SME Benefits and Business Opportunities with Superfast Broadband: the Virtuous Circle of Connectivity

A Report for the SuperfastCornwall Project

and BT TSO

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Executive Summary

This report is the second of a two-part study of SMEs before and after the introduction of Superfast Broadband (SFBB. The report presents the findings of research conducted with SMEs who had signed up for and used SFBB for between 6 and 12 months during the mid-phase of the Superfast Cornwall project. Research was undertaken using four focus groups in the period July 2012 - April 2013 with a sector-representative sample of local SMEs from 46 businesses based in Cornwall. The majority of the sample was comprised of micro businesses (0-9) employees and this is typical of Cornwall and the UK generally[1].

The primary aim of the research was to provide an understanding of the following topic areas in order that learning can be fed back into the second half of the Superfast Cornwall Programme to ensure the best outcome for the programme:

- Drivers for SFBB adoption
- Aspirations and expectations regarding SFBB
- Speed and efficiency benefits of SFBB
- Economic benefits of SFBB
- Social benefits of SFBB
- Environmental impact of SFBB
- Business impact and ability to work differently
- Future aspirations
- Connectivity options
- SME issues and concerns

Key findings are summarised below:

SFBB is serving SMEs well and has become a critical enabler for many

Our research provides unequivocal evidence that SFBB is changing the way SMEs operate and increasing agility and productivity in new and novel ways. Some of the benefits and advantages participants describe might have been achieved with effective regular broadband, but this was not an option for many rural SMEs in Cornwall who were operating with below optimal connectivity. SFBB is driving efficiencies and savings and helping SMEs to achieve their ambition of creating new opportunities for growth.

Virtuous circle of connectivity

We found a chain of interdependent benefits of SFBB that have become so important to SMEs they have become far more reliant on fibre connectivity than they were on regular broadband. SMEs have achieved not just an improved way of working, but different ways of working. As SME reliance on those benefits grows, that increases and reinforces their value,

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[1] Nearly 95% of all firms are micro enterprises employing less than 10 people and 75% have no employees. https://www.gov.uk/government/publications/growing-your-business-a-report-on-growing-micro-businesses Lord Young, May 2013.

new dependencies are forged and a new set of values and benefits emerges that are used to even greater effect.

SMEs need reliable SFBB to compete in an increasingly connected world and adoption drivers are mostly related to this and a desire to grow

SMEs are increasingly frustrated with existing broadband provision with many being hampered by problems associated with slow connectivity. SFBB has overcome these difficulties and opened up new opportunities.

Increased potential for business growth is a strong driver for adoption. Participants had already started to exploit the benefits of SFBB and felt it had exceeded their expectations.

SME need for increased bandwidth, particularly in relation to a growing requirement for better upload is being met with SFBB.

Cloud services are emerging as a major disruptive force as a result of SFBB. Few participants had used Cloud services prior to the introduction of SFBB because of slow connectivity but many had considered this ability as potentially transformative for business, hence it was a strong driver for adoption. Cloud technology offers a fundamentally different way for SMEs to harness computational power, storage capacity and services and is boosting innovation as a result.

Confidence in the reliability of connectivity is very important to SMEs and SFBB is perceived as offering greater reliability than that offered by regular broadband.

Many SMEs find unexpected uses and benefits of SFBB through experience of use - once taken up, SFBB sells itself

Hands-on experience heavily influenced the very positive views expressed regarding attitudes towards fibre connectivity and helped to overcome any apprehension SMEs may have felt initially.

Many participants perceived the change from broadband to SFBB as very much like the change from dial-up to ADSL i.e. a real step change that makes SFBB a 'must have.' There is also an appetite amongst SMEs for even greater connectivity that bodes well for uptake of FTTP.

The degree to which fibre connectivity impacts SMEs is influenced by business sector, how they use their connectivity, and how reliant they are on communication and ICT generally. However, SMEs told us that SFBB enables them to do more for less, is better value for money and more cost effective than regular broadband provision.

The provision of fibre connectivity is important to all parts of society but it is particularly beneficial to rural SMEs who suffer from poor mobile coverage and lack of road, rail and air infrastructure.

Having experienced SFBB the value it provides has become deeply embedded in SMEs daily work practices and processes and promotes efficiency, productivity and competitiveness.

Before SMEs had access to SFBB many reported a shift from operating online to offline (e.g. sending large files by courier rather than electronically) to accommodate poor connectivity. Fibre connectivity has reversed this shift and participants reported being able to accomplish more of their business operations online and to greater effect.

SFBB reduces the need to travel, and as a result reduces overheads, provides greater convenience, saves time, impacts carbon footprint, reduces frustration and improves efficiency and work/life balance.

It is not all good news, whilst SMEs were very happy with the core NGA service they received and all that it enabled them to do, they were far less happy with BT's customer service and ability to fix problems when things go wrong. Quality of customer service is as important as speed and reliability for SMEs.

Fundamental changes in the ways SMEs do business are enabled by SFBB

As a result of SFBB, the way SMEs are communicating with customers, suppliers and collaborators is changing, improving agility and responsiveness. SFBB promotes the use of Skype resulting in lower telephony costs for SMEs, provides increased and better collaboration opportunities across a wider field of expertise, a reduced need to travel, and is more time efficient.

SFBB fosters greater use of social networking sites for business enabling collaboration beyond the boundaries of business premises, helping build better relationships with suppliers and customers.

SFBB is changing patterns of employment; SMEs are collaborating with others on short term contracts rather than employing them full-time.

Cloud services offer SMEs the opportunity to revolutionise the way they work and compete far more effectively with their larger rivals. The Cloud enables SMEs to access services without the need to invest in expensive IT equipment and provides flexibility that was previously unattainable.

SFBB makes location irrelevant, creates opportunities for inward investment and regeneration and is having a positive impact on job and businesses retention.

SFBB improves business agility, promotes faster turnover, improves cash flow and creates a competitive edge. It has become a critical enabler for SMEs in Cornwall.

SMEs are more driven by economic factors than environmental or sustainability factors but SFBB does have potential to reduce the carbon footprint through travel reduction, increased use of Skype and Cloud services, working from home and remote working for some.

SFBB can make substantial contributions to the conditions required for inward investment in Cornwall

Access to SFBB is having an impact on business location and is likely to impact on property prices.

Cornwall has a growing graduate population, rich in talents that can be beneficial to business and many graduates choose to stay, having completed their degree. Graduates' ability to find well-paid jobs in the region is likely to be influenced by the kind of economic growth fostered by better connectivity.

Different ways of working made possible with SFBB result in the development of new products and services, business diversification and enhancement, new revenue streams, a broader customer base, greater control and improved competitiveness.

Technological innovation has led to more services and more people owning more devices that all require bandwidth. The ability to connect more people and multiple devices through SFBB without compromising quality of service or speed of operation is a valuable asset to business.

Key recommendations are as follows:

In planning SFBB promotional activities, recognise that basic knowledge and skills gaps have to be overcome and that benefits are best presented by users

SFBB acts as a motivator to upgrade IT kit to make the most of fibre connectivity but there is still a knowledge and skills gap in the SME community in understanding how fibre is delivered and what any limitations might be. Rather than offer training opportunities that are unlikely to be taken up by SMEs who do not recognise their need, a business mentoring scheme is likely to be more effective.

Design an awareness campaign to address known gaps in SMEs technological knowledge to challenge and dispel misconceptions.

For those who have not yet taken up the opportunity it is necessary to actively promote the benefits of SFBB and provide SMEs with facilities to try out SFBB to see for themselves how it can increase agility, productivity and competitiveness.

There is confusion about the benefits of SFBB business options and micro businesses are giving up regular business broadband packages in favour of SFBB consumer packages. Consumer options provide a faster, more reliable, consistent and cost effective option than regular broadband business packages and have the bonus to micro businesses of entertainment bundles. Devise an appropriate and compelling business package option for rural micro businesses in order to address the 'forced' migration to attractive consumer packages. Undertake further research to establish robust requirements for sufficient demand of new and additional services.

Hasten growth opportunities and maximise exploitation of SFBB. Recognise that the opportunity for inward investment to the region is not limited to the 'head start' period. Develop a dedicated programme to attract more businesses and start-ups which could greatly enhance employment prospects in Cornwall.

Undertake a third, follow-up study of 2 years plus use. A baseline study of attitudes and expectations prior to the introduction of SFBB has been conducted, followed by the present usage study of business impacts and benefits in the first 12 months of the SFBB experience. A follow-up study of 2 years plus usage will, in effect, provide the first longitudinal study of the SME journey prior, during and after the introduction of SFBB.

Exploit opportunities to build an increasingly rich picture of SME use of SFBB as rollout continues around the UK beyond BDUK areas focusing on areas with different demographics from Cornwall.

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1 Methodology

1.1 Research Aims and Objectives

The aim of this research is to gauge the impact of Superfast Broadband (SFBB) for SMEs in the successful and effective running of businesses in Cornwall. We aim to provide an understanding of the following:

- Drivers for SFBB adoption
- Aspirations and expectations regarding SFBB
- Speed and efficiency benefits of SFBB
- Economic benefits of SFBB
- Social benefits of SFBB
- Environmental impact of SFBB
- Business impact and ability to work differently
- Future aspirations
- Connectivity options
- SME issues and concerns

The key objective of the study is for learning from the Cornwall SFBB study to be fed back into the second half of the Superfast Cornwall Programme so that changes can be made to ensure the best outcomes for the programme. Additional objectives were to inform other BDUK and NGA bids, for Cornwall to learn from other rural deployments, and for the Cornwall deployment to inform best practice in other geographies.

1.2 Sample

Research was conducted with four focus groups held between July 2012 and April 2013. Participants were drawn from a randomly selected sample of businesses in areas that had been SFBB enabled for 12 months plus. Representatives from the local SME community who had signed up for and used SFBB for between 6 and 12 months were recruited from 46 businesses across a range of sectors.

Business sectors are representative of the business profile in Cornwall and included: IT Management, Retail, Tourism and Hospitality, Creative Media and Design, Architecture, Accountancy, Management Consultancy, Education and Training, Business Services, Digital Services, Plumbing, Financial Services, Funeral Directors, Construction, Fire and Flood Restoration, Motor Trade, Publishing, Agriculture/Land-based Services, Utilities, Healthcare and Transport. In terms of comparison with the UK more generally, according to the Office for National Statistics, the greatest differences in business profile are that Cornwall has more agriculture and accommodation/food industry businesses and less information and communications technology, and professional, scientific and technical than other areas in the UK[2].

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[2] Office for National Statistics October 2012 http://www.ons.gov.uk/ons/index.html

Cornwall has a small but growing economy with high levels of self-employment. Most of our sample was comprised of micro businesses and this is typical of Cornwall and of the UK more generally. At the beginning of 2012, 88.7% of VAT and/or PAYE registered businesses in Cornwall and the Isles of Scilly, were classified as micro businesses (with 0-9 employees)[3]. In May this year, Lord Young's report[4] stated that in the UK nearly 95% of all firms are micro enterprises employing less than 10 people and 75% have no employees at all. The growth in micro businesses is thought to be a long term trend and the contribution of micro firms to the economy is huge, hence this justifies a strong focus on this sector.

Amongst participants the highest reported download speed was 38.82Mb and the highest reported upload speed was 9.18Mb, the lowest reported download speed was 19.72Mb and the lowest reported upload speed was 1.85Mb. Five participants had opted for BT's faster FTTC 80/20 product that became available as the result of a network upgrade during the research period. Within this subset the highest reported download speed was 73.84Mb and the highest reported upload speed was 15.49Mb, lowest download speed was 59.98Mb and lowest upload speed was 4.03Mb.

Three participants had multiple businesses for which the same SFBB connection was used.

Focus groups were professionally facilitated based on an agreed discussion guide (see Appendix A), recorded and fully transcribed.

2   Introduction

This report presents the findings of research conducted with SMEs in the early stages of using Superfast Broadband (SFBB) for between six and twelve months and was commissioned by the Superfast Cornwall Project. Superfast Cornwall is a £132 million programme to bring SFBB to Cornwall and the Isles of Scilly, to make it one of the best connected locations in the world. It is funded by the European Union's Regional Development Fund (ERDF programme), BT and Cornwall Council, and managed by Cornwall Development Company. The programme will run until 2015 and Superfast Cornwall will bring superfast fibre optic broadband to 95% of homes and businesses in Cornwall and the Isles of Scilly, with the remaining 5% enjoying faster broadband speeds thanks to alternative technologies, such as satellite.

The research reported here represents Phase 2 of a 'before and after' study of the introduction of SFBB to rural SMEs. Phase 1 provided a baseline study of attitudes and expectations prior to the introduction of SFBB (see 'Current Business Attitudes and Expectations for Superfast

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[3] Cornwall's economy at a glance –Cornwall Council https://www.**cornwall**.gov.uk/ January 2013

[4] Lord Young, May 2013 https://www.gov.uk/government/publications/growing-your-business-a-report-on-growing-micro-businesses

Broadband[5]') to understand problems with existing regular broadband provision, perceived drivers and barriers to take-up and perceived social and environmental impacts. Phase 2, conducted after the introduction of SFBB, considers how fibre connectivity has met SME aspirations and expectations and captures drivers for adoption, business benefits and perceived economic, social and environmental impacts related to the introduction of SFBB in Cornwall. The research also looks at how business can be conducted differently with greater connectivity and considers the kind of innovations that arise as a result.

Access to fast, reliable broadband is fundamental to running a business efficiently and working patterns and business practices are dictated by effective broadband connectivity. Phase 1 of our research revealed that the majority of SMEs were unhappy with their existing broadband provision and had high expectations of fibre connectivity. Cornwall's rural location and dispersed population means that many SMEs live some distance from the exchange that serves their premises, hence many have been working with less than optimal speeds. There have been reports in the media that rural broadband speeds can be up to half of those in cities and towns as highlighted in an interactive map commissioned by Labour shadow culture, media and sport team, and produced by the House of Commons Library using data published in Ofcom's infrastructure report in December 2012[6]. Analysis showed that the digital divide between town and country is stark: average speeds in rural areas were 5.9Mb, compared to 14.6Mb in urban areas. Fibre infrastructure is particularly important in rural areas and has the potential to overcome other shortcomings in road, rail and air infrastructure that hamper business operations.

It should be noted that the magnitude of the transition to SFBB from regular broadband provision is not the same for all SMEs in Cornwall however; regular broadband provision across the county is variable, hence participants are entering this arena from different starting points. Like regular broadband, SFBB is retailed on an 'up to' achievable speed basis hence the speeds businesses received, whilst vastly improved over regular access, still varied across participants. Also, as noted, five participants had opted for an even faster fibre product.

Quotes from participants in the course of discussion during the focus groups are used throughout the report to illustrate points and provide primary evidence of attitudes, opinions and aspirations. Participant's business sector is noted against quotes but this should not be taken as evidence of comments being more or less pertinent to that particular sector. Quotes were selected on the basis of being the most illustrative or insightful with regard to the subject under discussion.

Conclusions and recommendations are offered and the next phase of research is suggested as a result of learning from this initial phase of the introduction of SFBB to Cornwall's SMEs.

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[5] Contact the authors for a copy of the report
[6] Guardian.co.uk, Saturday December 1st, 2012

3 Drivers for SFBB adoption

Discussions began with a focus on participants' decision process in upgrading to SFBB to uncover the major drivers for adoption. Overwhelmingly decisions were driven by issues and problems concerning regular broadband connectivity. These are dealt with in detail in the Phase 1 report (see 'Current Business Attitudes and Expectations for Superfast Broadband' pages 8-13 for more details), and to avoid repetition these difficulties are touched on only briefly here in section 3.1. Other drivers include a strong desire to expand business and improve productivity, increased bandwidth potential for uploading, and a desire for better reliability.

3.1 Overcoming the problems of poor connectivity

Frustration with existing regular broadband provision was the major driver for choosing SFBB. The most often cited difficulties included the impact of slow speeds and lack of a reliable and consistent service on SME's ability to run their businesses efficiently and effectively:

> *"I think the broadband connection I have got now is fantastic, it's dropping off sometimes but compared to what I had before it is amazing. So the actual job of providing the Superfast Broadband has been great, but it's more than that, it is much more than that, it's not just the broadband it's the frustration that I had before, I mean I was at my wits end! Well, I will admit, I was in tears."* Business services

> *"Anything is an improvement on what I had before. I just couldn't do any of the things I wanted to, it was just too slow. Have you ever tried managing to run a business on broadband of half a meg? It's a waste of time, totally."* Business services

In the light of such comments, unsurprisingly participants were delighted with the greater connectivity of fibre broadband:

> *"When I go on and check, it says you are faster than 95% of the UK, so I must be faster than most people now."* Tourism and hospitality

Cornwall's SMEs are very resourceful and had devised various workarounds to address the problems they experienced associated with poor and unreliable broadband. Many of these makeshift 'solutions' were far from ideal and impacted heavily on what SMEs were able to achieve, to the extent that many described themselves as being 'in despair.' The problems of poor connectivity and the extreme workarounds participants had to devise to combat these difficulties created a strong driver to switch to SFBB.

In the course of discussion it was clear that SMEs are aware of and value the greatly improved connectivity of SFBB, and are appreciative of the advantage it provides to Cornwall's businesses. Many had been hampered by problems associated with slow connectivity and SFBB has helped overcome the difficulties they experienced that stood in the way of productivity and business expansion.

