



SHEFFIELD CITY COUNCIL Cabinet Report

Report of: Chief Executive

Date: 20th March 2013

Subject: Rural Broadband:
Connecting Sheffield's rural communities

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Summary:

This paper examines the issues and potential solutions to broadband connectivity in Sheffield's rural communities in response to a motion passed at Full Council in October 2012.

The paper is in two halves: the first summarises the proposed solution and recommendations while the second includes the evidence base and research which supports the recommendations.

Sheffield has been part of the groundbreaking Digital Region project, delivering superfast, Fibre to the Cabinet (FTTC) broadband to 80% of South Yorkshire. However, some rural communities in Sheffield not only cannot access superfast broadband, but are 'not-spots' or have standard broadband which is slower than 2Mbps.

Government's target is to provide superfast broadband to 90% of premises in the UK and universal access to standard broadband at a speed of at least 2Mbps by 2015.

According to the latest OFCOM data, 13.3% of premises in Sheffield have broadband which is less than 2Mbps despite the Digital Region project.

Rural communities across the UK experience similar and more acute difficulties with broadband connectivity, with causes and solutions varying depending on place (specifically: geography, topography, proximity to a connection source). Solutions include WiFi mesh networks, 4G LTE, satellite broadband and extensions of existing fibre networks.

Therefore, solutions are available but many of the most successful solutions are community-led through locally established co-operatives, social enterprises or community

groups formed around a shared need for broadband access who then implement and manage specific broadband solutions for their community.

The paper proposes that Sheffield City Council will support rural communities to find appropriate solutions where rural communities share and demonstrate a clear need for a local broadband solution.

The Council can have a vital role in facilitating the development alongside communities where need is clearly articulated. This might include using the Council's partnership relationships to link to broadband connection sources in local services or using procurement expertise to link community groups with Internet Service Providers (ISPs).

However, it is suggested that a stronger local evidence base, particularly in terms of quantifying need and demonstrating clear commitment from local residents to use any resulting broadband services is needed, with the potential for grouping rural communities with similar levels of need and similar geographic challenges to make it worth ISPs investing in broadband provision.

Reasons for Recommendations:

Quantitative data from OFCOM and local anecdotal evidence from Members and the Rural Economy study indicate that some rural areas of Sheffield may have slow broadband connectivity or live in 'notspots' with no broadband connectivity.

Therefore, while increasing proportions of the city can access high speed broadband, some rural areas may not be able to access standard broadband or experience unusable line speeds. Clearly, this represents a potential digital exclusion issue for city, particularly as more services become available online and business need for internet presence increases.

However, this does not represent a clear business case for direct intervention from Sheffield City Council. The costed estimate for extending the Digital Region network to Dungworth and Worrall was £461k which is simply not financially viable. Further, efforts to access the Government's Rural Communities Broadband Fund in South Yorkshire were unsuccessful due to a lack of demonstrable commitment from potential households and businesses to use broadband services in the selected South Yorkshire rural areas and over-reliance on grant funding from Government to make the scheme viable.

The most successful solutions to broadband connectivity problems in rural areas are *community-led*, uniting proven local need and ingenuity to deliver affordable and technologically appropriate solutions for their communities.

Recommendations:

That Cabinet:

- Recognises the importance of usable broadband access to the wellbeing of the Sheffield's rural communities
- Notes that capital investment from Sheffield City Council is unlikely to be cost effective in delivering a solution
- Therefore, agrees that Sheffield City Council will support rural communities to find appropriate solutions where communities:

- Demonstrate demand
 - Are willing to come together and form community groups across rural Sheffield with other rural communities with similar needs (thus making solutions viable for internet providers)
 - Engage with Sheffield City Council through the locality management team (subject to resources), locality lead directors and other partners in the city to devise locally-appropriate solutions
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Background Papers:

DCMS (2010) *Britain's Superfast Broadband Future*,

<http://www.culture.gov.uk/images/publications/britainsSuperfastBroadbandFuture.pdf>

HMG (2010) *The Coalition: our programme for Government*,

http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_187876.pdf

HMG (2013) *The Coalition: together in the national interest – Mid-term review*,

http://assets.cabinetoffice.gov.uk.s3-external-3.amazonaws.com/midtermreview/HMG_MidTermReview.pdf

OFCOM (2012) *Infrastructure Report: 2012 Update*,

<http://d2a9983j4okwzn.cloudfront.net/downloads/ofcom-uk-broadband-speed-report-2012.pdf>

Sheffield City Council (2010) *A Fair Deal for Rural Communities: Rural Communities Strategy 2010-13*, [https://www.sheffield.gov.uk/dms/scc/management/corporate-](https://www.sheffield.gov.uk/dms/scc/management/corporate-communications/documents/housing/-A-Fair-Deal-for-Rural-Communities--PDF-6-04MB-.pdf)

[communications/documents/housing/-A-Fair-Deal-for-Rural-Communities--PDF-6-04MB-.pdf](https://www.sheffield.gov.uk/dms/scc/management/corporate-communications/documents/housing/-A-Fair-Deal-for-Rural-Communities--PDF-6-04MB-.pdf)

Sheffield City Council (2011) *Sheffield's Rural Economy, June 2011 (amended December 2011)*

Category of Report: OPEN

Statutory and Council Policy Checklist

Financial Implications
YES Cleared by: Paul Jefferies
Legal Implications
NO Cleared by:
Equality of Opportunity Implications
YES Cleared by: Michael Bowles
Tackling Health Inequalities Implications
NO
Human rights Implications
NO
Environmental and Sustainability implications
NO
Economic impact
YES
Community safety implications
NO
Human resources implications
NO
Property implications
NO
Area(s) affected
Northern Community Assembly & South West Community Assembly
Relevant Cabinet Portfolio Leader
Cllr Bryan Lodge
Relevant Scrutiny and Policy Development Committee if decision called in
Economic and Environmental Wellbeing
Is the item a matter which is reserved for approval by the City Council?
NO
Press release
NO

