 100 per cent' project team in 2016, to take forward the delivery of the infrastructure that will support superfast broadband to premises that are not covered by existing or planned infrastructure. We calculated in our 2015 report that about 132,000 premises will not get fibre broadband at all under the contracts.

The Scottish Government has still to finalise plans to extend coverage outside the current contracts. It has £42 million available, but it has been unable to take forward further procurement for two main reasons:

- Existing EU state aid approval for broadband projects ran out in June 2015. The UK Government received new approval in June 2016, allowing the Scottish Government to take forward its planning for further procurement.
- BT is modelling how the funding available from lower than expected costs and higher than expected take-up ([page 10](#)) can be used to extend coverage. This is taking longer than anticipated as it needs to remodel, because competitors are building in areas where there had been no previous indication the market would invest. This means that, under state aid rules, these areas are no longer eligible for public funding.

To encourage competition, the new EU approval sets a preference for a series of smaller contracts to extend broadband coverage into areas it is yet to reach. In practice, the size of each contract area will depend on the level of market interest and value for money considerations.



# The Scottish Government is considering the future role of Community Broadband Scotland in extending coverage

The Scottish Government established Community Broadband Scotland (CBS) in 2012 to provide broadband solutions to some of the remote, rural communities.

CBS has approved funding of £2.1 million towards the cost of 15 projects, which will provide 3,950 premises with access to superfast broadband. Thirteen of these projects are now offering broadband services to people in their community.

Further projects are being developed, some of which were delayed when the EU state aid approval for broadband ran out in June 2015. The June 2016 approval will now allow these projects to proceed.

There are more projects in the development pipeline than CBS currently has budget for. Many of these are at a very early stage and it is not yet clear if, and when, they will be achieved.

The Scottish Government is currently considering the role of CBS within the 'reaching for 100 per cent' project, including whether it will have a role in managing projects.

CBS feels it is constrained in getting projects to procurement because of the lack of information around where the existing contracts with BT will deliver, and how the additional £42 million will be used.