3.2   Increased potential for business growth

Another important driver for better connectivity was SMEs desire for business growth. The application of technology is considered to be the tipping point for business success and SMEs are keen to access new and affordable technology as an essential part of their plans for growth[7]. Participants had already started to exploit the benefits of SFBB and felt it had exceeded their expectations and although they had only had access for up to twelve months, they could already see how it offered potential for business growth:

> *"I want to expand my business and the broadband was going to be the limiting factor I think, it is about how many people I can communicate with."* Management consultancy

> *"For us, at the rate our business was developing, it was the only way of supporting the infrastructure. We're now based across a few depots, so that could be a couple of Skype stations, admin. teams taking claims and directing technicians via Google maps, with quite rich data coming in and out constantly. As the business grows Superfast is the only real option which will support that, and is supporting it."* Transport

Participants were excited about the possibilities of SFBB, even if they had not yet brought their ideas to fruition:

> *"The exciting thing for me it has made my business model and what I plan to do completely different, I will be able to widen it to a much larger operation than I would have with a land line system because I can communicate with more and more people. Potentially my business could be ten times bigger than it is now, probably more."* Accountancy

Business growth is vital in today's financial climate and several SMEs said their ability to operate at all, particularly in Cornwall, was wholly dependent on greater and more efficient connectivity. This is particularly significant in Cornwall where road, rail and air infrastructure is poor:

> *"In the short time I've been here, eight years now we've gone from seven flights a day from Newquay down to three, and even those are under threat. We are down to two in the winter and there's no competition for price, so it's expensive. Plymouth airport has closed, there's another link gone...and Newquay could too. The infrastructure is collapsing in on itself"* Land-based services

> *"There's only a very slow train from Exeter and we had to fight to keep the sleeper."* Architecture

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[7] Geared for Growth, White Paper,, joint research project between Talk Talk Business and the ICAEW publication Economia, Author Richard Cree, April 2013

> *"We just don't have the road and rail links in Cornwall; that cuts us off. You hear so much about the East Coast railway up to Scotland and getting them to Birmingham...we need a high speed rail link to Cornwall."* Digital services

Cornwall's peripheral and rural location makes access to SFBB very important to existing SMEs and their enthusiastic take-up clearly illustrates its value. SFBB is supporting businesses in the region with strong growth ambitions and fibre connectivity also has an important role in making inward investment to the county more likely and opportunities for start-ups more appealing.

3.3 Increased bandwidth capacity

The way SMEs use the Internet for business has changed and the increased upload capability of fibre connectivity in particular was a significant driver for choosing SFBB:

> *"That's what I was after to be honest, even if I didn't have the fast download, I wanted the upload, I've gone from 720k to about 15megs, that is a real difference, I mean a phenomenal difference."* Management consultancy

> *"It was the main thing for us, the upload speed. BT would always guarantee a certain level of download and for us, being website designers, upload is now much faster and that's important."* Media and design

> *"We create quite large presentations, it's the 40 meg file that used to take ten minutes to upload, so it was the upload speeds particularly for us that are important."* Accountancy

Several participants located their need for increased upload capability in innovations that have been made in applications, software, and services:

> *"The software we use is upgraded each year and it becomes more and more complex. Our product, our drawings become bigger and bigger and bigger because they become more and more useful. We were lucky enough to be in one of the first exchanges in this area to get Superfast and we had it immediately."* Accountancy

> *"In my profession everything is in PDFs, you can go to the manufacturer's websites, download their information and those files can vary in size, but you can download them very quickly so instead of a hard copy library it is all on your hard disk, saved. All of the information is there at the click of a finger so you can access it, so downloading that information is a lot quicker and that has helped."* Retail

> *"I think it is a question of software, a lot of software now doesn't come on a disc you download...there's a huge increase in the number of software products you can only get online. It would have taken ages before without Superfast..."* Digital services

Upload speeds have become increasingly significant in running a business; the way our SME population use their broadband connection has evolved. For the majority of SMEs, upload speed is now as important as download speed and this is not just confined to those business

sectors that are traditionally bandwidth hungry. SFBB means that SMEs can easily accomplish tasks that were difficult or impossible before and this allows them to work much more effectively. The increased bandwidth capacity of SFBB means that a growing need to upload large documents, as well as download, can be accommodated with ease.

3.4 Increased accessibility of Cloud services

Innovations in Cloud technology offer a fundamentally different way for SMEs to harness computational power, storage capacity and services but slow connectivity has been a major barrier to access. Few participants had used Cloud services prior to the introduction of SFBB but many were keen to do so and considered this ability as transformative for business, hence it was a strong driver for adoption. In particular, the increasing need for greater bandwidth both now, and in the future, was centred on the ability and growing requirement to take full advantage of Cloud services to operate more effectively:

> *"It's made working with Cloud services a lot more possible, if you're using the Cloud you need it to be fast or it's a waste of time, we're using those services all the time now, there's no delays, it's very good."* Publishing

> *"The backup, the backup is going to be big I think, it's going to grow and grow, well, Cloud based applications generally. I'm using the Cloud now, it's very good..."* Fire and flood restoration

> "*Cloud systems are out there, you can run your whole business through your Internet, through your phone systems."* Management consultancy

Speed and convenience contribute to the power of Cloud services as a driver but ICT-related operational expenditure is also a feature:

> *"It's just so useful, if you store everything on the Cloud and then when I am out and about with my iPad I have got access to everything that I have got on my Mac at home, so it's brilliant."* Digital services

> *"I was thinking of moving the website stuff onto the Cloud, we think it might be cheaper too. We have only got a landing page at the moment but you only pay for the amount of storage you use rather than pay a fixed fee for an FTP web hosting service. Here you just pay for the amount of any gigabytes you use, so it might work out cheaper, so we are exploring that at the moment."* Business services

In order to take full advantage of Cloud services some participants said that in the future they envisaged requiring even more upload capacity and some saw a future where their work could be conducted entirely from the Cloud:

> *"In the future I would like to see that you don't have a hard drive on your computer you just pack it full of RAM and work off the Cloud."* Architecture

Primarily participants were using Cloud services for hosting, back-up, storage, project management, extra processing power, virtual office access whilst on the move, and to save space and the expense of in house IT implantation costs (see section 6.5). Increased use of Cloud services is likely to have a significant economic impact, offering access to computational power, storage and resources that were previously unattainable to most SMEs in the region, either because slow connectivity hampered use or because necessary alternative ICT expenditure was prohibitive. In this context SFBB offers the opportunity to transform business processes for SMEs by providing essential Cloud-friendly capability.

3.5 Keeping pace with technological innovation

A further driver is the manner in which technological innovations are fuelling the need for improved connectivity and changing expectations of capability and responsiveness:

> *"I think the technology has changed...for us, when we are asked to put photographs up for instance, if it was five years ago the files wouldn't be a big as they are now. Cameras now have got 20 megabyte processors or whatever, so if we get asked for a photograph after we have photographed an event and news teams in London want it, we are uploading a file that can be 60/70 megabytes, whereas a few years ago it wouldn't have been that big."* Media and design

> *"I think it's just my expectations and the people I work for - I send them something and they want to have it in seconds or a minute rather than 10 minutes."* Transport

Access to SFBB changes expectations and perceptions of what can be achieved by businesses and clients alike and simultaneously reinforces businesses' increasing reliance on SFBB to deliver:

> *"By actually having the Superfast it means that you up your expectations, but you are also giving people at the other end a greater expectation of what you can do and that puts you under more pressure because if it fails, it fails more spectacularly."* Construction

> *"The needs of our clients have changed, what they send us is bigger than it used to be and what we send them is bigger than it used to be, it's just the nature of technology that is available."* Architecture

> *"Communication has changed dramatically, the old glossy magazines and the advertising, the Yellow Pages, it has all changed, everybody is communicating online now, social media is massive, Steve Jobs and Bill Gates should either be strung up or congratulated! They forced us into this situation, like it or not."* Management consultancy

SMEs have had to embrace an 'always on,' increasingly connected world and this has altered their own and their customers and clients expectations. Many participants located their increasing need for a faster, more reliable broadband service in technological change that had altered expectations and business practices.

3.6 Increased confidence in reliability

Confidence in the reliability of connectivity is very important to SMEs and the perceived greater reliability offered by the speed of SFBB over regular broadband also served as a strong driver for adoption:

> *"The connectivity and the reliability of it has been excellent, it's always there, whenever I need it."* Education and training

The importance of reliability and the impact of the fear of loss of connectivity are illustrated by the 'belt and braces' solution of installing two regular broadband lines that had previously been adopted by several participants. SMEs reported several instances of greater peace of mind arising from the increased reliability of SFBB:

> *"I would say I am very pleased with what I bought. I have more peace of mind...it's definitely better."* Financial services

> *"Now I can just scan a document and it's gone and I know it will be received. Before, when I had to send faxes to Russia you'd never know if they'd arrived or not, who'd picked them up...you have more peace of mind."* Management consultancy

> *"I can definitely book an appointment over Skype and know that it's going to happen, whereas before I would book an appointment and I wasn't sure it's going to happen if the connection went down."* Land-based services

SMEs operate in an increasingly connected world where new expectations are put upon them to respond in an agile and efficient manner. Key to the ability to achieve this is confidence in the reliability of SFBB connectivity.

4 Aspirations and Expectations regarding SFBB

In this section of the discussion we asked participants whether their experience of SFBB had met with expectations, how it compared with the move from dial-up to ADSL and whether SFBB offered good value.

4.1 The impact of experience

Prior to the arrival of SFBB, and before they had an opportunity to experience the improvements, advantages and opportunities it provides, participants reported having negative attitudes towards SFBB which supports what we found in Phase 1 of the research, before the introduction of SFBB:

> *"You can look at this in two ways really, they trialled it in Cornwall, that's one way of looking at it. So, if anything went wrong then only we would have suffered, exactly*

the same way as they trialled digital television in Cornwall, and that still doesn't work. If anything went wrong it was only the Cornish that suffered. Or you could say we're lucky to get it first and actually I couldn't be happier because it does actually work." Plumbing

"Back in April last year when BT implemented Superfast Broadband we were a bit negative about it as business people, we felt we were being used as guinea pigs because we felt that the system would crash." Funeral directors

"I was a little bit sceptical and I felt that we were being used, being experimented on if you like." Transport

However, having experienced SFBB, SMEs were enormously positive and appreciative of the advantages fibre connectivity provides and felt it had helped them overcome many of the frustrations of previous regular broadband provision:

"It allows you to do things that you could never count on doing before. There are the eureka moments when you look at something and think, well perhaps I could do it in a different way, and you find you can do it in a different way because you have got Superfast Broadband. So you can send large files, you can communicate virtually instantly with almost anyone, so this does change the way you work, and looking now at the way I work compared with even a year ago when I first got Superfast Broadband, I have definitely changed the way I work." Architecture

"In our case, publishing, before we would just set it off at 10pm at night, and it would sometimes drop out, and you would come down in the morning and find it was 45% done, but with Superfast we can send a whole batch of images or a whole huge file or music files, just like that." Publishing

For many of our participants the change from broadband to SFBB was perceived to be very much like the change from dial-up to ADSL i.e. a real step change that made SFBB a 'must have:'

"On April 8th last year [when SFBB became available in Cornwall] it was like the sun had opened up, you know, it was amazing." Retail

"It's definitely a step change, it's a must have." Management consultancy

For others the change was not as great as the move from dial-up to broadband but even so, SFBB was cited as providing more confidence in connectivity:

"I don't think Superfast is as big a step change for me. What I am doing couldn't be done on dial-up, so when broadband arrived, that's when it started, that was the big step. The step to Superfast gives a bit more confidence and saving of time but actually it's not such a big step as it was to broadband. That was the big one." Financial services

> *"It's more a progression than a step change, a gradual progression whereas the move from dial up was a quantum leap."* Accountancy

> *"It's not a revolution but it has got better, much better."* Fire and flood restoration

A minority, though very satisfied with SFBB, thought the newly achievable speeds should have been delivered earlier and that regular broadband should have been more effective:

> *"It's my expectation of how it should work, what I felt I should have been receiving from broadband really. I am happy with what I have got at present but really, I should have had that 2 years ago, 3 years ago, with that service then."* IT management

SME views concerning how much of an impact fibre connectivity had on their business were influenced by the business sector in which they were engaged, how they used their connectivity, and how reliant they were on communication and ICT generally. Those who relied heavily on connectivity to run their business were most vociferous and enthusiastic about the capability of fibre but even those who were less reliant were deeply appreciative of the difference it made to conducting business:

> *"It depends on what you're doing with the broadband as to how much of a jump it is but it's made an enormous difference to us in our design business."* Creative media and design

> *"I'm not uploading and downloading huge amounts of data but I couldn't go back to ordinary broadband now, it's just too useful to consider that."* Construction

> *"If somebody took it away now I think I'd be quite upset."* Tourism and hospitality

Our participants enthusiastically adopted SFBB as soon as it was made available. This was not because they were early adopters however; in fact many described themselves as not very technically proficient. Instead, they signed up for SFBB largely as a result of frustrations with regular broadband that hampered business processes and the ability to expand.

Prior to taking up the SFBB opportunity it was difficult for some SMEs to see the potential benefits of more reliable and faster connectivity, particularly when they had developed workarounds to deal with the problems they encountered on a daily basis as a result of poor bandwidth capability. However, the comments above show that experience is king in this context; hands on experience of using SFBB heavily influenced the very positive views expressed regarding attitudes towards fibre connectivity and helped to overcome any apprehensions SME may have felt initially.

4.2   SFBB is cost effective

Minimising costs and the ability to predictably budget for expenditure is very important to SMEs. In the current economic climate most participants felt they had cut all extraneous costs to the minimum but some reported regularly going over their broadband limit with their previous regular provision, incurring charges for which they had not budgeted. This

exemplifies the fact that SMEs generally are unsure as to how much data they typically use each month; hence they are often surprised by bills that are larger than expected.

Participants were very appreciative of the improved connectivity with SFBB; several told us that SFBB enabled them to do more for less, is better value for money and more cost effective than regular broadband provision:

> *"Superfast Broadband worked out cheaper and I get bigger bandwidth anyway."* Tourism and hospitality

> *"It's cheaper with Superfast, I had an ordinary land line broadband connection and I was using more than my allotted allowance of bandwidth so I was getting £100 per month bills out of the blue, I wasn't warned that I was using that amount."* Financial services

> *"I've just had a bill – the phone line and broadband including VAT is £40. The phone deal is virtually free apart from the line rental, that is Home BT. It's the deal I went for when I upgraded and I am pleased to say that that's the bill that just fell on the mat this morning."* Construction

> *"I got a cheaper deal with BT than I had been paying for the last 3 year contract, and that's on a business line. I'm quite happy to pay whatever it is a month; I think it's a deal."* Creative media and design

Most participants said that SFBB cost as much as their previous provision or slightly more:

> *"As a business user we were already paying through the nose for ADSL then fibre came along and it was about a pound difference a month."* Accountancy

> *"It's about the same as I was paying before, a bit more, but not much."* Funeral Directors

Some participants said SFBB cost substantially more than their previous provision but still felt that it was good value for money:

> *"It's costing me three times more than my previous ADSL but it's more than three times the value, even if I am paying a lot more."* IT management

> *"It's expensive compared to what I was paying, but it's cheap compared to what I used to pay on ISDN, and it's cheap compared with sending discs all around the country. The value of it makes it worth what you pay for it, or more so even, it's just freed me up in so many ways."* Creative media and design

> *"Ours is significantly more than we were paying but I think it's worth it. Everybody would like to pay less but that isn't an option, but I still think it's worth it."* Digital services

Because reliable connectivity is vital to running a business, prior to the introduction of SFBB some SMEs had installed two regular broadband lines with different companies as a 'belt and braces' safeguard against loss of service. SMEs perceive the introduction of SFBB as making this necessity redundant hence it is easy to see how for many, SFBB offers not only a more reliable option, but one that is more cost effective.

4.3 The virtuous circle of improved connectivity

Participants were asked whether their experience of using SFBB had lived up to expectations and all reported that it had, and that they had become accustomed to improved SFBB connectivity very quickly:

> *"We have got used to it now."* Education and training

> *"I had it pretty much 2 days after it came out in St Agnes. I had it set up and that's a year and a bit now, you do take it for granted, you can just go bang and do it."* Tourism and hospitality

> *"It's like getting a new computer, it's great and then you get used to it."* Publishing

Several participants had also noticed and were delighted with BT's free upgrade in speed that occurred during the course of the research period. When FTTC was first introduced it was a 40/10Mbps product and due to network upgrades BT was able to double the speed with an 80/20 Mbps product:

> *"...and then they doubled the speed, which was even more amazing. For free. For nothing!"* Digital services

> *"It's a no brainer. If you signed up for another year you get double the speed for free!"* Architecture

Having experienced SFBB, participants were very positive and appreciative of the advantages it provides and many felt that it had not only met their expectations, it had exceeded them:

> *"I think it's exceeded expectations because it's helped me a hell of a lot."* IT management

> *"Where I am based there are people around me that aren't on Superfast Broadband like me. Before, on broadband, we all had an intermittent but constant problem and they are still being affected by that. I've had Superfast for nearly a year now and I haven't had a problem, I haven't had a day where I haven't been able to use it, whereas I know 2 or 3 of the other offices on my site that are quite heavily reliant on broadband connections and they haven't been able to access the Internet."* Creative media and design

Not only had participants quickly become accustomed to faster speeds and greater bandwidth capacity, they also felt they had become increasingly reliant on better connectivity to run

their businesses effectively. This far exceeded their reliance on previous broadband provision because it enabled them to do so much more:

> *"It depends on how embedded it is in your business but the more you use it, the more embedded it gets and the more you have to take that into consideration, particularly if you're moving home, premises or whatever."* Fire and flood restoration

> *"I wake up in a cold sweat now and then thinking about what happens if this goes down, or worse, because you are totally reliant on it, there is no alternative is there?"* Financial services

> *"I would like to echo that...all of our work basically is reliant on the Superfast Broadband."* IT management

Some participants also reported having become more reliant on SFBB than they were on their previous broadband provision because it has enabled them to work in new and different ways that exploit the advantage of greater speeds and reliability:

> *"You are more reliant on Superfast Broadband than you were on regular broadband, without a doubt... you can do things now you'd never even considered before."* Management consultancy

SFBB has a pivotal role in delivering value through new found efficiencies and savings. The comments above clearly illustrate SMEs' increased reliance on improved connectivity to run their businesses effectively and competitively. None of the participants we spoke to could conceive of giving up the benefits SFBB delivers and all spoke enthusiastically about further innovations and the possibility of access to FTTP.

We uncovered a virtuous circle of connectivity through a chain of interdependent benefits of SFBB that have become so important to SMEs they have become far more reliant on fibre connectivity than they ever were on regular broadband. SFBB is not just an improved way of working; it is a different way of working. As SME reliance on SFBB benefits grows that increases and reinforces the value, new dependencies are forged and a new set of values and benefits emerges that are used to even greater effect.