Rural broadband: connecting Sheffield's rural communities

1. SUMMARY

- 1.1 Sheffield has been part of the groundbreaking Digital Region project, delivering superfast, Fibre to the Cabinet (FTTC) broadband to 80% of South Yorkshire. However, some rural communities in Sheffield not only cannot access superfast broadband, but are 'not-spots' or have standard broadband which is slower than 2Mbps. Government's target is to provide superfast broadband to 90% of premises in the UK and universal access to standard broadband at a speed of at least 2Mbps by 2015.
- 1.2 According to the latest OFCOM data, 13.3% of premises in Sheffield have broadband which is less than 2Mbps despite the Digital Region project. Rural communities across the UK experience similar and more acute difficulties with broadband connectivity, with causes and solutions varying depending on place (specifically: geography, topography, proximity to a connection source). Solutions include WiFi mesh networks, 4G LTE, satellite broadband and extensions of existing fibre networks. Therefore, solutions are available but many of the most successful solutions are community-led through locally established co-operatives, social enterprises or community groups formed around a shared need for broadband access who implement and manage specific broadband solutions for their community.
- 1.3 **The paper proposes that Sheffield City Council will support rural communities to find appropriate solutions where clear communities share and demonstrate a clear need for a local broadband solution.**

The City Council can have vital role in facilitating the development *alongside* communities where need is clearly articulated. This might include using the Council's partnership relationships to link to broadband connection sources in local services or using procurement expertise to link community groups with Internet Service Providers (ISPs).

However, it is suggested that a stronger local evidence base, particularly in terms of quantifying need and demonstrating clear commitment from local residents to use any resulting broadband services is needed, with the potential for grouping rural communities with similar levels of need and similar geographic challenges to make it worth ISPs investing in broadband provision.

2. WHAT DOES THIS MEAN FOR SHEFFIELD PEOPLE?

- 2.1 As part of Digital Region, Sheffield has demonstrated its desire to be at the forefront of superfast broadband technology, enabling Sheffield people and businesses to have access to the services and opportunities which a high quality broadband network can provide.
- 2.2 A significant proportion of the city can already access superfast broadband but some rural communities may only have access to slow broadband or indeed, not have any access at all.
- 2.3 The City Council recognises the increasing importance of broadband to rural communities in Sheffield and is committed to working with those communities that do not have broadband but want to find the best solution for their area. This means it is a great opportunity for communities across the rural area of the city to come together and show

there is a need for a bespoke broadband solution in their area.

- 2.4 The Council will support communities with expertise and provide links to partner organisations in the city and help work with Internet Service Providers (ISPs) to deliver affordable local broadband solutions.

3. OUTCOME AND SUSTAINABILITY

- 3.1 Whilst Digital Region may provide a longer term solution to broadband connectivity problems, smaller bespoke solutions may be necessary to connect some rural communities to usable standard broadband.
- 3.2 The proposal for the City Council to work with rural communities who demonstrate there is a local need for a broadband solution creates the opportunity to deliver solutions which are appropriate for specific areas (or several areas with similar characteristics), potentially producing the necessary economy of scale for ISPs to provide broadband services.
- 3.3 Examples from other rural areas in UK have demonstrated that where communities have developed a local broadband solution, it is often more successful, acts as a mechanism to bring communities together and can be self-sustaining or become a profitable community enterprise. Further, community-led approaches are more likely to be able to access national funding to either support the initial development of a broadband solution or upgrade their network to faster broadband.

4. SUMMARY OF KEY CONCLUSIONS

- 4.1 The lack of access to broadband in Sheffield's rural communities is an issue which has a number of implications for communities, businesses, for our service transformation outcomes and for our Corporate Plan priorities. However, the evidence above suggests a number of conclusions.

- 4.2 **We need a better understanding local circumstances and need** – whilst intelligence supports the view that broadband access is limited in some of Sheffield's rural areas, having stronger local evidence of broadband need and potential take-up in rural communities would strengthen our understanding of where to target solutions and which solutions work best for particular areas. It would also put communities in a better position to access national or European funding.

Further, having a clear picture of how many households and businesses cannot access broadband and how many would be willing to use (and thus, pay for) broadband, were it available, would be more likely to convince Internet Service Providers to invest in supporting solutions.

- 4.3 **Digital Region may not be the *short-term* solution for Sheffield's rural area** - but connectivity may be linked to the fibre infrastructure already installed in the city (eg. as a source point for WiFi solutions). Bespoke extension of the Digital Region network at present is prohibitively expensive but in the longer term, successful development of the Digital Region network through the delivery of 'phase 2' may provide a longer term solution for the majority of the rural area in Sheffield.
- 4.4 **Solutions do not have to be Council-led and indeed, community-led solutions appear to be the most successful** - community-led solutions have the advantage of

finding the best form of provision for that community, encourage communities to take greater responsibility and encourage take-up of the resulting broadband service. Communities could look to self-fund, find innovative ways to raise finance and use properties as router points to enable others to access broadband.

However, it may involve some initial support from the City Council, local Parish/Town Councils or the Peak Park in the form of community development support, small scale seedcorn funding or assisting in the development of funding bids.

- 4.5 **Once clear need is identified, Sheffield City Council could use its influence and relationships to engage partners to support solutions** – most of the existing rural broadband solutions rely on connecting to source which could be a school or other public building with broadband connections. Further, with clear evidence of community need, the City Council could provide communities with expertise in procurement, business case development, budgeting and planning regulation.
- 4.6 **The city's universities may be a source of support and solutions** – in addition to the example in Wray, Lancashire where Lancaster University provides a technological solution, the universities may be able to provide capacity building support, there may be opportunities to link to specific courses which entail community development or community physical design which may support our rural communities to find and resource solutions.
- 4.7 **Technology may find a solution before we do** – whilst the market may not find a broadband solution for our rural areas, the advent of 4G technology may resolve the issues quicker than we can.