## Community Broadband Scotland approved and funded projects



**15 projects**

3,950 planned premises  
1,022 (26%) with access



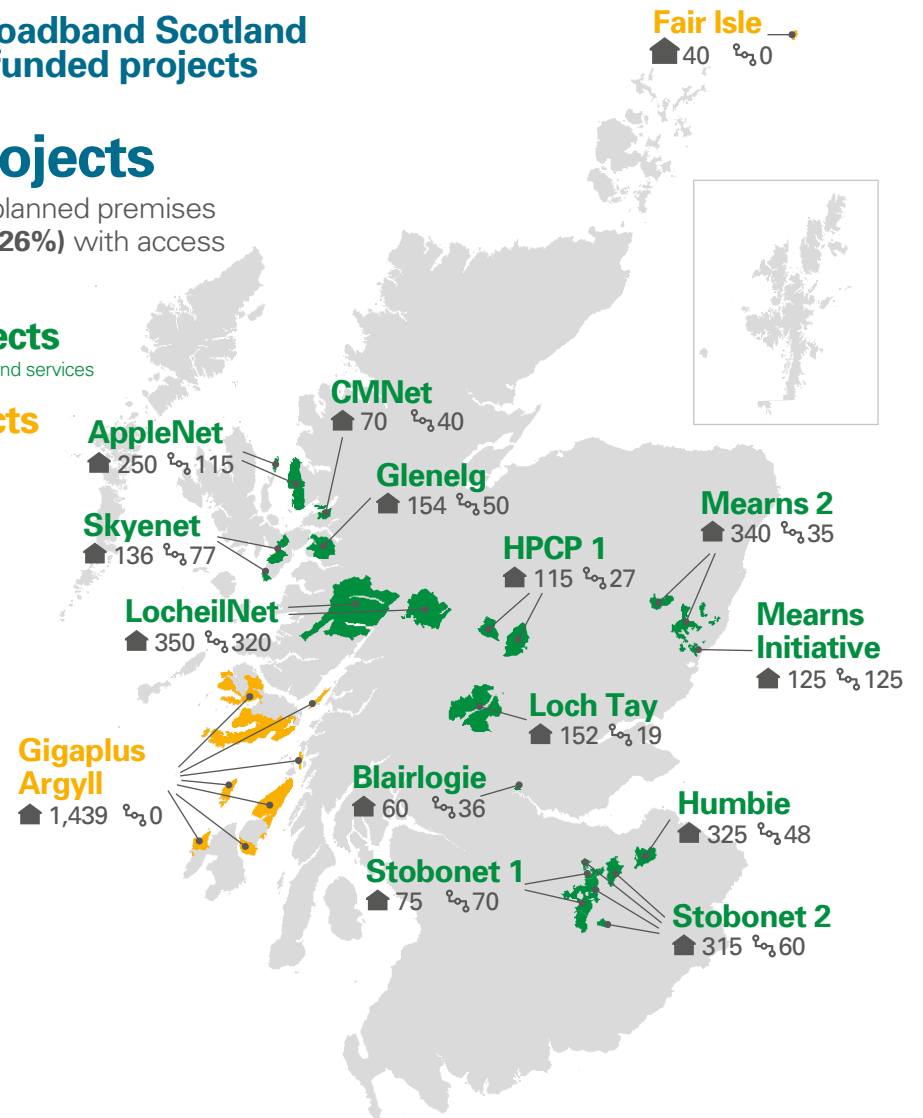
**13 projects**

offering broadband services



**2 projects**

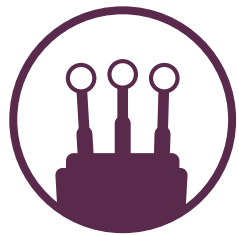
in development



# There is still much to be done if the Scottish Government is to achieve its vision of world-class infrastructure

The Scottish Futures Trust (SFT) has been working to develop the Scottish Government's vision of a world-class infrastructure which will allow people to access the Internet anywhere, anytime and on any device.

SFT has identified six interconnecting key 'pillars' of infrastructure that it believes are necessary to deliver world-class infrastructure. A world-class digital infrastructure involves more than faster home connections. It includes mobile connectivity and associated infrastructure.



**Fibre**

Fibre to homes and businesses forms the backbone of any superfast network. It is also needed to connect mobile masts.



**Power**

Masts and exchanges need a power supply, in some areas this has been the limiting factor for roll-out.



**Spectrum**

Used to transfer data between mobiles.



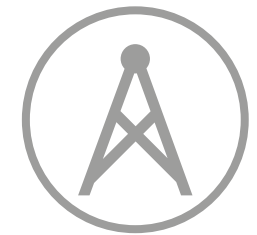
**Ducting**

The pipes that carry the fibre wires. For world-class infrastructure these need to be open to all operators.



**Exchanges**

Where internet traffic is exchanged. While there is an exchange in Scotland the majority of data must be sent to England before returning to Scotland.



**Masts**

Radio transmitters that are needed to make mobile phones work. They can be used to provide wireless Internet in remote areas.



The Scottish Government has still to finalise its plans for delivering its vision for world-class digital infrastructure by 2020.



This will require consideration of what world-class looks like and how best to use new technology to achieve it.



# Further work is needed to develop public reporting of performance

In 2015, we recommended that the Scottish Government and HIE should further develop their [performance measurement frameworks](#).

This included developing measures that address:



Speeds delivered



Unit cost of providing access to fibre broadband to each premises



Levels of take-up



Measures that allow benchmarking with other countries

The Scottish Government and HIE have developed robust contract monitoring processes. The Scottish Government relies on Ofcom to report on progress against overall coverage targets, including data on commercial coverage.

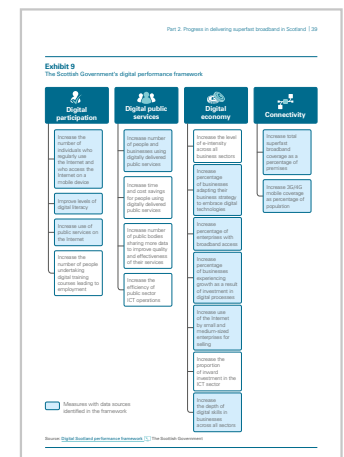
Ofcom also publishes other information on broadband including speeds achieved and level of take-up for each nation of the UK. It also publishes a comparison of the UK's digital performance against that of other European countries.

We consider the Scottish Government could make more information publicly available, including:

- publishing information on progress of the two contracts, including speed and coverage data, to help assess the success of its investment
- providing a link from the Digital Scotland website to Ofcom's published data on overall coverage in Scotland
- working with Ofcom to benchmark Scotland's performance against other countries.



## 2015 Exhibit 9: The Scottish Government's digital performance framework



# Conclusions

The Scottish Government and HIE have made good progress in the roll-out of fibre broadband in Scotland to date. So far, most of the roll-out has been concentrated on easier-to-reach areas. There is a continuing need to monitor carefully the progress and cost of further roll-out once it extends into more difficult areas if the 95 per cent coverage by December 2017 target is to be achieved.