5   Speed and Efficiency Benefits of SFBB

Having experienced SFBB the value it provides has become deeply embedded in SMEs daily work practices and processes. Although inevitably the advantages that SFBB provides overlap and in many cases are interdependent, they can largely be broken down into those concerning improved speed and efficiency, economic, social and environmental benefits.

The most obvious impact of SFBB for SMEs is on speed and efficiency and these are important factors since they impact on business productivity. Both were cited in the course of discussion as having a beneficial effect on business in terms of reduced frustration, the ability

to complete tasks more efficiently, improved multi-tasking and accomplishing more in a shorter time frame:

> *"We do a lot of web design stuff, there's a lot of CMS systems which you build online rather than locally and you know, the transfer rate was far superior and made our life a lot more comfortable and a lot quicker, and it speeded up your time really."* Creative media and design

> *"It's just got better and better as far as I'm concerned. It's making me more productive and I can get certain jobs done quicker."* IT consultancy

> *"The advantage of the whole Superfast thing is the rate at which I can transfer information, the number of emails I can send out in the course of a day, the number of clients that can get in touch with me in the course of a day…Those are real advantages."* Business services

Participants were aware that increased speed and efficiency in their work practices as a result of SFBB had led to an increase in productivity:

> *"It makes a massive difference...because if you are sending say 24 images of gold coins down to Australia, bang, they're gone! And then you can send another 24 to another client, and then to another 24, you know, and being able to do that is just magnificent because it frees up time as well, you can get on and do other things."* Retail

> *"It has made us more efficient. Whereas before I had to choose whether I should publish this website or send that photograph to that newspaper, I can do both, I can do all of those things at the same time! I don't have to worry about queuing things up; it can cope with it. We can work on several projects at the same time and although we are a home-based business, we have got these other people on home computers sending large files and all that works very well."* Publishing

> *"We are able to get a lot more things done than we used to, so that side of it is very positive."* Tourism and hospitality

Participants also reported that faster and more effective communication resulted in faster decision-making and greater productivity:

> *"It's the speed of communication in both directions that brings about the decisions that can be made quicker and hopefully more effectively than before."* Retail

> *"It's so much more effective, decisions made, deal done, productivity up."* Retail

For a minority of participants who had not yet explored many of the other benefits of SFBB, speed was the only advantage they described but even so, this was very important to them:

> *"All they doing is giving you the same service you had before but faster, and it all comes down to that wonderful word 'faster', all the time."* Plumbing

"It's just faster, that's all, but that's what I wanted, I needed it to be faster and it is." Financial services

The benefits SMEs describe, are most aware of, and are most easily articulated are a result of the way in which they use their connectivity for business. Those SMEs who were more bandwidth dependent were most likely to identify additional benefits over and above increased speed. In the course of discussions it was clear that SFBB provides benefits that make working practices not just quantitatively better (i.e. faster), it provides qualitative improvements in terms of what can be accomplished.

5.1 Increased ability to multi-task

Several participants described how SFBB enabled them to multi-task, affording opportunities to accomplish more in the same period of time and hence operate more effectively:

"It's not just simply run your business, you can multi-task. If you look at business news of the day for example, you can look at the videos while you are sending stuff, you can do all of that at the same time." Management consultancy

"You can do things, while all this is going on you can do other things as well." Business services

The ability to multi-task was also perceived as providing greater business agility and as promoting innovation and creativity:

"I think it's the immediacy of it, and if you like, the agility of it...being able to do several things at the same time has meant that I can free my brain up to do other things, to do more innovative things rather than doing the pedestrian things, because the pedestrian things I can now do very quickly." Architecture

The ability to multi-task was also cited as making life simpler, less frustrating and more enjoyable:

"I suppose you could just listen to a bit a jazz while you were doing some business if you wanted to, because you can do seven functions at once... music while you work with Superfast Broadband!" Tourism and hospitality

The ability to operate more effectively enables SMEs to reach the next stage in business progression; it promotes growth and agility and impacts productivity.

5.2 Reversing the shift - offline to online

In Phase 1 of our research, before SMEs had access to SFBB, many reported a shift from operating online to offline as a workaround to accommodate delivery of large files and this has been a source of major frustration. Fibre connectivity has reversed this shift and participants reported being able to accomplish more of their business operations online:

"Before I would have to put files on a disc and get them couriered up to London, it was the only way...now I just send them and whoosh, they're gone, job done!" Publishing

"With our web business we work with a lot of designers and normally, in the olden days, they would have sent a CD with all of the files for their website that we might be going to build and we would have to look at it, and pack it all, and then get back to them. Now they just send the whole lot to us straight away, and we can get back to them within the hour." Creative media and design

"As a photographer the days of sending file 1 of 32 have gone, but that was how we had to do it, one at a time and hope that it got through." Creative media and design

"You don't have to put it on a CD...It's putting out postman out of a job!" Management consultancy

The speed with which large files could be sent also contributed to cost savings. This occurred in two ways; it eliminated the necessity to send files by courier, often incurring expensive charges, and it meant that PCs no longer had to be left on all night to accommodate the sending of large files during less congested periods:

"I wonder how many people, if they had a big file to send, used to say 'I'll do that overnight' and they would leave their computer on and let it run over night. Now they don't have to because it's all done and when they have finished or they leave the office, they can actually switch everything off." Business services

"We don't use the postal system so much anymore. The price of postage went up to a ludicrously high level and we are trying to do everything electronically now. Our postage has gone down to about 5% of what we were paying before, we've been that successful with it and that's been helped by Superfast." IT management

Participants also reported that greater bandwidth capacity meant that many office functions that relied on paper were no longer necessary. For example, there was a reduced need for paper billing and invoicing:

"We send all of our bills out over the net, we don't ever use paper now, and we send all of our drawings out, we don't print paper drawings so you don't have to send them by courier." Architecture

"Well you wouldn't be able to do it without Superfast... You could send out an invoice with normal broadband...but you couldn't send the plans though." Architecture

Productivity and efficiency gains are not the only benefits that SFBB affords however, SMEs described many additional economic, social and environmental advantages including business process restructuring, further cost savings, better collaboration and growth, as well as innovations that had not previously been envisaged.

6 Economic Benefits of SFBB

Many of the benefits of SFBB are interdependent much in the way that improved speed and efficiency interrelates with productivity gains and cost saving. Speed and efficiency are the most readily articulated benefits but participants also spoke enthusiastically about a number and range of substantial advantages that translate into economic benefits.

6.1 Reducing the need to travel

Not only does SFBB represent excellent value for money, costing little more (and in some cases less) than regular broadband provision, it also helped to reduce costs by reducing the need to travel. This enabled participants to reduce overheads as well as enabling them to serve a greater number of customers in a given time period as a result:

> *"It's reduced my overheads on my truck a lot. If I was going to fix a computer, you can only charge a certain rate given the rates in Cornwall aren't that high, you go to fix a person's computer and there is only so much they will pay. So you drive from Penzance to all over the place, an hour or so driving, you are there for a couple of hours...so it's four hours work for one hours pay, but now I can just sit at home and do it from there, so it's taken out the whole travel element and I can do more people, more quickly."* IT management

> *"Being able to be here in the South West and not having to travel to see sales or look at X-rays and things like that…I watched the sale of a horse overnight in Australia and seeing the horse go in and being able to talk to people there was marvellous…it works in terms of a modern business for me. It's win-win in terms of lower telephony charges, lower transport costs, lower overheads."* Land-based services

Several participants also noted that reduced travel improved productivity as well affording greater convenience:

> *"One of my directors is involved in a lot of the training in the human resource side of the business. Before Superfast she had to make regular trips down to Cornwall which isn't an easy journey by any means. Now we just jump on Skype, it's that simple. A two hour training sessions is just that, it's not a day and then a hotel stay and travel back the next day."* Business services

> *"I think the saving comes in terms of the saving of time. Time is a commodity that you can never replace, it is very costly, but I think that Superfast Broadband has enabled me personally to save time, and travel."* Management consultancy

> *"I have been saving time, it's allowing me to speak to a much bigger audience, and make more money in one hour that I could have made in a week."* Business services

One of the beneficial factors of better connectivity that contribute to the reduced need to travel is improved Skype capability. A more reliable Skype connection provides better

collaboration opportunities for face-to-face meetings without the need to meet in person and this saves time and enhances efficiency:

> *"I am much more efficient being at home and online than I am whenever I have to travel, like to London for meetings. I might get three meetings and then I am scrabbling around trying to find Wi-Fi so that I can answer my emails, whereas I can have six meetings and do all of my emails and everything else I need from the office with no problem at all."* Management consultancy

> *"Before we had the Superfast broadband I did 94,000 miles in fourteen months which is quite a few miles, now I do about 28,000, it's made that much difference."* Financial services

Several SMEs reported that a reduction in travel also improved their work/life balance:

> *"Now I can manage two projects concurrently in different locations. I can have a project running in Serbia and one in Tajikistan at the same time and I can find out what's going on in both of them, rather than getting on a plane and disappearing for a week."* Management consultancy

> *"I spend a lot less time travelling now and I think the whole work and home balance thing is much better because of it."* IT management

SFBB not only enabled participants to save time on travelling and attendant costs, it reduced frustration and enabled them to work in a different and more effective way:

> *"I think one of the things that has happened is that you can do business in a very different way. I mean certainly the sort of business I do, I could never have done from home in Cornwall. I would have had to have been up in London, dealing with people up there because they are the sort of people I interact with, yet now I can do it quite happily from my home office, so it is looking at a totally different way of doing things really. Yes, it does speed up your business but actually it means you can look at your business model from a completely different perspective."* Management consultancy

> *"We have to do compulsory CDP professional development and with Superfast there you can get into webinars, live webinars where you're there and you can ask questions, you can discuss with some very informed people about any particular subject that matters to you, get your CDP points. So that means you don't have to go out, you don't have to be in London, you don't have to go some ridiculous distance."* Education and training

Being able to reduce travel provides a number of advantages over and above any financial gain; it provides additional convenience, improved efficiency, time saving, and reduces carbon footprint.

6.2   Skype conferencing

Few of our participants reported using commercially available video conferencing (unless hosted by a company with whom they were dealing) but there had been a substantial increase in the use of Skype as a result of SFBB that was not possible before:

> *"I have conference calls with, well, today I had one with Mozambique, Brazil, South Africa, France and Cornwall, and you couldn't have done that before."* Management consultancy

> *"It makes Skyping a lot easier as well, especially if you are holding a conference call...it makes an enormous difference that you have got a decent bandwidth so you can get everybody in..."* Financial services

> *"Skype has come into its own as far as I'm concerned. It's almost like being able to be in two places at once."* Land-based services

Participants also cited an increase in the use of Skype as significantly reducing their telephony costs and the need to travel:

> *"It's reduced my telephone bill definitely. Previously I'd be using the mobile or before that using land lines and it could cost a fortune."* Creative media and design

> *"Now we can use Skype and it's virtually free you know, so hundreds of pounds a month can be saved. That's been quite useful."* Business services

> *"I'm using Skype a lot more, it lowers telephony costs, it's reduced the amount of travel I need to do and I find it very reliable now. If a stud has got a problem with a horse or a foal, they can actually show me, I don't have to be there. I've got no complaints with the reliability at all."* Land-based services

The ability to use Skype effectively contributes to a reduction in the need to travel because it affords the face-to face contact that is important to many SMEs, whilst saving time and costs:

> *"I use it much more now, before the video was unreliable, the quality was much poorer, although it depends on the infrastructure of the country I'm talking to. Some of them are great, some of them are hopeless. Serbia and Armenia are good but it helps with face-to face communications in lots of ways."* Management consultancy

As illustrated in the quote above, Skype is not an entirely perfect solution because it is dependent on the infrastructure at the other end. Nonetheless, most found it a very effective collaborative tool:

> *"We work with structural engineers and quantity surveyors, we can be looking at the same drawing at the same time and actually putting notes on it, it's brilliant for that."* Architecture

"Well I mean you can send out an idea, or a diagram, or a table and they get it almost instantly, so while you are talking to them on Skype or whatever, you can collaborate and you can say 'well I have amended line 55,' you know..." Business services

Only a minority noted any difficulty in the ability to share documents over Skype but they had already devised workarounds:

"If you decide to attach a document while you're having a conversation on Skype it can be quite slow. It's usually quicker to go to your email and email the document." Financial services

Despite any shortcomings, participants were delighted that SFBB had provided them with the opportunity to collaborate more effectively and that it cuts the frustration of travel and the expense of staying in hotels, hence they claimed that it had provided them with a new, rather than simply an improved way of working:

"The way I work is all about collaboration with all sorts of people across the world which I could not have done before, so it is a new way of working really, as opposed to an improved way of working." Management consultancy

There is no doubt that the ability to use Skype with SFBB is having a dramatic impact on how SMEs conduct business and their ability to collaborate, changing not only what can be achieved, but the way it is achieved.

6.3   Increased collaboration opportunities

We found a marked increase in collaboration opportunities as a result of SFBB and participants felt this was very beneficial to their business. All were collaborating more with SFBB than with previous broadband provision and all agreed they are now working with a wider network of people:

"It has improved networking essentially, it has enabled people to communicate more effectively with other people, collaborate with people more efficiently if you like." Management consultancy

"Superfast Broadband has made a real difference to my business. Definitely. It has enabled me to make conference calls all over the world, and it has enabled me to have consistent communication, uninterrupted. It's brilliant." Land-based services

"I use a lot of webinars, so for me it's made a massive difference. I can have consistent communication with people without it dropping out and losing connection. When you are in the middle of a sale at the end of a presentation, if you lose your broadband, you've lost everything." Business services

"We have daily communication with traders all over the country and it is being able to pass information quickly. The market can change overnight; it can crash and drop

100 points in five minutes and if I can't communicate with those people, I am in big trouble." Financial services

The ease with which communication can take place with SFBB connectivity also had an effect on SME's ability to widen the circle of those with whom they collaborate and this was considered to be very important:

"We are working with more people because of this; it just seems easier to communicate with people." Fire and flood restoration

"It makes for better working relationships. When we set up in 2004 the early stage of our business was going over to meet people face-to-face a lot more...whereas now we don't need to do that, we can do a lot of things straight away, immediately with Superfast." Education and training

Several factors contribute to this increase in collaboration; SFBB affords better, faster and more reliable connectivity, and better quality Skype communication is now possible.

We have also seen evidence of SMEs making more use of social media as a result of SFBB:

"I never thought I'd be saying this but now that I'm using Facebook I feel that I'm more in touch with the customers I do business with…and it's not just customers, it's suppliers, it's a more informal way of staying in touch. I couldn't be bothered before with the connection going down all the time, it felt like too much trouble." Retail

"For most industry I kind of think that Facebook and Twitter is essential for helping you build your brand nowadays...and letting people know what's going on, trying to attract them…you build a kind of following as well." Tourism and hospitality

Several participants reported now using social networking sites for business and all felt that this was a positive change in that it enabled them to collaborate beyond the boundaries of their business premises, helping them to build better relationships with suppliers and customers alike:

"Social media has changed the way we communicate dramatically...it's the trend of communication now." Retail

Although some participants were using social media prior to the introduction of SFBB they were unanimous in their assertion that the reliability of SFBB connectivity made it much easier and more effective:

"The fact that I have got a reliable connection now makes it so much easier." Tourism and hospitality

The way SMEs are communicating with customers, suppliers and collaborators is changing and SFBB is facilitating that change, improving agility and responsiveness.

For SMEs, as for larger corporations, innovation is vital in order to maximise productivity, particularly in the current economic climate, and innovation is driven by collaboration. The greater reliability of service and bandwidth capacity offered by SFBB has provided SMEs with new capability to use Skype much more effectively as a collaborative tool.

6.4   Changing patterns of employment

Some participants reported they could reduce overheads with SFBB because, as a result of being able to work faster and more efficiently, they need fewer employees. None had made any redundancies but neither did they view SFBB as creating more jobs, at least in the short term. However, although none of our participants reported having created more jobs, several reported others they knew of taking on new employees as a result of SFBB:

> *"Personally I haven't taken on any more staff but I have clients who have."* Management consultancy

The reasons participants gave for not taking on more staff were twofold; they were able to be more efficient themselves as a result of better connectivity and were able to collaborate with, rather than employ others, as a result of SFBB:

> *"To some extent Superfast Broadband means that you don't have to employ people. Whereas if you were running this sort, or my sort of business 5 years ago, to run it to the level I run it at the moment I would probably have to have somebody else but I don't need it now because I can be so much more efficient online, I can involve my colleagues in other parts of the world. It's a bit like the old fashioned secretary, as soon as we got word processors you didn't need an old fashioned secretary because you all did your own."* Management consultancy

> *"I don't think there is a direct correlation between the bandwidth that you are getting and the number of the people you can employ."* IT management

> *"You are reducing the number of people you actually need, because you can be so much more efficient, arguably the less efficient business is becoming that way because they have got more overheads."* Financial services

SFBB affords SMEs increased access to a wider skills base through greater opportunities for collaboration with a wider network of potential employees. Some participants were of the opinion that this had already changed working practices and the way people are employed:

> *"That collaborative word has taken over from employee."* Management consultancy

> *"It's not really relevant for me to say 'yes I am going to expand my little office set up' because I just go and get someone in to help for a specific task."* Business services

> *"We are like a sort of network of people who know who to talk to. So I might say 'here's a bit of work for X', great, and two weeks later Y will say 'I've got this bloke, go and see him' or whatever, and you can do that over a larger area faster and more efficiently."* Financial services

Participants said they were able to access the best and most appropriate skills from a skills base that might exist worldwide rather than be confined to those in their immediate vicinity who made need training or up-skilling. This enabled SMEs to be more discriminating in who they employed and for how long in order to achieve a particular outcome and it was common for them to describe taking on collaborators on short term contracts.