The recent 4G auction resulted in the main mobile phone providers purchasing portions of spectrum but O2 won a portion which includes a 'public service obligation' to extend coverage to 98% of the UK (indoors) and BT won a portion which it intends to use for 4G connectivity at 'fixed locations' (ie. this is likely to mean broadband access for rural communities and 'not spots').

5. PROPOSED SOLUTION FOR SHEFFIELD

- 5.1 Evidence suggests that community-led solutions are often successful in rural areas where broadband access has been a major challenge.
- 5.2 Sheffield City Council will support local community organisations and Parish and Town Councils to develop solutions where communities demonstrate a need for broadband access. The City Council can use its expertise to support communities with procurement, planning issues, funding bids and linking with partner organisations.
- 5.3 This might involve:
- **Demanding** - communities working with local Councillors, local community groups, Parish or Town Councils to quantify need – ie. how many households cannot access broadband or have very slow connections. This should also include how many people would be willing to sign up to broadband if an affordable solution could be found.
 - **Forming** – development of community groups and linking with other areas across rural Sheffield to show that enough people are willing to pay for broadband services to make it viable for providers
 - **Engaging** – work with the City Council who will support communities to find appropriate solutions. This might include helping to write funding applications;

neighbourhood planning support to shape appropriate solutions (eg. placing of WiFi receivers); providing some ICT expertise on what might work best (eg. via universities, strategic partners or local businesses); providing links to local services such as schools, universities or public services which may have premises and could provide an initial source for broadband (eg. for a WiFi mesh network); or procurement support in working with broadband suppliers to find a company to deliver an affordable solution.

- 5.4 Subject to resources, it is proposed that communities keen to find solutions to broadband problems would engage with Sheffield City Council through the Locality Management Team and the Lead Director for their locality.

6. ALTERNATIVE OPTIONS CONSIDERED

6.1 Do nothing

Whilst our customer service and support for digital inclusion may be undermined by this option, the rapid development of new technology, resolution of take-up challenges with Digital Region and 4G spectrum auction may deliver solutions for our rural area.

6.2 Council funded infrastructure solution

Considering the initial costing work done for Dungworth, Worrall and South Yorkshire's Rural Communities Broadband bid, this is prohibitively expensive and undeliverable in the budgetary climate.

7. REASONS FOR RECOMMENDATIONS

- 7.1 Quantitative data from OFCOM and local anecdotal evidence from Members and the Rural Economy study indicate that some rural areas of Sheffield may have slow broadband connectivity or live in 'notspots' with no broadband connectivity.
- 7.2 Therefore, while increasing proportions of the city can access high speed broadband, some rural areas may not be able to access standard broadband or experience unusable line speeds. Clearly, this represents a potential digital exclusion issue for city, particularly as more services become available online and business need for internet presence increases.
- 7.3 However, this does not represent a clear business case for direct intervention from Sheffield City Council. The costed estimate for extending the Digital Region network to Dungworth and Worrall was £461k which is simply not financially viable. Further, efforts to access the Government's Rural Communities Broadband Fund in South Yorkshire were unsuccessful due to a lack of demonstrable commitment to use broadband services in the selected South Yorkshire rural areas and over-reliance on grant funding from Government to make the scheme viable.
- 7.4 The most successful solutions to rural broadband connectivity problems are usually *community-led*, uniting proven local need and ingenuity to deliver affordable and technologically appropriate solutions for their communities.

8. RECOMMENDATIONS

8.1 That Cabinet:

- Recognises the importance of usable broadband access to the wellbeing of the Sheffield's rural communities
- Notes that capital investment from Sheffield City Council is unlikely to be cost effective in delivering a solution
- Therefore, agrees that Sheffield City Council will support rural communities to find appropriate solutions where communities:
 - Demonstrate demand
 - Are willing to come together and form community groups across rural Sheffield with other rural communities with similar needs (thus making solutions viable for internet providers)
 - Engage with Sheffield City Council through the locality management team (subject to resources), locality lead directors and other partners in the city to devise locally-appropriate solutions

9. FINANCIAL IMPLICATIONS

- 9.1 The proposed approach does not commit the City Council to any new spending and indeed, argues that direct capital investment by SCC would not be the most cost effective solution to the problem.
- 9.2 Should any initiative related to Rural Broadband require SCC funding, this would be subject to a separate business case and funding approval.

10. LEGAL IMPLICATIONS

- 10.1 There are no legal implications resulting from this report or the proposed approach.

11. EQUALITY OF OPPORTUNITY IMPLICATIONS

- 11.1 The proposed approach empowers communities to work with the City Council to find bespoke solutions to the digital exclusion challenges that exist within Sheffield's rural communities. By asking communities to articulate demand, the Council will be able to target support and expertise fairly at those areas with the greatest need.

12. ECONOMIC IMPACT

- 12.1 As the Rural Economy study demonstrated, there is a potential positive impact on businesses in the rural area of the city if appropriate broadband solutions can be identified.