Although progress with the contracts is good, many premises across Scotland currently do not get 10 Mb/s. There is still much to be done if the Scottish Government is to achieve its vision of a world-class digital infrastructure. Priority areas for development include:


- The finalisation of clear plans setting out how 100 per cent access to superfast broadband is to be achieved, so that no communities are digitally excluded.
- How best to use digital technologies and build a world-class digital infrastructure fit for the future.
- How best to continue to encourage take-up to ensure the benefits of investment are maximised.
- Improved public reporting of progress and performance, to measure the benefits achieved from its investment and to allow benchmarking with other countries.



**Audit Scotland will continue to monitor the progress of the roll-out of fibre broadband. We plan to undertake a further audit of the performance of the two contracts and progress towards the world-class vision which will be reported in 2018.**

# Appendix

## Progress against recommendations in our 2015 report

Recommendations (summarised)	Progress
<p><b>The Scottish Government should:</b></p> <p> improve ways of publicly reporting the coverage and speeds its investment in superfast broadband will deliver.</p>	<p>The website gives details on whether premises have access to fibre, and if not, its current status. If fibre access is planned within the next six months this will be specified. Timescales beyond six months are not shared publicly as the Scottish Government and HIE are not able to commit to these until BT has completed its survey work. The website also gives a range of speeds premises can receive if they have access to the fibre network.</p> <p>Little information is available for those that won't be covered by existing contracts. The Scottish Government is still to finalise plans outlining the use of the additional £42 million available to extend coverage outside the contracts.</p>
<p><b>The Scottish Government and HIE should:</b></p> <p> encourage take-up of superfast broadband to maximise the benefits of their investments and identify what further work is needed to realise these benefits.</p>	<p>The Scottish Government and HIE have sought to stimulate demand for and promote the benefits of broadband through marketing campaigns and events alongside local councils and Business Gateway Scotland. Currently, the take-up is higher than originally expected (26 per cent for Highlands and Islands and 23 per cent for Rest of Scotland at the end of June 2016), resulting in an additional £17.8 million being made available to extend coverage.</p>
<p> develop clear plans, by June 2015, for the use of a further £42 million available for investment in superfast broadband. These plans should strike an appropriate balance between extending coverage in areas where there is no access to superfast broadband, and increasing speeds in premises with low speeds.</p>	<p>The Scottish Government has still to finalise plans outlining the use of an additional £42 million available to extend coverage outside the current contracts. It has been unable to take forward further procurement for two main reasons:</p> <ul style="list-style-type: none"> <li>Existing EU state aid approval for broadband projects ran out in June 2015. The UK government received new approval in June 2016, allowing the Scottish Government to take forward its planning for further procurement.</li> <li>BT is modelling how the funding available from lower than expected costs and higher than expected take-up (<a href="#">page 10</a>) can be used to extend coverage. This is taking longer than anticipated as it needs to remodel, because competitors are building in areas where there had been no previous indication the market would invest. This means that, under state aid rules, these areas are no longer eligible for public funding.</li> </ul>

## Recommendations (summarised)

## Progress



review work programmes and payment profiles and make any changes necessary to ensure that payment is closely linked to successfully achieving the agreed targets.

Payments to BT are £24.5 million less than originally planned.

- The Scottish Government's payments to BT are now in line with the project plan.
- HIE has paid BT £24.5 million less than planned.

BT's spend is less than originally planned.

- The Scottish Government has not made any changes to payment profiles but is monitoring the spend.
- For HIE, BT is reviewing the financial model at the same time as its modelling exercise, which will likely result in revised payment profiles.



keep staffing levels and workloads under review and alter the skills mix and number of staff when needed, to ensure that project teams are able to fulfil their contract management and monitoring roles well.

Staffing in the Scottish Government and HIE remains sufficient for the workload.

The Scottish Government has added three posts. HIE considers it may need to create an additional post depending on the nature of the next phase of procurements.

Both the Scottish Government and HIE recognise there are risks that short-term appointments won't hold expertise within the team.



further develop their performance measurement frameworks, including measures that address speeds delivered, the unit cost of providing access to superfast broadband to each premise and levels of take-up, as well as measures that allow benchmarking with other countries' implementation of superfast broadband.

We consider the Scottish Government could make more information publicly available, including:

- publishing information on progress of the two contracts, including speed and coverage data to help assess the success of its investment
- providing a link from the Digital Scotland website to Ofcom's published data on overall coverage in Scotland
- working with Ofcom to benchmark Scotland's performance against other countries.

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