A minority of participants were reluctant to take on employees due to changes in legislation regarding employment and for others it was a lifestyle choice:

> *"We've employed people in the past but due to the employment laws now…well, it's a minefield to be honest with you."* Utilities

> *"Our business is a lifestyle choice, we started 15 years ago because we didn't want to have people to manage, we just want to manage ourselves. Anyway we're not very good managers."* Motor trade

> *"I'm hoping to retire soon if I can, I will in a few years and I don't want to be taking on new people now."* Business services

It is possible that job creation as a result of fibre connectivity will take longer to materialise and may become more widespread when SMEs have had the opportunity to explore the benefits more fully than over the twelve month period of connectivity that our research covered. However, the growing trend in micro businesses and particularly in those having no employees at all may also be a factor. In 2012 approximately 88.7% of VAT and/or PAYE registered businesses in Cornwall and the Isles of Scilly, were classified as micro businesses[8] and this figure is even greater if those who are under the VAT threshold are included.

Whether or not SFBB really will change the way people are employed remains to be seen but Cornwall has a vibrant community of SMEs who all agree that Cornwall is an attractive place to live and work. Setting up in business is one way that natives can remain in Cornwall but that potential also attracts incomers and returners. The introduction of fibre connectivity enhances the attraction of Cornwall still further and helps nullify the negative effects of poor road, rail and air infrastructure.

6.5   Increased use of Cloud services

Increased bandwidth capacity is the vehicle that enables far greater use of Cloud services. Use of Cloud services helps reduce overheads and capital spend and it provides reliability, security and availability that all contribute to greater convenience. Many participants said use of Cloud services had only become possible with the introduction of fibre connectivity:

> *"It has only just become worthwhile since we've had Superfast."* Accountancy

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[8] www.**cornwall**.gov.uk/idoc.ashx?docid=4fb56226-a737-47a5

The speed and convenience of using Cloud services was a major driver for most:

> *"Certainly if you are backing up onto the Cloud, it is so much quicker. Rather than saying right, stop what I am doing, leave that to run for an hour to back up everything to there, it's just done."* IT management

Participants reported using Cloud services mostly for backup and storage but also processing power e.g. rendering on the Cloud rather than locally:

> *"We used to leave some workstations on to do photorealistic renderings and even though they were very powerful computers it would take a heck of a long time to do a high quality rendering, I can do it in the Cloud now and it's done in a minute and half."* Creative media and design

> *"A lot of companies like us use the Cloud for back up now, off site."* IT management

Participants reported increased use of applications such as Google Docs and Dropbox as a direct result of SFBB connectivity. Although these could have been used over regular broadband for many poor connectivity made this too cumbersome a process. SFBB acts as a catalyst that provokes change in working practices as more possibilities are opened up through improved bandwidth capacity and greater reliability:

> *"I've started using Google documents, it's absolutely fantastic."* Financial services

> *"I don't know if we could have done it without Superfast but until we got it we simply didn't think of it. Now we've just started playing with ideas. I don't think technically it would have been impossible without, maybe, maybe not... but it's Superfast that made us think of trying it."* Tourism and hospitality

Cloud services are emerging as a major disruptive force as a result of SFBB. In facilitating the use of Cloud services, SFBB offers SMEs the opportunity to revolutionise the way they work and compete far more effectively with their larger rivals. The Cloud enables SMEs to access services without the need to invest in expensive IT equipment and provides flexibility that was previously unattainable. The ease, convenience and cost savings Cloud services provide are likely to play an increasingly important role in SME IT operations and as use grows and evolves, it is likely that dependence on such services will increase.

6.6   Remote working becoming the norm

Participants reported that SFBB promotes remote working and this was perceived to be advantageous in several respects, primarily in reducing the need to travel:

> *"It cuts down on the number of journey's you've got to make, with us for example it cuts down the number of times we visit branches because we can just log in, see what's going on, see what the stock levels are and just do it without actually having to go there."* Retail

"It's made a big difference to us, there is a company that provide us with our booking system and it's quite complex. They used to have to come all the way down from Shrewsbury and sit at our PC, now we can just remote log in and sort any problems out. It's making more of a difference to them than us actually I suppose; if we have got a problem it means we don't have to wait for them to drive all the way down here." Tourism and hospitality

Participants also discussed how remote working reduced overheads and allowed them to work faster, more efficiently and from different locations:

"And me - logged into several computers at the same time, downloading, uploading or whatever...and when I have been away on holiday you can do the remote log in back home and still help your companies out as well because they have got Superfast and it's quite an easy session to go through...it's just as if you were there." IT management

"We've got a group of four different shops in the area and we can save time and money considerably by logging on to the computers of all the branches just from one branch and do the ordering for all of them in one go, so that's been very good." Retail

SFBB also enables SME's and their employees to work from home and this was seen as an advantage in reducing overheads in terms of office space but it also has a side-effect of contributing to sustainability:

"Our office is physically at home, as in it is on the residential premises. Lots of our clients have sheds in their back garden now and work out of there." Business services

"Lots of people have gone self-employed after they've been made redundant. They're dropping these £2000 log cabins in their back gardens, very nice offices they are too." Management consultancy

Much of the ability to work at home is centred on access to and use of Cloud services made possible with SFBB:

"A lot of systems we are using are Cloud-based so when I have someone log on it will update everything forwards and backwards and you're able to see what work they've done, so there's no need for them to come into the office. You just send something out and say 'I need this' and they can fire it back to you, you don't have people just sat around the office all day drinking coffee and talking. That's why we wanted Superfast, to be able to do that quickly." Publishing

"Is it worth dragging somebody into the office every day, half an hour there, half an hour back, is it time effective? At the end of the day you've just got to look at what they are producing." Business services

All participants said that SFBB provided them with more opportunities to work from home and were happy for employees to do the same. Whilst this was advantageous in terms of productivity and overhead reduction some felt it also had disadvantages in that the work/home boundary became blurred:

> *"It's got its downside because you are always available."* IT management

> *"Now I'm probably trying to do too much because I seem to be busier now than I was before in terms of myself and with the business growing. It's hard to switch off from it; it's always there isn't it?"* Land-based services

SFBB is the vehicle through which remote working and home-working is made possible and this is likely to expand as confidence in the technology grows and SMEs and other employers who may be considering relocation explore what is possible.

6.7   Faster turnover

Participants reported several examples of improvements in business turnover as a result of being able to work faster and more effectively and this was seen as having a major impact in improving cash flow:

> *"The fact is, if you have got 30 clients and you are sending images out to them, large 2meg files, high definition files, it is just a nightmare on broadband of 1 or 2 meg, but when you have got 57 meg you are then able to send out all this information very quickly and get a response as well. So it speeds up the turnover, the turnover of business actually improves."* Retail

> *"Well it has had a major impact on what I do because I am able to send out images to clients throughout the world and then form that deal within the same day, funds are there instantly."* Retail

> *"Cash flow is better isn't it... with Superfast Broadband it's making the whole process quicker, everything is faster..."* Retail

Participants were also aware that faster turnover can provide a competitive edge by improving response times and creating greater agility:

> *"It puts you ahead of the game, if you can get back faster to your prospective customer or client you have got more chance of clinching the deal than if you are taking the old traditional methods."* Fire and flood restoration

The ability to speed up turnover is valuable to SMEs because it enables them to increase demand and boost sales. This makes small businesses more competitive and improves cash flow and that is particularly important in today's economic climate.

6.8   Creating a competitive edge

We found evidence of participants achieving a local competitive advantage over those in similar businesses who had not yet taken up the SFBB opportunity:

"I'm offering Wi-Fi to my competitor's guests because they haven't got SFBB yet." Tourism and hospitality

"It's given us an edge because we are the only ones that have got it." Financial services

This advantage was not confined to local business dealings however, some participants were aware their speeds were greater than those in the capital and felt this capability created a wider and more compelling competitive edge:

"We are actually faster than a lot of places in London, so we have definitely got an edge in terms of speed." Tourism and hospitality

"I look after a dental practice, for years now we have been looking after them and I think, because of the remote log in scenario, I think we have stopped probably bigger companies coming in and doing the IT support side of things, they just pick the phone up and we can log into any of the surgeries at any time and sort them out." IT management

While not all participants were as optimistic, even the more reserved felt that SFBB had levelled the playing field:

"It seems like it has levelled the playing field doesn't it? Not necessarily tilted it in our favour, but it means we can do everything that people in London can do pretty much." Management consultancy

The ability to access SFBB is fundamental to SMEs ability to remain competitive, particularly in Cornwall where other infrastructure is lacking.

6.9   Improved business agility

One of the most discussed advantages amongst participants was the way SFBB had improved business agility, flexibility and response times and again, this was linked to improved competitiveness:

"I think what it does is it enables us to make use of one of the edges that small, independent, self-employed companies tend to have which is agility. The big companies don't have that because the big companies have to rely upon process to ensure that quality is delivered and process tends to build in sclerosis and inertia. But now, because we have got Superfast Broadband we can actually turn round proposals very quickly and we can respond on what it is the client wants in a much more responsive manner, and in a personal manner which actually, people tend to like." Business services

Agility and responsiveness are perceived to be strong advantages that small businesses have over larger companies that are hampered by process and SFBB was perceived as increasing those qualities:

"I deal with people on a one-to-one basis...if you are dealing with a large multi-national company they might not respond for some time, yet when you have someone who is going to respond to you instantly, that means everything. Even if you come back with the wrong solution, it's the speed at which you respond and communicate. A large multi-national company is not capable of that." Managerial consultancy

Rapid response time is crucial to SMEs and participants reported that SFBB had the effect of raising their expectations of the response times of others with whom they were dealing:

"The thing we hate the most as business people is the lack of response from other people, that is the worst thing in business." Financial services

"For us, in a way we are expecting a response a lot quicker because we are sending out the questions and we expect them to be on the same system as us." Creative media and design

Several participants reported frustration in dealing with those who do not respond quickly:

"One big frustration is...you are sending out communications, you are responding instantly and you expect them to respond instantly, but they don't. You can't have virtual conversations with somebody that doesn't know how to use the kit or hasn't got it and I find, especially over in the west of the country, they haven't built up a way to react, or even use the broadband." Accountancy

"They'll see a communication but they don't know that you are using Superfast, their inertia is still in place, especially with the big companies." Retail

It could be argued that some of the benefits and advantages participants described could have been achieved with effective regular broadband but the simple fact is that this was not an option for many SMEs. Before the introduction of fibre connectivity many participants were operating with below optimal connectivity and found it necessary to devise a series of workarounds to accommodate slow speeds and poor bandwidth.

SFBB has become a critical enabler for SMEs in Cornwall as illustrated by the incremental benefits over regular provision that make a compelling case for adoption. At the very least the provision of fibre connectivity has provided a level playing field and, given Cornwall's peripheral location, that is a valuable asset in itself, but SFBB has provided the region's SMEs with far more than that; it has enabled new and unexpected ways of working and opened avenues of collaboration that would have been otherwise impossible.

7   Social Benefits of SFBB

Just as participants were able to articulate the economic benefits of fibre connectivity, they also discussed a number of social benefits. These were centred on overcoming Cornwall's peripheral location, attracting inward investment, improved ability to operate a business in

Cornwall, choosing SFBB enabled premises, improved work/life balance and potential for regeneration.

7.1 Overcoming Cornwall's peripheral location

Cornwall suffers from its remoteness and lack of effective road, rail and air infrastructure. There are only two major road links between Cornwall and the rest of Britain; the A38 that crosses the River Tamar at Plymouth and the A30 that crosses the county border south of Launceston. Cornwall has only one airport at Newquay that offers an increasingly restricted service and an alternative airport just over the county border in Plymouth has now closed. Rail services to the county are slow, although there is an overnight service to London. However, participants claimed that SFBB has made location irrelevant and helped overcome many of these difficulties.

Some SMEs spoke of businesses they knew of that had recently been set up as a direct result of the introduction of SFBB, or were likely to survive and flourish because of SFBB:

> *"I certainly know of...a lady who has come down and runs an Internet business, a shopping business...I think anything from that perspective...because then it doesn't really matter where you are.. Location is irrelevant, it's great in the summer, she runs a small craft business but she does most of her business online."* Business services

> *"I know of shops that probably wouldn't survive without it because just the passing trade that they get is not enough, they also rely on mail order sales as well, particularly niche businesses. There is one down road from us which does body boards and okay, they get a fair old sale during the peak season in the summer but their Internet side allows them to trade at a healthy level all year round, so the shop survives."* Retail

One participant stretched the idea of location being irrelevant to maintaining his business operations from his holiday venue:

> *"My case is a bit different - I have just spent five days in Majorca and I could carry on working as if I was in the office from a laptop, and nobody was any the wiser. I transferred the phones to over there and because I made sure that I didn't actually have to meet anyone for those four days I was away, my clients were none the wiser."* Management consultancy

Participants were of the opinion that SFBB could open up markets to them that had been inaccessible before due to poor connectivity and were optimistic that as a direct result of fibre connectivity, businesses in the region had a new lease of life and far greater potential for growth and success.

7.2 Opportunities for inward investment

Many participants were optimistic about opportunities for inward investment to Cornwall created by SFBB:

"I moved here from the Far East and I didn't know anyone within 200 miles when I arrived. I selfishly hope that Superfast attracts more people to relocate in the county. I feel very privileged to have sort of fluked finding such a great place and I hope more people come, they should do, not just artisans, but more small businesses." Land-based services

"We can create little hubs for them whether it's Bodmin or Redruth; all these places are vibrant now with fibre. I hope it doesn't affect the quaintness and the charm of the place but it could be a real step forward and attract more like-minded small businesses." Creative media and design

Although some felt this might take time to materialise:

"I don't think fibre broadband is going to turn Cornwall into a super county, not yet, but you can work more efficiently and you can download files and you can do Skype efficiently, but it's not going to change Cornwall that much. We need investment, if bigger companies move to Cornwall that would be great." Business services

A small minority felt that the opportunity for inward investment only existed while Cornwall had a head start in fibre connectivity ahead of other areas in the UK but comments were still positive:

"I think that chance has gone for inward investment because the whole of the country will have it very shortly, but it will be a great equaliser." Financial services

Cornwall is traditionally a holiday destination and several SMEs said they would like to see a move away from a business emphasis on tourism and services for tourists and felt that SFBB offered an opportunity for that to happen through inward investment:

"At the start I was in the holiday trade, but I would like to see as much emphasis put onto other business interests in Cornwall. A little over a third of the income coming into the county is via the holiday trade but as a business person I'm looking over my shoulder saying 'what's happening to the other two thirds?' There's a lot of chances being missed if we just concentrate on tourism, I think it's blinkered, we need to look at other industries, there's room for both." Management consultancy

Others said that inward investment would provide them with the opportunity to broaden their own customer base and cited examples of how SFBB had already made this possible:

"There is a girl in our village, we are like just outside Truro, there is a girl there selling sailing bags and things like that but prior to that she wasn't doing very much at all. Her business has really took off and she is obviously on Superfast as well, but I think people are moving down and setting up businesses here knowing that they can get Superfast Broadband." Retail

"I can make money out of America, I use a site in New Orleans and sell stuff so that just gives you another income stream, I don't have to be in Cornwall to do that...but you do need Superfast." Retail

Some participants felt that fibre connectivity alone made enough of a difference to Cornwall to attract new businesses that might be considering relocation. Others felt that it was still dependent on better road and rail infrastructure and that this required development first:

"The only way you'll attract business here is to actually improve the infrastructure to bring industry in., the physical infrastructure needs improving. We need that to get businesses to relocate." Land-based services

"I think high fuel prices make Cornwall a bit more inaccessible, the roads, the rail and flying, the prices are just going up and up. So, in terms of attracting inward investment which relies on moving things, or people, we are just too far away, and that's down to the cost. Anything beyond Bristol or Exeter, people don't believe it's there, There's dual carriageway to Plymouth, then it stops and the same with Launceston." Management consultancy

"If we had the infrastructure it would encourage more people to relocate here." Education and training

Some were also concerned that Cornwall might not have the right skill set to attract inward investment:

"At the moment it's a lifestyle choice to live down here, you are not going to have that many big companies coming down on a lifestyle choice; you have to have the infrastructure and the skill sets." Creative media and design

SMEs were very keen that any inward investment opportunities should be exploited and that they should encompass a move away from tourism and the service industry to provide better paid jobs and opportunities in the region.

7.3 Ability to stay located in Cornwall

Living in Cornwall and running a business is a lifestyle choice for many SMEs. Given the infrastructure problems from which Cornwall suffers, some had been considering relocating in order to conduct their businesses more effectively. However, with the introduction of SFBB none saw any need to move away from Cornwall:

"Well, certainly if I wanted to work ten years ago I did seriously consider moving out of Cornwall but I certainly don't have to now. I can work with clients in France and some in London and handle the whole thing from Cornwall...that wouldn't have been possible before." Management consultancy

"I think it's proved that location is not necessarily that important, providing you have the facilities, which we do now." Tourism and hospitality

"I seriously was thinking about moving to Henley or to London...but with the Superfast Broadband I don't have to." Management consultancy

"My whole life has been, even from when I was at school in Truro, wanting to stay in Cornwall so it's helped me to stay here, I haven't had to go elsewhere, my reach is bigger than it was before." Architecture

As a result of SFBB some SMEs described being able to live in Cornwall and operate as though they were in London (or elsewhere):

"I think loads of people would like to relocate down here if they could do what I do. I've got a virtual office in London and if we've got something going on I can have Skype on and be talking to my secretary as though she was sitting on the other side of the desk from me. I can have two or three Skype lines on if I need to and be speaking to the other senior partner just as though we were all in the office." Publishing

"We have a major London client base, we only take clients on in London by recommendation, we don't advertise at all and we don't advertise here. Superfast has enabled us to talk to people in London that don't know us. It's got to the stage where we've taken clients on that otherwise we would have had to get in the car and driven up to see them, and to be honest with you we wouldn't have bothered doing that. So yes, it's had a very positive effect, we're taking on new clients over the Internet." Business services

It is clear that fibre connectivity has already had an impact on business and job retention in the region and as a result we are likely to see improvements in business expansion and economic growth. Whilst these may take time to materialise, fibre connectivity is clearly a key factor in that transformation.