BROADBAND IN SHEFFIELD: BACKGROUND, EVIDENCE & STRATEGIC POSITION

13. BACKGROUND: GOVERNMENT POSITION ON BROADBAND IN THE UK

- 12.1 Building on a commitment in the Coalition Agreement¹, the Government launched their strategy, 'Britain's Superfast Broadband Future' in 2010, which commits to delivering the 'best superfast broadband network in Europe by 2015'.² Through Broadband Delivery UK (BDUK), Government have stated that their ambition is to provide superfast broadband to 90% of premises in the UK and universal access to standard broadband at a speed of at least 2Mbps³. Government reiterated this commitment in the 'Mid Term Review', with specific reference to rural areas.⁴
- 13.2 Government believes that delivering a superfast broadband network in the UK will lay the "foundations from which the UK economy will grow and recover from recession"⁵. The Government's strategy aims to enable businesses, services and customers to operate more efficiently, increasing communication, driving innovation and reducing costs. Further, greater digital inclusion and open access to information and data is a key facet of Government's 'Big Society' and public service transformation programmes, with individuals using digital connectivity to choose which services they access, how they access them and how they hold service providers to account.
- 13.3 The latest data collected by OFCOM indicates that current generation broadband is now available to close to 100% of premises in the UK. Superfast broadband is currently available to around 65% of premises and average line speeds across the UK are 12.7Mbps compared to 7.5Mbps in 2011. OFCOM's report indicates that to address the 'final third', success will be dependent on activity by commercial operators but also targeted public funding.⁶ The data also shows that only 1.3% of premises in England are in likely 'not-spot' areas and only 10% of England has access to broadband which is less than 2Mbps.
- 13.4 Thus far, funding to support the Government's ambition has included: £530m to rollout high speed broadband to communities where private investment alone will not provide it; £100m for 10 'super-connected cities' to install ultra-fast broadband; and a further £50m in 2012 for eight smaller cities to become 'super-connected' (winning cities announced in the 2012 Autumn Statement).
- 13.5 Government have also deployed a **Rural Communities Broadband Fund (RCBF)** which is specifically targeted at the 10% most 'hard to reach' places in England. The RCBF has

¹ HMG (2010) *The Coalition: our programme for Government*, http://www.direct.gov.uk/prod_consum_dg/groups/dg_digitalassets/@dg/@en/documents/digitalasset/dg_187876.pdf

² DCMS (2010) *Britain's Superfast Broadband Future*, <http://www.culture.gov.uk/images/publications/britainsSuperfastBroadbandFuture.pdf>

³ Superfast broadband is defined by BDUK as having a potential headline access speed of greater than 24Mbps, with no upper limit.

⁴ HMG (2013) *The Coalition: together in the national interest – Mid-term review*, http://assets.cabinetoffice.gov.uk/s3-external-3.amazonaws.com/midtermreview/HMG_MidTermReview.pdf p11

⁵ DCMS (2010) *Britain's Superfast Broadband Future*, p7

⁶ OFCOM (2012) *Infrastructure Report: 2012 Update*, <http://d2a9983j4okwzn.cloudfront.net/downloads/ofcom-uk-broadband-speed-report-2012.pdf>

thus far had two funding rounds, each of £20m, and DEFRA are yet to confirm whether a third funding round will be announced. Applicants were required to be community organisations, trusts or social enterprises acting on behalf of a community who could access RCBF to cover the capital and associated costs of establishing a broadband network (not ongoing costs) usually with match funding from private or locally-raised sources.

- 13.7 In collaboration with rural areas and parish councils in South Yorkshire, DRL submitted an unsuccessful bid for £668k of Rural Communities Broadband Funding (RCBF) to provide broadband access in some of SY's most rural communities. However, none of the communities identified as part of the bid were in Sheffield's rural area. DEFRA suggested that the bid was unsuccessful because of the insufficient private match funding, state aid concerns and very low demonstrable take up commitment from households (22 of 2427 identified) and businesses (2 or 125).
- 13.8 To access funding (regardless of which funding stream), Government required local authorities to produce '**Local Broadband Plans**' which identify areas of greatest need to target investment. Due to involvement in the Digital Region project, Sheffield (and South Yorkshire) does not currently have a 'Local Broadband Plan' as the project itself provides a clear strategic direction for broadband connectivity in the region.

14. SHEFFIELD: STRATEGIC POSITION

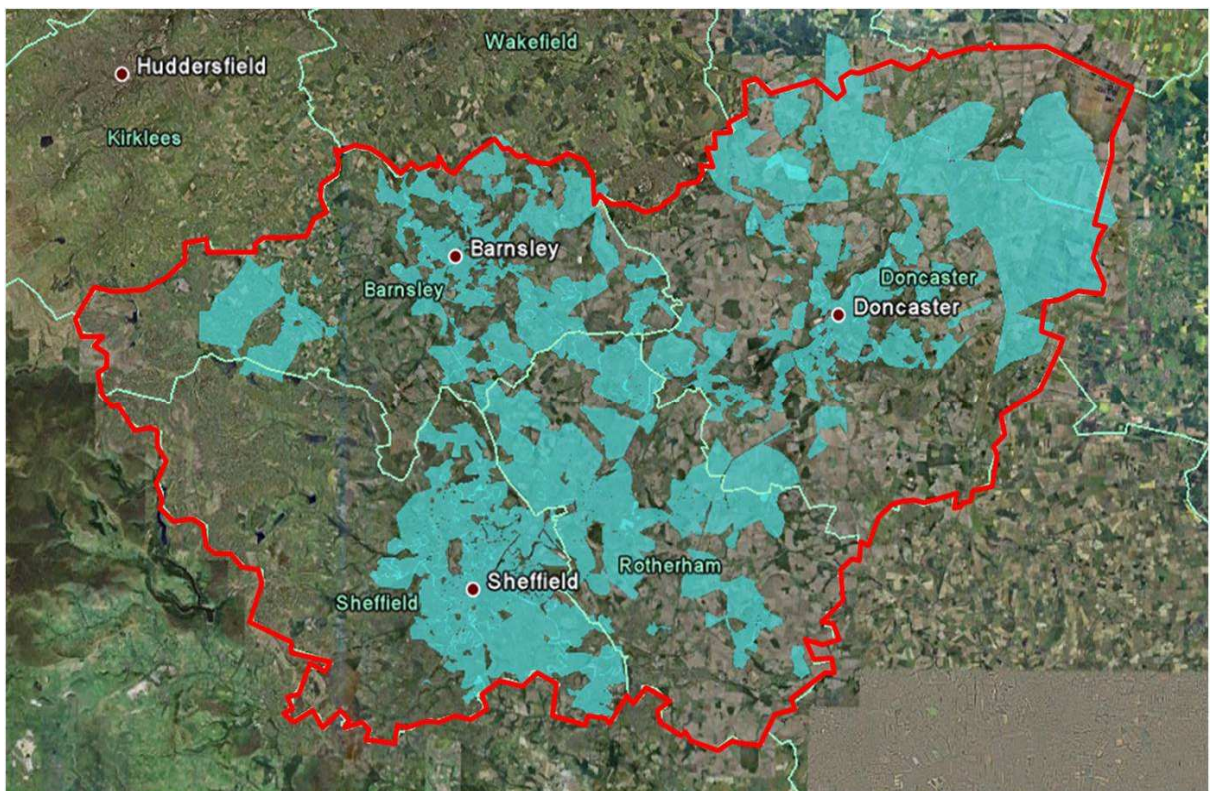
- 14.1 Access to broadband has already been recognised as a socioeconomically important part of the city's future through our commitment to the Digital Region project. Not only are there economic development and business opportunities created through universal broadband access, the internet is a vital mechanism to enable local communities and individuals to access the services they need, particularly as services are increasingly accessed electronically or via the telephone rather than face-to-face. This is both an issue of economic wellbeing and (digital) inclusion.
- 14.2 Developing fair access to broadband capabilities has clear links with the Council's Corporate Plan, particularly **business-friendly** and **supporting and protecting communities**. Having wider public access to broadband can support our values of 'enabling local people' and 'taking a long term view', particularly as we try to deliver the infrastructure the city needs to be socioeconomically successful in the years to come.
- 14.3 As an enabling tool, broadband will support the delivery of a range of corporate outcomes, improving the efficiency and effectiveness of customer contact and providing the necessary technology to support people to contact the Council through electronic means. Broadband can also support service modernisation and create greater control over services for people, such as giving choice and personalised approaches to health and wellbeing in local communities (eg. through telecare). It can also help businesses grow and diversify and reduce social exclusion.⁷
- 14.4 Sheffield have been part of the Digital Region South Yorkshire programme in which the four councils of South Yorkshire (SY) have accessed over £90m of EU, private sector and partner funding to deliver a leading superfast fibre optic broadband over the majority of the region.

⁷ Sheffield City Council (2011) *Standing Up for Sheffield: Corporate Plan 2011-14*

Digital Region

- 14.5 'Phase 1' of the Digital Region project has delivered broadband infrastructure to 80% of premises in SY and this phase was completed in December 2011, providing the opportunity to access broadband speeds of 37Mbps on average. The intention remains for the project to be rolled out to reach 97% of premises using revenues generated from residents and businesses subscribing to superfast broadband in SY.
- 14.6 Phase 1 of Digital Region does not cover the majority of the rural area of Sheffield (see Fig 1) and will only provide access when phase 2 is delivered. 97% coverage will ensure that only a small number of households across SY will not have access to superfast broadband via the network, meaning alternative solutions may be needed for the remaining 3%.
- 14.7 Digital Region Limited (DRL) have recently undertaken a procurement process to award the contract for operational management of Digital Region. The successful company will operate the network using the city's new broadband infrastructure and be accountable for the revenues, costs and risks associated with running DRL in South Yorkshire. It is expected that this will progress in Spring 2013.

Fig 1: Digital Region Phase 1 rollout



(Source: Digital Region Limited)

Rural Communities Strategy

- 14.8 In 2010, Sheffield City Council agreed 'A Fair Deal for Rural Communities: Rural Communities Strategy'⁸ which specifically refers to the impact of Digital Region and digital

⁸ Sheffield City Council (2010) *A Fair Deal for Rural Communities: Rural Communities Strategy 2010-13*, <https://www.sheffield.gov.uk/dms/scc/management/corporate-communications/documents/housing/-A-Fair-Deal-for-Rural-Communities--PDF-6-04MB-.pdf>

connectivity in the west of the city. Broadband and the need for greater connectivity in the rural area of the city is cited as key to supporting communities to access services (alongside the Customer First programme) and enable business start-ups, growth and diversification.

14.9 In response to a recommendation in the Rural Strategy, an economic study of the rural economy was commissioned to better understand the opportunities for strengthening the economic wellbeing of people and businesses and increasing the area's contribution to the Sheffield City Region economy. 'Sheffield's Rural Economy' study was completed in December 2011 and identifies that the rural area contains 19% of Sheffield's population, 10% of the city's small businesses, low reliance on public sector employment and a 'good track record' for business start-ups. Access to services tends to be lower in some of Sheffield's rural settlements and this could be exacerbated by slow or non-existent broadband access in some communities.⁹

14.10 Improving access to broadband is one of the key recommendations of the rural economy study. The study recommends:

"There is a need to consider the high number of settlements in the rural area which are only likely to receive upgraded broadband through Digital Region if it achieves its first stage earning targets. Consideration should be given to developing a "Plan B" for these settlements should this not happen to avoid them being disadvantaged. This is particularly important if the Council's "face to face" access strategy for a number of these settlements is to be based primarily on internet and telephone contact going forward."¹⁰

15. SHEFFIELD: UNDERSTANDING RURAL COVERAGE & DEMAND FOR BROADBAND

15.1 As Sheffield has both superfast and standard broadband in the city, it is worth making the distinction when looking at the rural area.