7.4   Impact on choosing premises

SFBB has become so important to SMEs in conducting business that some participants voiced strong views that in the future, property will be sold on the basis of the broadband speeds can be achieved from given premises:

"Ten years ago when you were buying a property say in Truro... you'd look at room sizes...at where the location of the property is...but you would never check the broadband speed would you? My parents-in-law lived up at Blisland[9] which had a dreadful dial-up speed and apparently someone actually bought the house from London without checking the speed. When they look at the property details now I don't know if any of the estate agents put the broadband speeds on, but that's actually something that would attract people to a property." IT management

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[9]It should be noted that Blisland is now SFBB enabled.

All participants said they would definitely be put off buying or moving to a property that did not have SFBB access and for many, SFBB was an absolute necessity in being able to conduct their business at all:

> *"You wouldn't consider buying business premises or even a house without checking the speeds first. If you're moving you have to think 'what would I lose, or what will I retain?' Superfast has become imperative now in any sort of move or relocation. It's certainly one of the things I'd check."* Creative media and design

> *"We couldn't operate without Superfast because we couldn't run the business."* Management consultancy

We found evidence of some participants already choosing and moving to different premises so that they could take advantage of SFBB:

> *"We actually chose a building, an innovation centre which had got Superfast Broadband and that is one of the reasons we decided to move there. Not purely, but it was a big consideration for what we do."* Creative media and design

> *"We wouldn't consider moving premises without checking the speed first, we just did actually. We've moved to a better place and although it's still ADSL we checked and Superfast will be there very soon, I think we'll even be able to get fibre to the premise."* Fire and flood restoration

> *"When we moved back to Cornwall, when we relocated here we brought my sister and she brought her business down, as well as mine. The big criteria when we moved, for all of us, and the only reason we moved back to Cornwall, was to have somewhere with a high-speed connection. That's why we didn't choose the North Coast; it was a major decision for where we'd relocate the business."* Business services

Whilst all our participants told us that SFBB is vital for business premises some said it was less important at home. However many were of the opinion that this is becoming more important now because it provides the opportunity to work from home as effectively as from businesses premises:

> *"I want to be able to work from home so it's vital for me, even if it's just something I want to check up on,"* Education and training

> *"I think it's important for both, and that can only get more so with people wanting to work from home - because with Superfast you can."* Accountancy

Having experienced the value of SFBB for business it is not something SMEs are prepared to relinquish. These were strongly held views and exemplify the value of SFBB to the SME community. Connectivity is likely to influence property prices in the future and is already influencing existing business relocation in the region. Recent reports in the media also support the notion that access to good broadband speeds is an important factor in choosing a property; according to research from the Halifax, almost one third (30%) of people surveyed

said it is likely to affect their thinking on whether to buy a home in a particular area and one fifth (20%) say they would be prepared to pay more for the same home if it had good broadband[10].

7.5 Improved work/ life balance

Very few of our participants reported working fewer hours as a result of SFBB, in fact the reverse was true for some who maintained that better connectivity meant they were always available. However, all said all said they could accomplish more and that this could be achieved more efficiently and effectively. As a result participants said that SFBB had reduced their frustration, created greater convenience and improved their quality of life:

> *"It's not really improved the business but it's made me happy."* Funeral Services

> *"There is no question, it is less frustrating, you switch it on and it's there, there's no frustration at all now, you can work when you want to."* Land-based services

> *"It's just convenience really, if you get a VAT query that you don't know the answer to, you go on the revenue website and download the appropriate literature there and then; it's so quick and convenient where as if it was slower, you would be there waiting for it and you can't respond that quickly."* Accountancy

Although many participants said they used the time saved in working faster to accomplish additional tasks, a minority said it simply gave them more leisure time:

> *"The time I save working I spend stroking the cat mostly!"* Management consultancy

> *"I look at You Tube videos, read the news, things I wouldn't have time for normally, I probably waste more time."* Tourism and hospitality

> *"It's easier to do business when it's faster and I spend less hours at the machine in the evening, having done a day's work, than I used to."* Management consultancy

Other participants suggested that the improved opportunity SFBB provides to work from home would have a positive impact on work/home balance and the local economy:

> *"If people can work from home now they will do, and they can do that and live in Cornwall, that's always been the case. When I came to Cornwall in the early '70s there were a few people doing that but Superfast means more people can come and live here and work remotely, I think Superfast will encourage that. It will be good for them in terms of health and lifestyle and good for us because they will be spending money in the local economy."* Creative media and design

The ability to work from home was cited as having a major impact on improving work/life balance but for many this had only become viable when SFBB became available. A minority of participants were unable to access SFBB from their business premises but had access at

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[10] Telecompaper Europe, Monday February 11th, 2013

home and said that their working pattern had changed to spending more time at home as a result.

7.6   **Increased flexibility in working hours**

In Phase 1 of our research many SMEs told us that they worked very late at night or got up as early as 4am to accomplish bandwidth heavy tasks that would have been impossible in the course of normal working hours due to contention ratio problems. SFBB has enabled many to normalise their working hours providing the bandwidth capacity they need whenever it is required resulting in speedier and more efficient working practices.

Participants reported that being able to conduct business more reliably with SFBB improved flexibility in working hours. They were no longer hampered by having to avoid heavily congested periods of Internet activity when children came home from school, during school holidays, or during evenings and weekends.

> *"It's enabled us to be a bit more flexible with working hours."* Motor trade

> *"Before the quality of service degenerated towards the end of the afternoon, but that doesn't happen now... it's a bit like a dial tone, it's available whenever you want it, so that means you can plan your day without reference to that, which means you can be much more flexible."* Land-based services

> *"I can do whatever I need to do whenever I need to do it, I'm not waiting around until the early hours or whatever to claw back some bandwidth."* Creative media and design

SMEs also reported being able to accomplish more through greater flexibility in working hours although in several cases participants reported that this resulted in working for longer:

> *"I just find, because of the speed of the thing, I actually work longer days because I want to get stuff out because you never know what is coming in the door or down the wire at some other stage during the day."* Management consultancy

> *"As business owners, I would imagine that everybody round the table is very busy most of the time and could probably fill their day 24/7 if they so wished. Superfast Broadband has just made our headaches less I would say, that's how I view it. It's something I don't have to think about now, I can just go there and it will work."* Retail

> *"I get up at 6am instead of 7am now and spend an hour just clearing the decks...it's too convenient!"* Accountancy

Much of the improved flexibility that participants described was as a result of greater reliability and bandwidth capacity:

> *"I don't have Superfast at home yet, I have it at work, but one of the things I do at home is audio editing and I finished a CD and somebody wanted it in London urgently*

so I finished it at home and I got it to them quicker by taking my laptop to work, driving 4 miles to work, connecting it to the broadband and uploading it from there." Creative media and design

Such flexibility is largely perceived to be an advantage but we did find some evidence of the evolution of a 24 hour culture as a result of changed expectations created by more reliable connectivity:

"The downside, from my wife's point of view, is getting ridiculous phone calls at silly o'clock in the morning and they want their machine up and running before the start of their business day... people expect you to be there on call when they need you and that can be 2 in the morning on a Sunday." IT management

"It's the speed at which information is being given to you now....people are more reliant on it..." Financial services

"You are always available in some respects, especially when you are trying to follow a global business like I am. The downside is that you are constantly available and there's not a clear definition for those you work with that you are not working now." Land-based services

Greater reliability and flexibility in working hours was particularly appreciated by those working across different time zones:

"It's the consistency of the signal, your connectivity is there, it's guaranteed. The great thing about that is you have got the flexibility to do it any time of day so you are not restricted by time zones if you don't mind getting up." Management consultancy

This represents a great change in working practices for SMEs who told us in Phase 1 of the research that they worked unsocial hours on a regular basis, trying to pick periods of least Internet congestion so that they could accomplish tasks that were otherwise impossible. The fact that participants had so much to say about the ability to work more flexibly as a result of SFBB also indicates how important this is as a benefit.

7.7   Potential for regeneration

Cornwall has a high incidence of second home ownership that has led to many homes being empty during the winter months, particularly in coastal areas. This has an impact on communities, shops and facilities but some SMEs felt that the availability of SFBB could play a role in regeneration with second home owners taking up permanent residence and working from home:

"I think that there's evidence of more and more people moving out of conurbations and coming down here, particularly those who can work from home." Creative media and design

"I've got quite a few clients who have moved down; they're working from home three days a week and the other two from an office up country somewhere." Accountancy

"It's the way a lot of people want to work these days, depending on what your occupation is. A lot more people can work from home now with these much better connections. The better the connection the more it's going to generate people to come in." Creative media and design

Cornwall has an aging population; there is a higher proportion of people aged 65-79 living in Cornwall (14.4%) than the rest of the UK (11.5%)[11] Regeneration is important to SMEs to maintain, retain and grow their customer base in the region as well as further afield:

"The second home owners, if they came to live here they'd be bringing a larger disposable income than is normally available down here and that can only help the businesses that are already here." Retail

"People would be bringing their skills into the county too, bringing their skills with them and that will help up-skill other people." Creative media and design

SMEs were aware of existing local initiatives and hoped that these could be expanded upon with a new influx of residents:

"We've got techie industries, like Wheal Kitty, there were a number of us in the late 90s, early 2000s working online when there weren't that many people doing it. We called it Silicon Combe." Creative media and design

"In St Agnes there's quite a strong entrepreneurial spirit and because people want to live there they are finding a business they can set up so that they can live there." Creative media and design

"People say 'oh I couldn't come that far, I might stretch to Devon that's all' and I say 'well, do you realise we have the infrastructure now…?' So the message needs to go out, needs to be fed further up the line to let people know and get them here, stop the brain drain." Architecture

Historically Cornwall has experienced high levels of outward migration of those between the ages of 16 and 29[12]. SFBB creates the opportunity for regeneration, attracting a younger population as well as stimulating the return of those who have left in search of better-paid employment:

"I was born here and I love it and I'm lucky enough to have a business here but from when I was 18, I didn't know anybody, none of my friends stayed in Cornwall. They all left but they are coming back now they are in their 30s and 40s. They sort of all left and now they are coming back with different skills and setting up their own businesses and things like that." Tourism and hospitality

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[11] www.**cornwall**.gov.uk/idoc.ashx?docid=353dbf4b-9cf8-47fb

[12] http://www.cornwall.gov.uk/default.aspx?page=22832

"We need better paid jobs in Cornwall, if you want to stay in Cornwall at the moment you have to look at setting up your own business and I think that needs encouraging, the entrepreneurial sort of thing." Financial services

"We need to keep what makes Cornwall special, the reasons we all want to be here and attract technical jobs, low impact, low carbon footprint, you don't want to go destroying the very thing that we all want to live here for, but generate high quality employment." Architecture

Participants were of the opinion that SFBB could also impact on their children's ability to find employment in the region when the time came:

"It could impact that too, it could offer jobs to the younger generation which would stop them leaving." Accountancy

"They all have to leave at the moment, if you want a decent job, if you don't want to be a waitress all your life, it's really sad but it's true." Business services

The implications of fibre connectivity are far reaching; Cornwall has a growing graduate population rich in talents that can be beneficial to business and many graduates choose to stay having completed their degree but this is a fragile trend that requires support. Graduates' ability to find well-paid jobs in the region is likely to be influenced by the kind of economic growth fostered by better connectivity.

8   Environmental Impact

In the course of discussions participants gave many examples of working differently with SFBB that have an environmental impact. Even though participants rarely couched the advantages of using Cloud services, Skype, working from home or reduced travel in terms of improving their green credentials, these opportunities have the potential to reduce SME's carbon footprint. In the course of discussions we also introduced Green Gauge, Superfast Cornwall's carbon calculator tool[13] that helps businesses to log, track and measure fuel usage and carbon footprint.

We gave SMEs the opportunity to talk about the environmental impact of using SFBB and how it might contribute to sustainability issues but found scant evidence of concern, only a minority were interested in this aspect:

"I think it is vitally important to care about our planet; it's all we have got." Architecture

"I use 100% renewable electricity which costs more but I prefer to pay and feel I'm doing my bit." Creative media and design

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[13] http://www.superfastcornwall.org/business-user/green-gauge

"I don't think you can ignore the cutting the carbon footprint thing really. Every time you book an airline ticket it's there asking if you'd like to offset, so yeah, it does bother me." Land-based services

The following comments were more typical of contributions to the discussion:

"Chop the tree down, smack it up in the corner and burn it the following year, that's about as green as I get." Motor trade

"I don't think the carbon footprint is our major concern." Management consultancy

"I don't feel that great social responsibility...For me, the benefits of being able to use the technology are in terms of my lifestyle. That's the bottom line, not in being socially responsible, I like to think we do things ethically but social responsibility is not a primary concern." Digital services

"Being green? It's not a consideration at all." Business services

The type of business in which participants were engaged also influenced whether they considered SFBB could help them make any savings on their carbon footprint. For example, a participant engaged in building and plumbing told us:

"Not for me in any way, shape or form has Superfast reduced my carbon footprint. I used to work from home but now 90% of what I do is physical, I have to come to your house and put a new boiler in or put a new roof on and I can't do that from home." Plumbing/construction

For most participants any carbon saving was overshadowed by an emphasis on the economic aspects and how SFBB could save on overheads, rather than impact on the environment:

"I think the cost of the petrol is more of a concern...most people would say the price of petrol, if you can save a couple of trips..." IT management

"I think they go hand in hand but really it's a case of, if I don't need to go there, it saves me the cost in fuel, but it's nothing to do with social responsibility, it's to do with personal comfort." Management consultancy

Whether or not SMEs were concerned with environmental issues and how SFBB might help reduce their carbon footprint, there were several instances where a positive impact might occur, even though this was not readily articulated by participants.

8.1 Potential for reduced carbon footprint through less travel

Many participants reported a reduced need to travel as a result of fibre connectivity (see section 6.1). Several factors contributed to this: the ability to access information online, better and more effective Skype communication, and working from home:

"Before we would have travelled to archive and record offices but there is a lot more information online now so that's probably cut our travel, a slight decrease I'd say." Business services

"We used to have meetings four times a year in London and now we do some of those meetings by Skype." Management consultancy

"There was always a lot of travelling involved in my job but there's less now because we can do a lot more from home." IT management

Some participants were of the opinion that any carbon savings as a result of a reduction in travel were likely to be minimal because they had already organised their lives and businesses to minimise fuel costs as a direct result of rising fuel prices. Again, motivations were focused on economic rather than sustainability issues:

"A lot of us are working from home anyway. For myself, my office is only three miles from my home so my mileage is very low. I wanted it that way anyway so it was close to pick up the kids from school and also the cost of fuel was rising so it just makes life a lot easier. Personally I don't think it will help with my carbon footprint. The odd meeting, the odd time when I might have to go to Devon to a site where they can show me the issues yes, but that could be a couple of times a month, that's all." Digital services

One group of participants felt that the opportunities SFBB provides for business expansion had actually increased their carbon footprint and they were travelling more than they had formerly:

"Maybe it's very particular to our business but because of the ability we now have to share documents and photos, we can now send a technician to London, or Birmingham, or Newcastle, so they are now driving to Birmingham, Newcastle and London whereas before we were much more regionally based around Cornwall and Devon and that was it really. Getting paperwork back and then data processing it to get the reports out would never have been possible before, so Superfast has enabled us to increase our range of work and out of it all we are driving far more miles." Fire and flood restoration

"Superfast hasn't helped me cut my travel at all; in fact I think I might be doing more now." Motor trade

Better connectivity creates opportunities for some, but by no means all SMEs, to reduce their need to travel. Inevitably a reduction in travel helps reduce the carbon footprint but few participants mentioned this, instead they told us how it enabled them to save on fuel and accommodation costs. This suggests that appeals to SMEs sense of social responsibility in regard to sustainability may best be focused on economic aspects.

8.2   Potential to reduce carbon footprint through teleworking

In the course of our research it became clear that the much improved quality and reliability of fibre connectivity over regular broadband has enabled SMEs to spend more time operating remotely and working from home (see section 6.6). SME employees are also encouraged to do the same where appropriate. In most cases the reasons behind this were convenience factors and to save costs on overheads; office space and heating and lighting, rather than as a carbon saving tactic:

> *"When I worked in a more traditional job I spent two hours a day travelling and I only lived in the centre of Birmingham, less than ten miles from where I worked but the centre of the city was at complete gridlock. It would take me an hour to get home, an hour plus, so I was burning all that fuel which I had to pay for, now I've saved all that money by working from home."* Financial services

All participants were convinced that SFBB opened up greater opportunities to work from home and thought it would result in altered work patterns if employers were willing to embrace change:

> *"Employers haven't got their head around the potential...You would have thought some would have by now but it doesn't seem to be happening."* Creative media and design

> *"For some reason employers seem to be intransigent to allow people to work from home, they think they are skiving or something if you are working from home."* Land-based services

SMEs were adamant that fibre connectivity has made location far less important and were convinced that this would lead to more teleworking opportunities in the future.

Technological innovation has reduced the imperative to be located in a single place from where business can be conducted and our participants exploited the potential this offers to the maximum. As noted by the Government's UK Broadband Impact study[14]:

> *"Information and Communications Technology (ICT) is a major source of carbon emissions, and broadband networks are themselves significant consumers of energy (faster broadband networks can have higher emissions, though the energy efficiency of network technology is constantly improving). However, ICTs (and broadband in particular) offer opportunities to reduce emissions through a variety of mechanisms."* [Source: UK Broadband Impact Study, Feb 2013]

The study also notes that some of the positive impacts from faster broadband may be offset by 'rebound' effects, for example, working from home is likely to entail greater use of ICT and each home from which business is conducted will incur extra heating and lighting. Similarly teleworking may also create extra car journeys to complete tasks that would otherwise have taken place as part of the journey to and from work. However, there are a

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[14] https://www.gov.uk/government/publications/uk-broadband-impact-study February 2013

number of recent studies[15] focusing specifically on measuring the carbon impact of SFBB that take into account the rebound effect that quantify the benefit and are endorsed by the Carbon Trust[16].