15.2 The latest data from OFCOM indicates that superfast broadband is available in 71.9% of Sheffield, with average speeds of 12.5Mbps which places us in OFCOM's second highest ranking band of local authority areas in the UK for overall broadband performance. However, 13.3% of premises in the city still receive broadband that is slower than 2Mbps.¹¹ Sheffield remains the Core City with the highest proportion of premises receiving less than 2Mbps broadband.

Superfast broadband access

15.3 Postcode data for the coverage of Digital Region infrastructure demonstrates that in addition to the rural area, pockets of the city also do not have Digital Region coverage (see Fig 2). This reflects the complexity of the issue and the varied nature of the problem depending on location. Reasons for lack of coverage include:

- **Areas where exchanges are BT rather than DRL** – of the 54 exchanges in South Yorkshire, DRL currently covers 36 exchanges while BT Infinity services

⁹ Sheffield City Council (2011) *Sheffield's Rural Economy, June 2011 (amended December 2011)*, undertaken by Rose Regeneration

¹⁰ Ibid

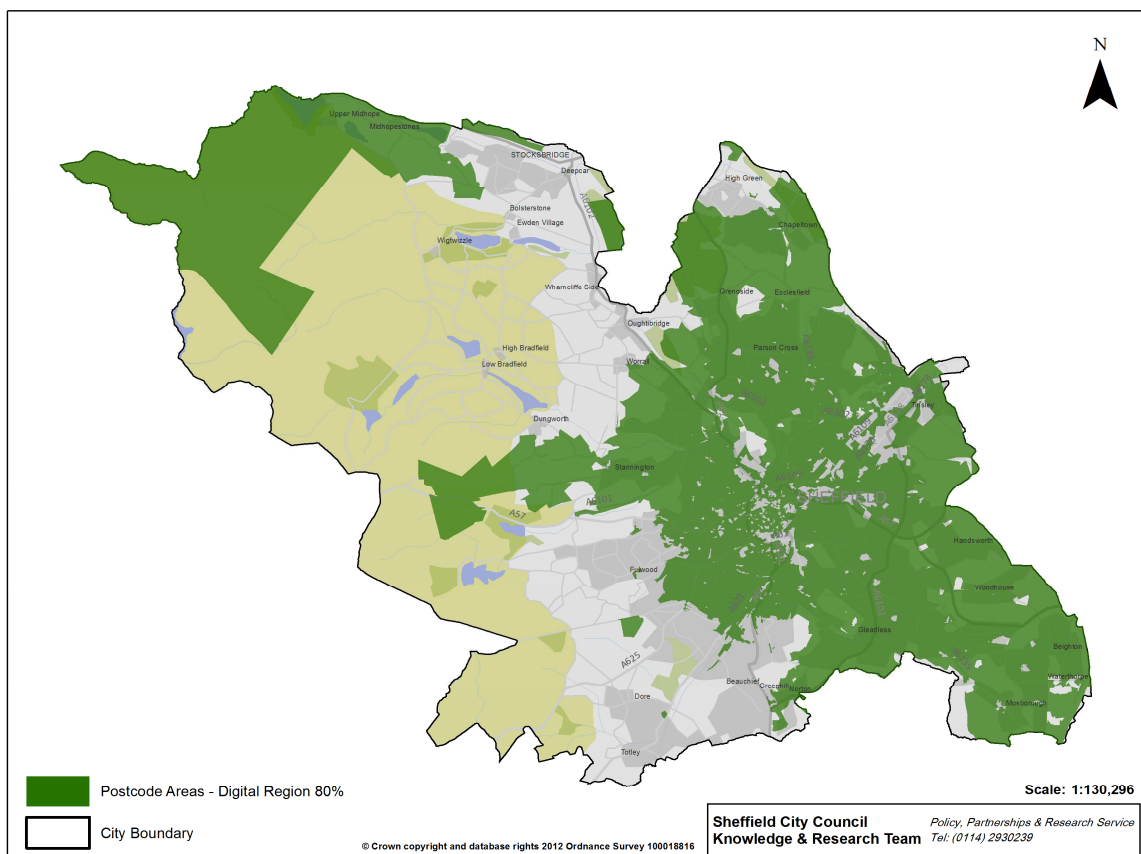
¹¹ OFCOM (2012) *Infrastructure Report: 2012 Update*, <http://d2a9983j4okwzn.cloudfront.net/downloads/ofcom-uk-broadband-speed-report-2012.pdf>

cover 29. Therefore, there is some overlap but also there are some areas where superfast broadband is or will be provided by BT rather than DRL (hence gaps around Stocksbridge, High Green, Greenhill, Beauchief). High speed broadband has recently been made available to two-thirds of premises in Stocksbridge through BT using both Fibre to the Cabinet (FTTC) and Fibre to the Home (FTTH). The exchange in High Green is scheduled to get similar capabilities by the end of 2013.

- **Areas where exchanges are enabled but premises aren't connected to cabinets which allow superfast broadband to be accessed** – this is likely to be the case in some areas of the city such as High Green or Wadsley Bridge (BT suggest March 2013) where the local exchange supports superfast broadband but the cabinets have not been upgraded to enable premises to use the capability
- **Areas which do not have access to FTTC technology** – currently this includes areas such as Bradfield and Oughtibridge which are not included in DRL phase 1 or BT's current rollout schedule. This does not mean that alternative approaches to deliver standard broadband are not available.

15.4

Fig 2: Digital Region Phase 1 rollout based on postcode data (supplied by DRL)



(Source: Digital Region Limited)

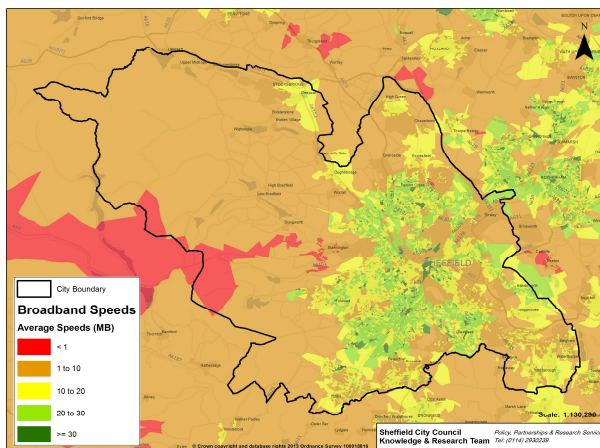
15.5 Therefore, for superfast broadband, the issue of accessibility is complex and will vary depending on the particular locality (as will solutions). One other factor which must be considered is whether people are fully aware of the broadband services available in their area. For example, Ecclesfield is cited in the Rural Economic Study as having slow

connection speeds but the Ecclesfield exchange has BT and Digital Region FTTC capability.

Standard broadband access

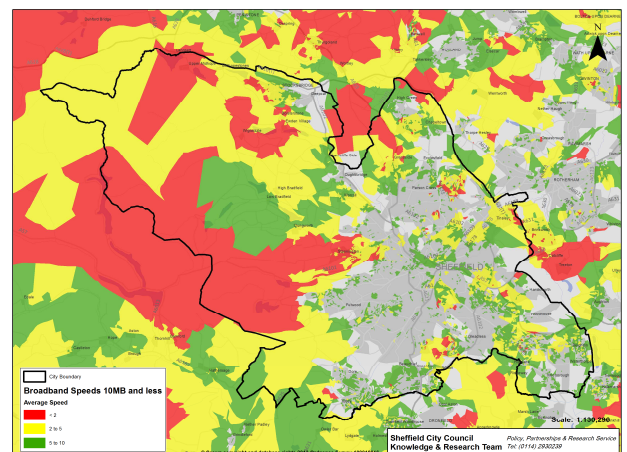
- 15.6 The maps below give an overview of the *average* line speeds in each area (using postcode data). However, within those areas, average speed of connection can vary significantly with parts of the rural area having average speeds of less than 2Mbps and large areas only able to access 2-5Mbps on average (see Fig 4).

Fig 3: Average Broadband speed in Sheffield 2012 based on postcode data



(Source: OFCOM UK Broadband Speed Data for Postcodes, 2012)¹²

Fig 4: Average Broadband speeds 0-10Mbps in Sheffield 2012 based on postcode data



(Source: OFCOM UK Broadband Speed Data for Postcodes, 2012)¹³

- 15.7 The OFCOM postcode level data is insufficiently nuanced to pick up the local intelligence Members and Community Assemblies have received, particularly where ‘not-spots’ exist or have been reported.
- 15.8 Of the 17 rural settlements examined in the Rural Economy study, **two are classified as ‘not-spots’** (Dungworth and Storrs) with **seven experiencing significant speed problems** (Stannington, Loxley, Grenoside, Ecclesfield, Burncross, High Green and Bolsterstone / Ewden). The causes of these problems will vary depending on location.
- 15.9 Whilst the study and the data available suggests that there is disparity in connectivity to superfast and standard broadband in Sheffield, the Northern Community Assembly has not previously made broadband access a key priority in its Community Assembly Plan (2011-13) other than to ‘support the recommendations of the Rural Strategy and Economy Study’. However, the Northern Assembly intend to use the recommendations of the Rural Economy study to shape future plans, with broadband access being a key challenge.

16. SOLUTIONS: IMPROVING BROADBAND CONNECTIVITY IN RURAL COMMUNITIES

- 16.1 Sheffield’s rural communities are not homogenous. Each community varies in size, scale, topography and proximity to services and the city’s infrastructure.

¹² OFCOM (2012) UK Broadband Speed Data 2012 <http://maps.ofcom.org.uk/broadband/>

¹³ Ibid

- 16.2 Whilst the data and local intelligence presented above suggests that broadband connectivity may be an issue in some rural areas of Sheffield, it is not possible to conclusively stipulate exactly where connectivity is poorest and importantly, where demand for a solution is greatest.
- 16.3 Further, it is suggested that it would be difficult and inappropriate to attempt to prescribe a broadband solution for all 'rural' communities in the city when such a solution may not address the specific local obstacles to access and may not be used by local communities.
- 16.4 It is therefore crucial to consider the following:
- Where the greatest need is in the rural area – is it the identified 'not-spots' in Dungworth and Bolsterstone?
 - Is it possible to identify commonalities between localities in Sheffield's rural area that share similar geographical and topographical challenges (and hence, may benefit from a similar solution) but also share an expressed desire to identify and support a localised solution? Such localities could then be grouped together to create economies of scale and make investment by providers viable.
 - Strong, community-led action is key to accessing Government funding but a clear articulation of need may help to convince providers.
 - Local public buildings, schools or services may have broadband connections and could provide a source from which a local broadband solution could be developed.
 - Is there a package of support which Sheffield City Council could provide to communities that articulate a collective demand for a bespoke local solution?
 - Technological advancement (eg. 4G) and rollout of superfast broadband may resolve the issue faster than a bespoke solution can be developed.
- 16.5 Clearly, the optimal solution for delivering high quality and superfast broadband in Sheffield is via Digital Region complemented by the continued expansion and investment by providers such as BT and Virgin in high speed broadband infrastructure. However, as the evidence above shows, this may not provide a solution in the short term for areas in Sheffield which are not part of the phase 1 rollout.
- 16.6 In 2011, Sheffield City Council developed some initial estimates of the cost of extending DRL FTTC services to Dungworth and Worrall. Together, the cost was estimated to be £461k (for new fibre cabling and a superfast broadband enabled cabinet in each community).
- 16.7 This indicative work suggests that a bespoke extension of the Digital Region network is not viable or affordable, particularly as this estimated cost would only serve two communities.
- 16.8 There are many examples of solutions from rural communities across the UK which address specific, localised obstacles to accessing standard broadband. Key examples of solutions include:
- **Mobile broadband** – using mobile phone technology and transmitters to provide internet access (eg. 4G LTE)
 - **WiFi** – using receivers across a community to bounce a signal to properties from an original source point ('point to multipoint') (including developments in WiMax)
 - **Satellite broadband** – often a viable option for remote areas (but can be expensive)

and the distance the signal has to travel does slow down connection speeds. Government accept that this method will need to play a role in pursuit of universal access.