8.3 ICT use and carbon emissions

SMEs were aware that ICT use is a significant source of greenhouse gas emissions, from computers to smart phones:

> *"I've heard that the Internet uses about 5% of the electricity produced in the world...And if you think about all the routers that have to be made and all the wires that have to be made...just because you are working from home and doing something on the Internet doesn't mean it's greener."* IT management

> *"It's like catalytic converters, you know, for the car. They were supposed to help cut emissions and they created more than they stopped in the process of making them."* Retail

The ICT sector is currently reported to be responsible for 2% of global greenhouse gas emissions[17] and this is set to rise. However, while ICT use is the cause of a percentage of greenhouse gas emissions, it can also provide opportunities for savings such as using Cloud services instead of running energy intensive servers in-house.

The degree to which fibre connectivity has a positive impact in reducing SMEs' carbon footprint is likely to be influenced to some extent by business sector and the nature of the business in which SMEs are engaged. For example the potential to reduce travel or take advantage of Skype for meetings is likely to be greater for a business that is home or office based than for those engaged in businesses like plumbing or building where travel to, and being on site is imperative. However, this report provides a number of examples of participants using SFBB to operate their businesses more efficiently that result in a reduction of emissions, even though they did not perceive or articulate the benefits in those terms. These include reduced travel as well as dematerialisation effects such as electronic rather than paper billing and electronic transfer of files rather than on disc via a courier. Some of our participants were concerned with, and anxious to reduce their carbon footprint, but most were more concerned with reducing costs. Even though few participants placed environmental issues high on their list of priorities and benefits of SFBB, our research shows that it is already reducing the need to travel for many and this is highly valued. This suggests that appeals to the economic benefits of carbon reduction may have the most impact in this domain.

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[15] http://www.btplc.com/Betterfuture/NetGood/OurNetGoodMethodology/index.htm

[16] http://www.carbontrust.com/ Carbon Trust – An independent, not-for-profit company set up by the UK Government to help organisations reduce their carbon emissions and become more resource efficient.

[17] http://news.techworld.com/green-it/3434388/smartphone-usage-driving-up-greenhouse-gas-emissions-report/

9 Business Impact and Ability to Work Differently

Undoubtedly SFBB is providing SMEs with more effective and efficient ways of working but it also affords significant additional benefits because it creates opportunities to work differently.

9.1 New opportunities with SFBB

Having had experience of using SFBB a major benefit to participants was that it enabled them to exploit new opportunities to operate differently, even if they had not considered these ideas at the point of signing up:

> *"It's hard to know what it's going to do for you or what you're going to do with it until you start exploring and playing around with it. You experiment with it and then you end up doing things you wouldn't even have thought about doing."* Management consultancy

One participant described how SFBB had enabled him to develop a new product:

> *"It occurs to me that we have actually introduced a new product because of Superfast. It's because it's easier and faster now. We offer a desk top survey which is everything we can find out on the Internet without going anywhere else as a sort of cheaper version of what we do. That's really only since we've had Superfast because it's so much quicker and easier now."* Business services

Another participant in the computer repair business told us that he was now able to diversify his business to build a new revenue stream by teaching abroad over Skype as a result of SFBB:

> *"We do remote log-ins and fix computers remotely, and I have done teaching abroad without leaving the house because I just connect up my computer to one set up over in France, Germany or wherever, and I have got Skype, and they can see me and I can control their computer. So I have been able to teach in Buenos Aires from home."* IT management

A caravan site owner told us that not only had SFBB had enabled him to work faster and more efficiently in taking bookings, it had opened up new opportunities for him to enhance his holiday venue by offering Wi-Fi to customers:

> *"We sell ours to our customers because everybody wants Wi-Fi and we can have upwards of two to three hundred people on the caravan site at any given time. We were giving it away for nothing before we went onto Superfast because you just couldn't guarantee it; it was such a bad service you couldn't charge anybody for that.*

So we went straight onto Superfast the minute we could...we charge £12 per week, which works out at £2 per day but that's per device..." Tourism and hospitality

The same participant also described how this capability had improved his competitiveness and helped him broaden his customer base:

"There is another holiday park that backs on to us and we rake in quite a bit of money from the fact that their customers haven't got it." Tourism and hospitality

Another participant described how SFBB gave him more control and enabled him to stay in touch with aspects of his business that took place around the world that would have been impossible to achieve otherwise:

"It's stopped me trying to be in two places or three places at once, with live streaming everything comes to me. I sold a horse in Australia and I was able to see it go into the sales ring, watch it go around, talk to the stud...and I had a horse run in France and I was able to watch that rather than travel to it, and I had a foal born in Ireland on Tuesday and I saw that. It all comes in through one little PC, I've got lots of screens all in one room. It's the reliability of the streaming now, I can watch a horse race from Japan or Hong Kong and it's pretty much instant." Land-based services

Another example is that of a publican and hotel owner who described how SFBB had opened up an opportunity to expand the facilities she was able to offer customers. She provided wine tasting dinners with a live link-up over Skype to vintners in Australia and France to talk diners at her premises through the wines that accompanied their meal. This two-way interaction allowed guests to ask questions of the vintner and provided a novel, entertaining and interactive experience for all:

"It's been really fun actually. We've done live link-ups around the world to different vineyards and brewers and stuff so that's been the exciting side of it, my customers love it." Tourism and hospitality

Prior to access to SFBB the only way this could be achieved was by flying the vintner to England to appear in person with all the attendant costs of travel, accommodation, and time that entailed.

This participant also exploited the benefits of fibre connectivity to offer Wi-Fi access and described how this had helped attract customers:

"It's been brilliant, I've had people working, running their business from my pub now which is great for me, and for them too. Now that I can offer Wi-Fi that actually works we've had a lot more business travellers too. We don't get a mobile signal here so that increase in connectivity you get with Superfast has been really important to communicating with the outside world for our customers, and the staff. And social networking too, that works to promote your business you know, people are always

tweeting when they are having a nice pint of beer, so there's all those sorts of benefits too, it's made a huge difference." Tourism and hospitality

Having discovered the opportunities that become apparent as a result of using SFBB, this participant talked enthusiastically about plans to exploit that capability further with interest groups that could be run from the pub, including a book club with a live link up to an author. A further new revenue stream also in the pipeline was the possibility of expanding use of the pub as a wedding venue with the capacity to provide a live link-up with guests who were not able to attend, who might be anywhere in the world. Plans were already afoot to offer this facility to a bride and groom who had a relative serving in Afghanistan who was unable to attend their wedding in person.

> *"We could link up with the whole garrison! It's really novel, I don't think anyone else is doing this and it will provide entertainment for them and the people here at the wedding breakfast, just like they are in the room with us, we can see each other and hear each other's conversation."* Tourism and hospitality

SFBB had provided another participant with the ability to devise a new method of online trading:

> *"I have developed a hedging strategy so the Superfast Broadband gives me a tactical advantage. I can give one trader a certain set of trading objective and I can give someone else a completely contradictory set of objectives. Put the two in unison and I have an advantage in then making a profit. We would never have been able to do that in the past, the trader would have been left more or less on his own and would have to work on his own initiative whereas we can interact now, and allow contradictory tactics for each trader."* Financial services

We also found evidence of SFBB enabling new ventures in the music business that had not been previously envisaged. One participant spoke about delivering online concerts over SFBB rather than travelling the world:

> *"The music business has changed a lot with technology over the last 20 years with people downloading stuff and all the rest of it. So although we have a catalogue of CDs and DVDs and stuff, the beauty of being able to produce your own stuff now is that you can have people all around the world downloading. We have a pocket of people in Toronto, some from San Francisco, some from Tokyo; it doesn't make sense to go on tour and go to just one place just because you have worked out there is a sprinkling of people who potentially like your music in that town. With Superfast Broadband we can actually put together a package that says 'we are playing live from our own home and if you would like to come to the gig you pay in advance and then you will be able to view this concert from wherever you are. So we can mail shot all of the people who have downloaded our music over the last however long and they can see their own televised concerts."* Creative media and design

This participant had also developed a new revenue stream as a result of SFBB. His wife had been providing master class music lessons from their home to local pupils and those abroad who could afford fly to Britain to take advantage of her expertise. Since taking up SFBB however, she was able to offer those lessons over the Internet and although she had originally expected her clients to be drawn from the UK, she found she could fill requests from students as far afield as Japan:

> *"She has had people come from all around the world for her thriving master classes but the people who come are very well-heeled and flying from the other side of the world. Then we realised that we can now advertise these master classes online to anybody and we can do it through the Internet, so that is a new revenue stream for us. Anywhere on planet earth we can be available, so yes, that is something we would never have dreamed of before...we can now offer private classes to people via the Internet. Obviously it depends on the connection at their end but we can do that. So there are two distinctive new revenue streams that we couldn't have done without this, or even thought about it."* Creative media and design

Even when participants had not fully exploited the value of SFBB themselves, they knew and were appreciative of what others had been able to achieve to grow their business:

> *"I have a client who was telling me last week that he's had a 60% increase in business since he opened up his online shopping facility over Superfast. It isn't even complete yet but in the 14 years that I have been working with them, this is the busiest year that has ever been. When you think of that against this background, the state of the economy...it's all down to the fact that people can get at you, they can see what you have got to sell, they like it and they will buy it. Superfast has enabled that client to invest £40,000 odd in developing his online facility and that's the first step of three over the next two years."* Accountancy

These examples provide compelling evidence of SMEs willingness and enthusiasm to embrace the new and exciting opportunities that fibre connectivity affords. Given that participants had only had access to SFBB for up to twelve months, the number and variety of innovations they have already devised indicates a very bright future for SMEs in the region.

9.2 Ability to accomplish tasks that were not possible or difficult to achieve previously

A number of the benefits of SFBB participants described in the course of discussion not only enable them to work more efficiently, they also enable them to work differently and provide the ability to accomplish tasks that were impossible or very difficult to achieve with previous broadband provision:

> *"This has changed things significantly; it wouldn't have been possible before. We have technicians up in Newcastle and we have agreements with insurance companies saying 'we will get the report to you in 4 hours.' If the paperwork is in Newcastle, and*

there's lots of it, there are significant volumes, well before it just wasn't possible." Fire and flood restoration

"We trained some of our volunteers to edit video using whatever the package might be, and the idea would be that we can send them a 4 gig video file, without having to worry about it too much, they could edit it and then send it back. You couldn't have done that with just broadband, it would have to be Superfast." Publishing

"I think we take some things for granted and you don't even think about it now...we are only in our second year of this business and our old brochure was a complete load of rubbish and we wanted a new brochure for this season. I think we would have been back and forth to the printers with this and that and pictures and proofs...but we were able to send all of the images that we wanted in the brochure and they were able to send us a proof straight back. We were able to go through it and say 'no, change that,' and all that stuff was done without anybody having to get up off their backsides until they printed one for us to have a look at and we went down to fetch it. I reckon we would have been back and forth god knows how many times..." Tourism and hospitality

Another significant difficulty that had been overcome was the ability to use Cloud services effectively to accomplish tasks that were impossible before:

"Having the ability to do things in a different way means you change the way you work. Years ago people sent us a CD in the post with a load of images on it that took a few days and we worked on that and then we published it up slowly. Now we send them a Dropbox connection and it's appeared on our desktop. Things like moving resources around, images and things like that, we couldn't have done it, we wouldn't have considered sending it over the Net before, but now we can." Creative media and design

Participants also described how SFBB enabled them to be more agile and responsive, including via a new found accessibility to instant alerts and up-to-the minute information:

"With high definition photographs that I take using a digital SLR camera, I used to send those up to London on a USB stick, now it's instantaneous. I can plug the camera in and my secretary in London's got those images in seconds. Before, I had to reduce the size of the photographs so I could send them up to London if they had to go up in a hurry, now I can send them in HD." Management consultancy

"I'm getting involved with AVG and internet security anti-virus people, they are bringing out a new product which is like a Cloud-based system where you can install software through that Cloud if you like, into all of your customers' computers and they can update. You get SMS alerts, email alerts, if any of the machines have found anything or been attacked, you get instant information." IT management

Some participants reported that this increase in agility and responsiveness impacted positively on customer perceptions and clearly this is good for business:

> *"I may not actually be any more efficient in terms of what I do, but I certainly look like I am to my customers because now I can respond to an alert as soon as it happens, not just when I can get the Internet up and running."* IT management

Tasks that were office dependant can now be accomplished at home with SFBB and this provides SMEs and their employees with greater flexibility in how and where work is completed, speeding up and increasing productivity and opening up opportunities that did not exist before through working remotely:

> *"This is purely Superfast I am focussing on, but one of the things we do with the back end of our archive is we have volunteers who add meta data, information about the images, about the video, so that it can be found by a search engine and that can be done from home now."* Publishing

The degree to which participants had explored new ways of working with SFBB was dependent on sector but those activities that lend themselves to remote access, or are dependent on greater bandwidth capability, were quickly adopted and exploited by SMEs.

9.3   Ability to connect more devices/people

Particularly for those SMEs who worked solely from home, competition for bandwidth resources with family members was often a problem that caused friction and impacted negatively on business:

> *"If my son went upstairs and switched his Xbox 360 on I'd notice that in the office, now he could be running two of them and it would make no difference!"* Digital services

> *"My partner works in one part of the house and I work in another and she used to complain frequently that I was using all the bandwidth. Now we can all be on, the kids as well, and it's brilliant, just brilliant."* Business services

> *"We have got one of these smart TVs so my wife can be watching Downton Abbey or something on the iPlayer on the TV while my lad can be upstairs doing whatever he does on his laptop, and I can be doing what I am doing in my office and it just doesn't slow down, which is wonderful."* Tourism and hospitality

Those engaged in the tourist industry that had to share connectivity with guests had a similar problem that has been overcome with SFBB:

> *"We found we can work in the evenings which is something we could never do before because all of our customers would come flowing back, they would slow the broadband down and we could never do the bookings. We have a little boy and we used to get him to bed and then we would go in the office and then just give up*

because everyone had slowed it down, whereas now, when we have put him to bed, we can sit in the office and do all of the bookings." Tourism and hospitality

Participants agreed that technological innovation has led to more services and more people owning more devices that all require bandwidth:

"We're definitely finding the need to connect more devices." Business services

"There's laptops, smart phones, kids with their devices and smart phones, which before wouldn't have been possible because we would have been shouting at them for slowing everything down, whereas now it doesn't cause a problem." Tourism and hospitality

All participants were very enthused about the way fibre connectivity allowed them to connect more devices and more people:

"I've got nine people in the office who can all Skype at the same time now if they want. That would have been impossible before." Creative media and design

"Increasingly I get clients walking into the office with smart phones and we've got an open hub so they can just pick up their emails while they're sitting in our office. It's not even a service we thought of offering before, well we couldn't, but now, well, it's just there. Clients come in with a laptop and expect to be able to plug it in and bang, there's the Internet. We couldn't have done that before, we were struggling ourselves." Management consultancy

"Our Superfast connection feeds onto a network of computers so we have 4 or 5 wired computers and then 4 that we use on Wi-Fi as well, and so it would be 5 or 6 machines at the same time, at the same speed. We definitely couldn't have done that before." Land-based services

As more people own more devices expectations regarding availability to use those devices have grown. This was particularly pertinent for those operating in the tourism and leisure industry, for example, the capability to offer effective Wi-Fi to camp site customers was seen as a great advantage and something that had not been possible previously:

"I have got 200 customers that can get on iPlayer that couldn't before, Facebook, do all of their photos, iCloud...the lot!" Tourism and hospitality

"There might be 40 or 50 people in the pub and in the summer the beer garden's full as well, and everyone's taking photos and uploading them to Facebook and Twitter, especially later in the evening with the younger generation. With the Wi-Fi I've got now with Superfast they can do it." Tourism and hospitality

The ability to connect more people and multiple devices without compromising quality of service or speed of operation is a valuable asset to business. This applies equally whether that is in the ability to supply greater connectivity to customers and clients or to eliminate friction

in the home where office requirements for bandwidth must compete with entertainment requirements of family members.

10 Future Aspirations

Participants talked with enthusiasm about their future aspirations regarding SFBB. Discussions were centred on how some participants had been motivated to update their IT kit as a result of access to SFBB in order to create smarter working solutions and future-proof business, and whether an even faster service could be made available with the possibilities of access to FTTP. Participants also discussed their desire for a symmetrical service to accommodate growing requirements for greater upload capacity.

10.1 Updating IT kit to maximise the benefits of SFBB

In order to capitalise on the new speeds available and take full advantage of the greater bandwidth capability of SFBB, some participants had been motivated to update their IT kit:

> *"I want to get the best out of Superfast. I have come up kicking and screaming with technology so it's taken me a while to say, 'it's here, lets embrace it' rather than trying to sweep it away, but yes, it means that I have really got to think about what equipment I should be looking at for my business in the future."* Architecture

> *"I am going to have to update my computer set-up to keep up with things. It's that interaction between the equipment that you are using and the Superfast Broadband. Software makes demands on the hardware that you have got and it seems to be that Superfast Broadband needs the hardware to go with it, the faster it goes and the more things you are doing, that computer that is a couple of years old is getting a bit tired."* Tourism and hospitality

> *"When we got Superfast we had a whole new computer system in our office, a brand new computer, a wireless bridge from our building to the big antenna in the middle of the park and some other stuff as well, new routers and bits and bobs I reckon we spent, god knows, probably £1500 - £2000 upgrading everything."* Tourism and hospitality

A number of participants had invested in new IT kit because they felt that in combination with SFBB, it would provide a smarter way of working:

> *"I bought an iPad when I got Superfast, I wouldn't have done that otherwise. I wanted to work smarter."* Management consultancy

> *"I think it's shaking up how I work, I've got a new iPad and a new iPhone to go with the Superfast, I think you need that, it means you can be smarter in how you work, it shows you're at the cutting edge."* Business services

Other participants updated their IT kit regularly as a matter of course rather than as a result of fibre connectivity:

"The fibre aspect is irrelevant to me, I mean I update my kit every two years anyway, because of my design work, there's always new stuff coming along and you've got to be on top of it." Creative media and design

For those in the tourist industry it was important to update infrastructure in order to supply Wi-Fi connectivity to customers to make premises more attractive:

"I spent a grand networking to try and get Wi-Fi everywhere and we've had to put boosters in too because it's over a quite a large area. Now we can advertise that we've got Wi-Fi in all the bedrooms." Tourism and hospitality

"We put a new system in for visitors and we got a new computer too." Tourism and hospitality

These comments show that IT kit has become an increasingly important strategic asset for SMEs and a critical enabler for business success that goes hand in hand with the SFBB experience.