4G LTE

- 16.9 4G Long Term Evolution (LTE) technology is now available in urban areas of Sheffield and in the longer term may provide a broadband solution for rural areas of the city. 4G already plays a role in providing high speed internet to rural areas of the USA and Germany.
- 16.10 Using the spectrum freed up following the digital switchover from analogue, Government has recently auctioned the available spectrums to mobile operators (Feb 2013). Of the two available, the 800Mhz spectrum allows signals to travel over much greater distances and penetrate buildings more successfully (the 2.6Ghz spectrum is more for cities and urban areas which require greater capacity due to user demand).
- 16.11 OFCOM revised the conditions for the 4G auction to guarantee 4G services are to available to 98% of the UK (indoors).¹⁴ OFCOM currently estimate that 4G services will start being more widely available from late Spring 2013. However, the question would then be whether it's an affordable solution.
- 16.12 The 4G auction was completed on 20th February 2013 and it resulted in the main mobile phone providers purchasing portions of spectrum. O2 won a portion which includes a 'public service obligation' to extend coverage to 98% of the UK (indoors) and BT won a portion which it intends to use for 4G connectivity at 'fixed locations' (ie. this is likely to mean broadband access for rural communities and 'not spots').
- 16.13 4G was tested in rural areas of Cornwall and Cumbria at the end of 2012 with users receiving around 7Mbps. In the longer term, it may offer an affordable solution for providing standard broadband in remote or rural areas.

WiFi and radio solutions

- 16.14 The solution proposed in DRL's RCBF application was to expand the existing project using FTTC where possible but use a 'meshed wireless network' using either:
- microwave radio technology – a radio base station (linked to DRL exchange by fibre) will transmit signal to receivers on premises which must be in the line of sight of the base station
 - outdoor WiFi – using a WiFi base stations (covers around 1-3km) linked to the DRL network via a radio base station to transmit WiFi signals to premises with receivers.
- 16.15 For the 2,552 premises expected to benefit from solution in the RCBF bid, the WiFi solution was expected to cost £585k of the £686k project (with 75% of the funding from the RCBF and the additional 25% as a loan from Horsebridge, the company providing the wireless network technology).
- 16.16 There are some useful examples of localised WiFi or radio networks in rural or remote areas across the UK. For example, **Robin Hood's Bay**, North Yorkshire has a community mesh network which was created by a social entrepreneur in the area in 2004. It was initially established using a £5k grant from 'Unltd', an organisation supporting social entrepreneurs. The original source of the signal is via a fibre connection in Whitby and the signal is then transmitted to a chain of towers and relayed around the village to 30

¹⁴ OFCOM (2012) <http://consumers.ofcom.org.uk/what-is-4g/>

strategically placed receivers (bouncing the signal to properties in the line of sight). Users paid around £5 a month for access (up to 8Mbps) but visitors also could use it for a slightly higher fee. The network is maintained by volunteers using local community expertise and runs as a social enterprise with all users being members.

- 16.17 In 2012, the BayBroadband Co-operative was been successful in securing RCBF to improve the network, using the funding to access a high speed fibre connection at Whitby's Environment Centre. The 140 local residents who use the network can now access broadband at 12Mbps for £8 a month.
- 16.18 A further example can be found in the villages around **Alston Moor in Cumbria**. The network was initially established using Government funding in 2004, again using radio masts and receivers to relay the signal. They have since upgraded the network, digging trenches through farmland to lay fibre cables. It is reasonably expensive for people to set up (around £350 for the equipment and £65 for the connection per household, plus £15 a month paid to the Cybermoor co-operative). However, initial research into the local impact showed that broadband connectivity had brought new money into the village, increased IT skills and contributed to house price rises.
- 16.19 A further example which has received significant publicity (featuring on Radio 4's *Today Programme*) is the village of **Arkholme in Lancashire** which is attempting to rollout a 900Mbps network. Driven by the local community, they have engaged with expertise from Lancaster University and local farmers have permitted free access to their land to lay fibre cables. They have established the 'B4RN' community broadband network and by getting local people to sign up to the £30 a month subscription and buy shares in the company, they are hoping to raise £2m to roll the network out across a 265km area.¹⁵
- 16.20 There is also an example in **Wray, Lancashire** where Lancaster University funded a project to provide wireless broadband to the village. Researchers have been studying the ability to provide reliable mesh network infrastructure at low cost. They are now trialling the next generation of wireless high speed services in the area as part of a project funded by the EU.
- 16.21 What is common in these examples is that they are largely driven by clear local need, community ingenuity and have resulted in sustainable delivery models which suit the local circumstances. The community ownership model has been instrumental in securing additional Government resources and ensuring local usage and take-up makes delivery models sustainable and profitable.

Satellite Broadband

- 16.22 Satellite broadband is often used in the most remote areas but it isn't a mainstream solution used by rural communities in the UK. It might actually be the simplest to set up because there are a range of providers and because the signal is beamed from satellites, it's a viable solution for most communities.
- 16.23 However, it is often prohibitively expensive for the speed of the service provided and users often have fairly restricted usage limits. Set up can be around £200 with monthly prices ranging from £25 to £100 for up to 10Mbps.

¹⁵ Cellan-Jones, R. (2013) *Fast fibre: A community shows the way*, BBC News on 14th February 2013, <http://www.bbc.co.uk/news/technology-21442348>