10.2 Future possibilities with FTTP

Discussions about the importance of improved speeds and greater bandwidth to SMEs led participants to voice aspirations and expectations concerning the possibility of even faster broadband speeds and how businesses will require this in the future. Having told us how quickly they had become accustomed to the new capabilities they experienced with SFBB, participants asked if it could be faster still:

"I don't know what the mileage is in Superfast, when are we going to have mega fast?" Creative media and design

"Is there a possibility with Superfast Broadband to be super, superfast?" Architecture

At the time we conducted our research FTTP was not widely available hence discussions were limited. However, comments showed that there is clearly an appetite amongst SMEs for even greater connectivity than that offered by FTTC and some participants also mentioned that they would be prepared to pay for fibre on demand:

"Fibre to the premises...that's the way forward. Everybody wants it to the premise!" Creative media and design

"I'd love fibre to the premise, the faster the better as far as I'm concerned!" Tourism and hospitality

"What's after Infinity 2? People's consumption of bandwidth is just going to grow..." IT management

FTTP is becoming more available to SMEs and the desire for even greater connectivity bodes well for uptake of FTTP in the future. Participants were concerned with the rate of technological change taking place around them and were keen to be able to keep pace, particularly as they feel they suffer from a lack of other infrastructure in Cornwall to support their business endeavours. For many participants, FTTP will provide the future-proof solution they are seeking that will accommodate their changing patterns of Internet use and the anticipated technological advances they wish to embrace.

10.3 Requirement for a symmetrical service

SME's business practices and requirements regarding Internet use have changed and in order to accommodate this many participants said they wanted symmetrical upload/download speeds:

> *"Ideally I'd like it to be symmetrical, it would be lovely."* Publishing

Business today demands far more upload capacity than was previously required and this was especially true of, but not confined to, those SMEs who want to avail themselves of Cloud services:

> *"Why haven't they gone SDSL which is where the speeds are both the same, why is it download speed of 57 and upload speed of 12? That's definitely what we want, SDSL."* IT management

> *"We are fed up with having two different speeds, we want the same speed down that we get up, what is the issue here?"* Financial services

> *"I would want it 75/75 though, because if you are Cloud computing and I am bringing down one of my files from the Cloud to work on it, then I want it to come down as fast as I can send it out."* Management consultancy

One participant who catered for tourists said that a symmetrical service would benefit him because he could better fulfil his customer's requirements:

> *"I get 200-300 people in the school holidays coming in, they all want to upload their pictures to Facebook and it must be slow, so yes I would like them dead level so people have got everything they want,...now everybody has got 10meg cameras, the pictures are getting better and better aren't they, and taking longer to upload."* Tourism and hospitality

As SFBB provision becomes more widespread some participants felt a symmetrical service would become even more important:

> *"The more people who can get Superfast Broadband, the more important that is going to become because it's going to be no use having a Superfast speed if you can't send stuff to them."* Creative media and design

"We need to be looking at faster, not just download speeds, but uploading speeds as well, rather than concentrating on the download speeds all of the time. If we could have a doubling of the upload speed it would make a massive difference, much more than increasing from 40 to 60 download speeds." Business services

"If you are doing, like I said, remote control teaching, that fact that it's a lot slower up than it is down can make a difference...if you are controlling a company in Argentina." IT management

Some participants even wanted more upload capacity than download and said this was likely to become more important to businesses over time:

"Is there anybody else here that would actually benefit from having...a reverse idea, where you have a bigger up line than you have a down line? We would benefit from that. Most of the data we are transferring is things like video files to a server, and we are really going to need much more of an up speed rather than a down speed." Architecture

"Or even, where you've got, I don't know, 7 meg down is fine for us and you have got 25/30/40/50 up." Funeral directors

It is possible that this desire for a symmetrical service is actually a symptom of simply wanting even more improved upload capacity, rather than symmetry:

"I would like it even faster. I always want faster, I wish it was symmetrical rather than asymmetric, but it's because of the current technology, because of the copper." Financial services

It is worth noting that a minority, some of whom had opted for a faster product, did not think a symmetrical service was necessary:

"I don't think it would make a lot of difference." Creative media and design

"I don't think it would make any difference at all." Land-based services

Although many participants voiced a desire for a symmetrical service the fact that a sub set of participants who could achieve faster speeds than the majority did not think symmetry was important suggests that greater speeds generally nullify this requirement.

It is difficult to establish whether the desire for a symmetrical service simply masks a desire for greater upload capacity more generally, or whether there is a genuine requirement for equivalent upload and download capacity. Certainly, the way SMEs use their connectivity is changing and it would be interesting to see if the desire for a symmetrical service endures over time, or if it disappears altogether with for example, access to FTTP.

11 Connectivity Options: Business versus Consumer

Participants were asked about the kind of connectivity to which they subscribed and we found approximately half our participants were using a consumer rather than a business package. This had not necessarily been the case with their previous broadband provision however and several participants described moving from a business to a consumer package when they signed up for SFBB.

11.1 SFBB consumer package perceived to be adequate for business use

For some participants consumer targeted SFBB packages offer a faster, more consistent and reliable service than participants had received with their previous regular business broadband. This was particularly true for those who had received poor broadband speeds with regular provision:

> *"The consumer package gives me all I want, I'm happy with the consumer product for my business."* Funeral directors

> *"I don't need a business product now. The Superfast is faster than what I was getting before on my business line and it's a lot more reliable."* Education and Training

Several participants also noted that consumer SFBB products were cheaper than their previous business broadband provision, whilst offering improved connectivity and this had influenced their decision to opt for a consumer package:

> *"My home situation was a business line... they charged me £54 per month which seems ridiculous for the amount of work I did so I just took it down to a standard amount for finances and broadband. I just think the extra that BT is charging is far more than it's worth for my particular business."* Construction

> *"I think it all comes down to price."* Business services

> *"I was paying £25 per month, I am now paying £30 per month but my phone bill has been reduced drastically, just because of the different offers they had on at the time for home use, so I went for that."* Digital services

Several participants felt SFBB business products were too expensive by comparison in terms of the benefits they provide. SME's are particularly price conscious and they felt that the available SFBB consumer packages offered good value for money, were more cost effective than their previous regular business broadband package and adequately met their needs.

11.2 Consumer bundles are attractive to micro businesses

Another major reason that participants gave for this shift from a business to consumer package was that they wanted to avail themselves of a consumer package that bundled calls and entertainment. A prime example is those who wanted BT Vision:

> *"I was on a business product before but like many people in this room, I work from home and I wanted BT Vision and I couldn't have BT Vision because I was on a business package, so I had to change. I didn't want to but they will not do BT Vision on business. Two years ago they said they will get it sorted out but I found out two weeks ago that it hasn't changed yet, they said 'no, we still can't do it.' I think that is ridiculous, that so many people work from home and want to use BT Vision but they can't have it because they have got a business package."* Business services

> *"What I want to be offered as a small business is a competitive package with a consumer side to it for entertainment. Why should I, as a business which is basically a one-man business, pay something like 50% more for a business package that doesn't work for me?"* Management consultancy

The comments above indicate that to some extent the SME shift from business to consumer packages is forced because participants want access to the kind of packages that include entertainment, designed for consumers that are not available as a business package. This was particularly true of the micro business community who work from home and are reluctant to sign up to two different packages to meet their business and domestic needs. This requires some compromise of course, but our research suggests that currently, this appears to favour the consumer option.

11.3 Confusion regarding the benefits of a business package

We also found evidence of some confusion amongst participants concerning why a business package might be a better option:

> *"Why go on a business package, what's the difference?"* Motor trade

> *"Would it actually help to have the business product? Would it or not? Are you treated any better being a business or a consumer?"* Financial services

> *"I was given to understand that if you go on a business package you get a more solid line as opposed to BT Internet, I think its BT Connect isn't it for business?...But I don't know if you actually gain anything from doing that now that we've got Superfast."* Business services

It is apparent that some participants felt that currently available business packages do not meet their needs appropriately and are not as clearly differentiated from consumer products as they might be in terms of the benefits they offer to SMEs. In this context participants talked about how they use the Internet for business and how they now require far more upload capacity to take advantage of Cloud services for example. Some felt that a service

option providing equivalent upload and download capacity, or 'on-demand' capacity might help differentiate a compelling business product:

> *"It's like they are selling business people a domestic product and it's not what's wanted... most domestic users tend to use their connection more for web browsing and pulling information in, they are less involved in sending things up."* Funeral directors

> *"If you are using the web professionally then you want both aspects."* Creative media and design

> *"If there was an option there, where you pay an extra £20 per month for it, if you have got a business which is turning over £3m, it's worth it."* Accountancy

It is likely that a dedicated business product targeting the needs of rural micro businesses that includes a flexible, sliding scale of bandwidth options would meet with SME approval. Comments suggest that currently available business products do not adequately match their needs and benefits are unclear.

11.4   Service experience

Inevitably there have been teething troubles in provisioning SFBB. Some participants, who had opted for a SFBB business product, were not impressed with the service they had received as a business customer when connectivity had been lost for a short period:

> *"I'm on a business line. Without broadband we can't sell tickets, we totally rely on it to run our operation, so we are totally stuck. We had a case where we lost our broadband on Thursday, I eventually got through to the guy locally and he said 'we will make an appointment'...I said 'I want it fixed now,' but they didn't come and fix it until the Monday. We trade seven days a week, therefore we were without broadband Thursday, Friday, Saturday, and Sunday. All it was - a guy had gone into one of the green boxes and instead of putting a connection to us he had put it on something else, totally stumped us, but no one was willing to go and trace it."* Creative media and design

> *"I do remember in the dim and distant past I had a phone call from a person who said that he was my account manager from BT and that was the first and only time I heard from him, he didn't give me a number to ring him. I think it's appalling that the company in the business of communication can't communicate!"* Business services

> *"Do you feel different being a business customer? I like to think that I am but we have had a couple of times when it has stopped working and we have almost been in tears at our house because we couldn't find anyone to fix it. We were going round and round the world being transferred from one call centre to the other. I think when it works you have this idea that behind the scenes there is somebody just waiting for your call to put you right, but the reality is, when it does go down you can't find anybody, apart from the automated message."* Management consultancy

In the course of discussions reasons to opt out of a business package were compounded by SMEs who operated over a consumer line and who described the excellent service they had received:

> *"I am on a private home broadband connection but we have had different problems; there was an engine out on the farm which caused problems with our line, they came out within the next day and you can ring them for support no problem at all. They don't seem to differentiate the service, for me anyway."* Digital services

However, there was some appreciation of the advantages of a business product from a small minority:

> *"To be fair to BT, when we signed up for broadband we went on the BT business broadband and we were always kept informed on what upgrades were available by email on that. Now the semi-fast broadband has gone into the home package with the BT telephone line, a combined thing...but BT business definitely kept me in informed."* Accountancy

> *"They are certainly very good on any help and I had a problem once and even had BT Wholesale phone me, so BT Business is good."* Publishing

> *"You do get an advantage with getting the engineer out and if your telephone line goes down, and presumably your Internet line, they respond quicker if you have a business contract rather than a residential contract."* Management consultancy

The variety of comments, both positive and negative, that arose in the course of discussion regarding the kind of service SMEs received as business customers suggests a lack of consistency. There is also evidence that SMEs are confused about the advantages of a business product and the appropriateness of current business packages to serve their needs. This is particularly true of those operating a micro business and those working from home. As both of these scenarios seem set to grow with greater uptake of fibre connectivity there is clearly scope for a micro or rural SME business package that includes the features they find attractive when operating a business from home.

11.5 Customer service is as important as speed

Businesses are more reliant on Internet connectivity now than ever before, particularly with new-found access to Skype communication, increased collaboration and use of Cloud services over SFBB. Connectivity is vital because communication downtime means lost revenue.

Since SFBB has become SMEs most relied upon business tool, we were surprised that more participants had not opted for a business package and we questioned participants about their requirements.

The most often cited issue upon which participants were unanimous was access to much better support when things go wrong. In order to address this problem participants envisioned a service that requires a single call to a single point of contact, to someone who is preferably

local, or who at least has an understanding of their business needs, the local area and known problems:

> *"I would like to feel like a client, a one-to-one relationship, so I like to know that there is someone looking after me if it goes wrong."* Financial services

> *"It would need to do what it says it does, which is give you a prioritised service 24/7 with help lines and support. At the moment that help is finished at 6 o'clock, you get an answer phone machine with lots of messages that tell you to go on the Internet. But my Internet is down, that's why I'm calling...how pointless is that? A voice telling you to go on the Internet and look at help pages is not support! They don't even give you an option to log your name, account, or anything else so that they could get back to you in the morning, you just have to keep phoning and get in the queue."* Management consultancy

> *"It would be great to have a name and contact details when you are given that service. So that you have got a name there and a contact number and an email address and they are your account handler."* Retail

SMEs wanted to feel valued as a business customer. For many participants, personal contact and quality of customer service was more important than increased speeds; improved service as a business customer featured highly on participants' wish list. No service can be perfect but SMEs have become so reliant on SFBB they want to know that faults can be fixed quickly. Many do not have the technical skills to diagnose their own problems, or the technical language to explain what has happened. Many are limited to explanations couched in layman's terms and they wanted to be able to speak to someone who would understand this and were prepared to pay for such a service:

> *"In a way I am happy with getting between 20 and 45 but I would pay more money per month if I knew that if something went wrong, I could ring a number and someone answered it – I would pay for that."* IT management

> *"I agree, getting double my Internet speed for an extra £10, I am not bothered, although it would get my files to my clients faster, but if I knew that I could simply pick up the phone and someone answered, I would pay for that."* Creative media and design

Almost all participants found calling a helpdesk a frustrating experience and were adamant that customer service is as important as improved speed:

> *"You don't want to ask them just about one thing, you say 'I want to sort this out, this out and this out', and I want to speak to one person, I don't want to speak to that person, that person, that, that, and that person like they try and make you do..."* Management consultancy

Inevitably the problem of not being able to understand those manning help desks abroad arose, as did being passed from one department to another and SMEs said this was a serious problem:

> *"I would say if you could talk with someone who has a very good command of the English language, alright, that's presumptuous, but I happen to live in England and I operate my business from here, then it would help somewhat...I think the problem is that the organisations or companies that are the providers are so huge and they have totally lost connection with customer service."* Architecture

> *"I want their first language to be English because you have so many problems when they can't understand you...it's not their fault but you feel guilty to keep saying, 'sorry what was that?' We are talking about something which is vital to all of us for our business...it's not just this broadband, it's much more that needs to be resolved."* Business services

Some SMEs do not understand the difference between business and consumer grade connectivity and because they cannot see the benefit of a business package, some opt for the more obvious benefits of a cheaper consumer package that provides entertainment and calls. Given that SMEs are critically dependent on SFBB for running their businesses, effective, guaranteed, consistent and enhanced customer service may provide a very clear and attractive incentive for a rural micro business package option. Similarly evidence of SME's newly established and increased collaboration becoming the norm suggests that advanced collaboration tools may help to differentiate a rural business package, as might the option of a sliding scale of on-demand bandwidth capacity.

12   Issues and Concerns

In the course of discussion a number of issues and concerns around SFBB arose. Some of these were focused around a skills and knowledge gap in using IT and how fibre connectivity is delivered. Others were concerned with a perceived slowing down of SFBB speeds since participants had originally signed up. We also found a greater dependence on fibre connectivity that arises from the benefits of being able to work differently that increase SMEs sense of vulnerability.

12.1   Skills gap

In today's fast-moving digital economy technical skills are vital to business growth and success. Whilst participants were confident they had the skills to run their business effectively, a high proportion said they were not technically proficient:

> *"I don't know any technical stuff; I'm just running an office and a business."* Motor trade

> *"People try and explain what the problem is and I say 'look, I just want it fixed, I don't want to understand why.' It's often just little things..."* Tourism and hospitality

"I'm not worried about being technical...I've got other things I need to do." Retail

"If you are running your own business it's not time efficient to be fixing your own computer, import an expert to do it properly in half the time and it frees you up to run your business. I'm not a computer expert." Management consultancy

Most SMEs knew of someone they could call on to fix computing problems or deal with technical difficulties:

"I'm sure I could be more efficient if I knew what things were called and what they did but I just don't, you know? I just get somebody else in to sort it out for me. I just haven't got the patience to sit there and do it even though it could be that some things are quite simple, or I get some of the young staff to come in and sort it out for me." Tourism and hospitality

"If something goes wrong, I've got a little man that comes and fixes it. He came in the other day and he said 'your systems needs upgrading, I'll come in Friday, take them home for the weekend and bring them back first thing on Monday morning.' It's more RAM, upgrade to Windows 7...and I think, just go away and do it and bring it back, and if it works faster, I'll be happier." Education and training

"Mine can log in remotely now and have a look around." Plumbing

None of our participants considered their lack of technical expertise to be a hindrance to making the most of what SFBB has to offer and few were of the opinion that they needed new skills to take advantage of SFBB:

"Yesterday I was on ISDN, then I moved to ADSL, skills required? Change nil. Then I've gone from ADSL to Superfast and Infinity 2 and there's still no change in the skills I need." Business services

"Superfast shouldn't make any difference at all to your security, your skills or whatever, else; it just makes the ability to do it quicker." Retail

Some participants felt that any additional skill requirements would only become necessary if they changed their field of business but even then, those skills were likely to be associated with the new field of operations rather than skills to use IT kit and fibre connectivity more effectively:

"It depends entirely what you are going to use it for, if you're going to try and go into another area of expertise then you may need to develop additional skills, but not to run my business now." Creative media and design

It is interesting to note that, almost without exception, only those participants who were engaged in the IT industry felt that there was a skills gap in the SME community:

"There's a massive gap I think." IT management

"Most people have limited technical knowledge and they are not interested in general. It's not everyone, some pay an interest in the technology and they know how to log into their router or whatever, but by and large people are not that technical, they don't have the skills" IT management

It was difficult to gauge participants' skills level because in the course of discussion we had to rely on self-report. However, comments of those participants who worked in the computing industry or served the computing needs of fellow SMEs suggest that there may be more of a skills gap than SMEs are aware. Although SMEs are very good at running their businesses effectively many do not have the technical skills to diagnose what has gone wrong when problems arise, or knowledge of the technical terms to describe their problem to a help desk. For some SMEs, the belief that they know enough to operate effectively hampers any up-skilling potential and hinders growth. In many cases participants were not aware of what it is that they do not know; hence they do not recognise a skills gap. Others, who have no interest in gaining technical skills, bring in expertise as and when it is needed and some are so busy running their business that they do not feel they have the time to address matters themselves.

12.2 Knowledge gap

In Phase 1 of our research we found a distinct knowledge gap amongst SMEs in understanding the differences between broadband delivery over copper and delivery over fibre. In the course of Phase 2 discussions it became apparent that there is still a degree of misunderstanding about how SFBB is delivered. For example we found evidence that participants still believed that distance from the exchange impacts on SFBB speed:

"Mine is round about 24megs but that's due to the distance from the exchange." Business services

"It's all on old technology, that's where you start to get the different speeds, the distant from the exchange, but also it is all still linking up to old technology." Financial services

It was also clear from other comments made by participants that they do not understand how fibre technology works:

"What I have never understood is why it is that Superfast broadband, when they first install it, you get told what speed it is and the engineer will then say 'it will take a while whilst it settles down.' It's not logical, if it's a connection it's either there or it's not...nobody will ever tell you why." Funeral directors

Confusion regarding how the technology works led a number of participants to voice concerns about how to trace what had gone wrong when faults occur:

"When it fails we don't know where it fails, or in what way it fails, and I think all around here we are probably using a new technology which we don't quite understand. We may be using it before it's really fit for use, you plug the kettle in at home and you expect it to work and it's the same with your telly...but with this there's lots of boxes to join up with lots of bits of wire and when it fails I'm at a loose end working at home, I don't know where it has failed, but it happens too often for me to just dismiss it as once in a blue moon." Financial services

Those participants engaged in IT support elucidated further on knowledge gaps they had uncovered in their dealings with SME clients and the impact that had on perceptions of what might have gone wrong, or what is causing systems to slow down:

"I went to a customer the other day and he said the computer was running very slowly at a certain time of day. They weren't even aware that their actual back-up was running then, that's why his computer was slow! There's lots of scenarios like that...that the customers don't know about so you know, it's like they are blind-folded...they haven't got a clue." IT management

"A lot of small businesses in Cornwall just don't have the budget to upgrade, that's why so many are still running Windows XP which is expiring next year and lots of businesses aren't aware of it...I don't think they understand how efficient it can make them and how much more productive they could be. I think it's a knowledge thing rather than they don't want to." IT management

Participants tended to dismiss technical knowledge as unimportant or not their area of expertise but discussions revealed that a lack of basic knowledge about what might impact connection speed does impact on business. The most common misunderstanding was how using a wireless rather than an Ethernet connection would considerably reduce the speed of operation:

"I got a 17 meg download speed when I did the speed test and I thought 'oh, that's a bit bad' because it was over our 40 meg connection. So I went to a colleague's PC and he got 38 or something, it was because I was on wireless and I hadn't realised...so it was interesting that it was half the speed." Publishing

"I didn't know that it was going to be slower if I was on wireless, so that's some basic stuff I didn't know, I think the engineer who came round should have told me." Healthcare

Contributions to the discussion from those engaged in the IT support business also confirmed that common misconceptions regarding impacts on speed abound:

"There's quite a lot of misconception, there's a lot of customers out there who think if they get Superfast Broadband it will speed up their computer, and of course, it

doesn't. There's a lot of people out there that think 'if I go for fibre broadband my computer will be so much better' and really of course, it isn't." IT management

The Superfast Cornwall website provides a very clear and comprehensive explanation in a "See how it's built" animation[18]. This could dispel many misunderstandings about how fibre is delivered but SME's are notoriously time poor and reluctant to seek out information, particularly when they feel they 'already know,' even if that knowledge is erroneous. There is a knowledge gap in SME understanding of how fibre connectivity is delivered but despite this, participants showed evidence of a range of skills in utilising the benefits and capabilities of SFBB.

12.3 Perception that SFBB has slowed down

All participants were asked to check their wired SFBB speed before coming to the focus groups. Different speed checking tools measure different aspects and in order to provide consistency we asked participants to use the BT checking tool. Although participants all used the BT speed checker they reported also having checked speeds using a variety of different tools and inevitably this gave rise to inconsistencies. Participants reported that the BT speed checker appeared to show faster speeds than any other tool they had used. For example one participant reported speeds of 36.33 download and 2.25 upload using the BT speed checker tool and 10.4 download and 7.7 upload using a non BT speed checker tool. These discrepancies led some to question the accuracy of the BT speed checker:

> *"When I was asked to do that test this morning, if I do a test with the BT tester then it tells me I am getting 38.99 download speed and upload speed is about 6. If I use any of the other available online testing systems it tells me that I am getting about a 10 megabyte download and I am getting less than 2 upload."* Architecture

> *"Same here, I'm afraid I'm not believing the BT one, it seems to me suspicious that all of the others are telling me something different."* Business services

> *"We used the BT one and its download speed came up with about 70 which was very fast but with another one it was half that, so I would say with the two different testers there is massive difference, BT's always says it's faster than the others."* Tourism and hospitality

The tendency amongst participants to doubt the credibility of the BT speed checker was exacerbated by fellow participant reports that previously broadband speeds had registered approximately the same, no matter which tool was used. Much greater variations had been noted in checking SFBB speeds:

> *"All I would say is that before I had Superfast Broadband and used the BT tester for my broadband, it was almost exactly the same as the other testers, so I believed them all. I had them all on my favourites and they were all the same, so when I eventually*

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[18] http://www.superfastcornwall.org/about-sfc/see-how-its-built

got through to BT and said this is what I am getting I felt secure that was the case. Now I have got Superfast the BT tester seems completely at odds with everyone else's testing systems." Creative media and design

"I have found the same – we may still be lucky because maybe everyone else around me isn't actually using the fibre yet, but when I tested with BT it says I am always getting 70 to 80 download but with the others it's 40 - 50. That seems to be the story." Tourism and hospitality

Even though the accuracy of reported speeds may be in doubt for some, almost all participants were very satisfied with the speeds they could achieve, even though inevitably these varied amongst different participants. However, a small number of participants were of the opinion that their SFBB speeds had dropped since they originally signed up:

"Mine definitely fluctuates; definitely, it's when the schools come out." Land-based services

"We do 95% of our work online and it has got patchy lately, especially when the schools kick out, it tends to slow down, definitely about half past three..." Creative media and design

"I've noticed that too, it's not as fast as it was when we first had it." Accountancy

Most participants were of the opinion that this was because more people had signed up and taken the opportunity of fibre connectivity and the available bandwidth had to be shared with a greater number of people:

"I think it is early days. I live in a small village and I am not sure what percentages of people in the district are on Superfast. I am wondering what would happen if more people come on because we are only in the infancy of it at the moment. I've noticed just recently that sometimes the signal (because I use presentations a lot and Skype a lot), I have noticed recently that the signal is dropping off slightly at times, whereas when I first got it, it was very consistent, so it is early days really isn't it?" Management consultancy

"I have noticed it slowing right up. When the BT guy came and did the test two months ago he said it's about 80. I did the test before I came here, made sure I had turned everything off and it was half that... I need to check out why it's going so slow now." Digital services

"Contention is the thing that I have a problem with most. I get quite a good connection speed, about 60megs, but I do find at certain times of the day, particularly at 6pm, there's obviously so many people actually on the connection that it does actually slow down the bandwidth you actually get." Architecture

Whether or not SFBB speeds as measured by various speed tests are accurate and whether or not it really is actually slower than when it was first installed, in the majority of cases any

perceived slowing down, although apparently noticeable, was not enough to impact business practices:

"You get so reliant on it and then it sort of takes you back to the days when you used to complain. It's noticeable. For me it's not necessarily a problem but it is noticeable. You're working away and you look up and you think 'oh, it's four o'clock', it's kids all logging on to do their homework and whatever." Land-based services

"It's the same for us, it's not that bad but it is noticeable. It doesn't really hamper what you're doing but because a lot of what we do is using Cloud based systems for our back office systems and customer management, I notice a difference at half past three when it takes that much longer." Retail

"Skype will still work with 8 megs or 20 megs but there is a difference." Business services

Discussion around achievable speeds led some participants to voice what they felt was acceptable:

"There are going to be days with bandwidth considerations, with usage considerations when you are not going to get your 76, 70 something or your 40 or your 20, depending on what your contract is. That's simply because every man, Jack and the world is in there on the same day, right? And we understand that, that's acceptable, but if you give a contract up to 20 I would expect to get 75% of that every day, alright? Mine is up to 40 and I would expect to get 30 at any time, I'm on 38, 39 on occasions, lovely, but never less than 30, but to get less than 50%, it's not a good service." Creative media and design

This led to a discussion about possible solutions to what participants perceived to be contention ratio problems and they mooted the idea of an option ISPs could offer to agree to let customers share bandwidth capacity with a limited number of others, and pay accordingly:

"There isn't any choice at the moment as to contention, you know, how many people you're sharing with, but if you could have some scale so that you could have whatever contention you are prepared to pay for…If you need a lot more bandwidth than I do because of the nature of your business it would make sense to limit the number of people you have to share with and for me to share with more." Accountancy

"You don't really get an option as to how many people actually share your connection. I think if you have an option there, if that was really important to you, you'd say 'well, I'd be prepared to live with 5 rather than 20 and I'd be prepared to pay extra to have a bit more guaranteed bandwidth'. I think that would be a good thing to offer. Financial services

"It's like web site hosting, you can get a really cheap package but you share that server with maybe 300 other websites, so the speed isn't fast, but it's cheap. At the other extreme you have a dedicated server and the speed is much faster on your

website so it's more expensive, but you have the choice, you choose depending on what you need." Retail

It is possible that participants' opinion that SFBB has slowed down since more people have taken up the opportunity are legitimate but there are a number of other factors that should also be taken into consideration. For example, since participants told us that they had got used to the new speeds of SFBB very quickly; their perceptions of how fast it actually is may have changed with use and familiarity. There are also several different scenarios that could cause systems to slow down, for example back-ups running, systems that require upgrading, malware etc, but none of these were considered by the majority of participants, instead they focused on the one cause with which they were familiar – that of contention ratio issues.

12.4 Rollout and network issues

SMEs were delighted with the SFBB product they received once it became available but they voiced several issues around availability and structure of the rollout programme. We found evidence of confusion about the way SFBB has been rolled out and why it was available to some, but not to others, in the same village. Participants were of the opinion that rollout has been something of a patchwork, resulting in different exchange areas having different levels of coverage at different times. Participants could not understand why the early rollout had not included industrial estates and business parks and said it was difficult to find accurate information about when such areas might be fibre enabled:

> *"I've got it where I live but both our offices are on industrial estates in Redruth. We asked them about it and there's always Openreach lorries driving around, but we don't know what they are doing. At the new office you can see them putting fibre in the ground, so I think they are putting the infrastructure around the industrial estate which we are on, but you can't get anything out of BT, they just don't tell you. I've looked on the Superfast site many times but that doesn't really help either, you do a test based on phone numbers and if it's available it's available and if not, that's that."* Fire and flood restoration

> *"Oddly, it's available in parts of Redruth...but it's not available in the whole of Penryn. It's not actually available in the main part of Penryn, the actual town, the High Street..."* Motor trade

> *"It just doesn't make any sense, there's no rhyme or reason to this rollout really, not that I can see anyway. There are whole chunks that can't get it and it's where all the businesses are. I did ask to be kept in the loop on the site but nobody did...it's only that I kept checking, that's how I found out."* Creative media and design

A coverage map showing where and when exchange areas have fibre available and where further planned coverage is forecast is available on the Superfast Cornwall site[19] but participants said they found the gaps in coverage confusing and this was compounded by dates for availability slipping in some areas:

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[19] http://www.superfastcornwall.org/ Where and when?

"In my mind I just feel that there must be a better way for putting cables in the ground, it's just a patchwork at the moment, it's all a bit of a mess" Publishing

"It's not going to the places you'd expect it to be like the business parks, the industrial estates, you need to be really careful and check you can actually get it. Then when they say it'll be here in April they actually mean August." Fire and flood restoration

The nature of the existing network also means that SFBB is not available to all in areas that do have access to fibre, for example it is not available to those on an exchange only line, although solutions are being investigated:

"I can get it but my neighbour can't, and the chap on the other side, he can get it, but him in the middle, no way, now why is that?" Plumbing/construction

"We had a letter saying Superfast Broadband was available and we all signed up and went through all the process and everything, but when it came to it, it didn't meet the criteria for BT Infinity broadband. We have got all the Superfast equipment, we are a 7 download and 1 upload or something like that and there was a sort of hybrid tariff for it." Education and training

In Cornwall there are many instances where aluminium has been used in place of copper in the network and this has also given rise to confusion about availability and the impact this may have on possible speeds:

"Where we are they haven't got copper wires, they've got aluminium wires, I think it came in after the war didn't it? It's very old technology so therefore the conductivity is not quite as high and that's causing problems." Financial services

"The infrastructure is BT...but, if I'm paying for up to 40MB, which is the deal on Infinity 1, why am I putting up with 12? Despite all the arguments...the reason being is that BT won't come around and change the aluminium conductors. It's silly really because they say they need to have at least three complaints, but there's only one person on the line, it's me. So how are they going to get three?" Business services

Some participants were of the opinion that it was not financially viable to make SFBB available to some areas and that this accounted for gaps in provision:

"It's going to be a nasty call though isn't it? Because if you've got a village where there's five people that say they want it and it's going to cost BT hundreds of thousands of pounds to bring fibre cable into the box, into the village...would you do it if you were a business?" IT management

"You can see it from BT's point of view sometimes in the scenario that if it was you, and it was your business, and you were only going to get X return for putting it in, you wouldn't do it. I mean if you were a businessman you don't do it, do you?" Accountancy

Whilst it is true that there may be network issues pertinent to Cornwall, that it may not be possible to make fibre connectivity available to all and that there are still some gaps in provision, it should be noted that since the programme began in September 2010 over 70% of residents and businesses in Cornwall can get SFBB. During the remainder of the programme currently there are plans to bring Superfast fibre optic broadband to 95% of homes and businesses in Cornwall and to provide the remaining 5% with alternative technologies such as satellite. The comments above do however highlight a need for better communication with customers regarding potential dates for availability rather than simply 'available'/'not yet available' that will help dispel some of the confusion around rollout.

12.5 Increased dependency on SFBB perceived to increase vulnerability

In section 4 we described how SMEs are becoming increasingly dependent on the benefits and added value that SFBB provides and how this leads to a virtuous circle of connectivity. The more SMEs use SFBB the more value they derive and the more dependent on fibre connectivity and the advantages it provides they become. As a result of the benefits participants discover, they are able to work differently and this provides a route to further innovation and greater dependence on the vehicle through which this is made possible – fibre connectivity. Participants were very aware of their growing dependence on SFBB and this led many to voice the perception that this increased their vulnerability if access was compromised, and the potential risks to their business of losing connectivity:

> "My concern is, if my business expands...my major need of the Internet and the speed I get now is for morning conferences to communicate with other people. As the business grows bigger and I have got more and more diverse people to contact, will the system slow up and crash? That is my big concern." Financial services

Given that participants believed that SFBB had slowed down since they first signed up and that this was due to competition for bandwidth resources, several voiced concerns regarding whether current SFBB speeds were sustainable. Many believed that as more and more people take up the fibre option, speeds will diminish:

> "I am particularly concerned...at the moment, we may be lucky, we may be the only people using fibre but I think we'll notice when others come on, it will go down." Tourism and hospitality

> "I have been expecting that it will slow down as more people come on." Business services

Participants were worried that as time goes on they may have to compete more heavily with consumers as an increasing number of bandwidth hungry services are delivered over SFBB:

> "I want reassurance I suppose, as somebody who has taken up Superfast Broadband, that large organisations are not going to be allowed to swamp it and thereby destroy it. If we take the BBC, it is trying to persuade people to take television through

broadband, if 300,000 homes in Cornwall watch their TV through our fibre links will it be Superfast anymore, or will it just grind to a halt?" Financial services

"That's the reassurance we need isn't it, that they will not come back and say to us in 10 years' time 'well you can have a faster link but you will have to pay three times as much for it,' I mean as a business customer, so you don't have to compete with YouTube or iPlayer or whatever they come up with next." Business services

Participants felt that a further contributory factor to compromised SFBB speeds in the future may be as a result of more people opting to work from home as SFBB becomes more widely available:

"With more and more people working from home, which is where the trend is going, you are going to have more and more resources being used." Digital services

This was particularly pertinent to many of our participants who already worked from home and suspected others would follow suit. Many were convinced that this would compromise SFBB speeds even further and negatively impact the reliability they value:

"The apprehension I have got is that my businesses relies on morning online conferences all over the country. Is it going to crash and not work?" Financial services

Participants who had devised new processes and different ways of working as a result of SFBB were the most reliant on the new capability it offers but were also the most concerned about any possible degeneration in service. For most, these fears were focused on not knowing what the limits might be:

"For us it is an unknown quantity if I am honest with you, because we have started so many processes which I don't think would have been possible before SFBB, so there has kind of come a point where we are using it for so much, we are going to start testing its limits. We have recently gone over to using Google docs for sharing images; we have got quite a lot of technicians in the field constantly sending us quite large images of properties back continuously...we are having Skype conversations going on too. What my worry is, when will we hit the limit and what is its capability - that is an unknown quantity we don't know until we hit it and then it's going to be like, what do we do now? It is that unknown quantity which is concerning me and something to be aware of." Fire and flood restoration

"At the moment, although Infinity 2 has provided sufficient bandwidth for pretty much everything everybody wants to do, that growth in how people are using the bandwidth is eventually going to hit the limit, so where do we go beyond that? If BT has invested, and the European Union...where's the next step, what are they actually going to do? Are we going to hit a brick wall?" Publishing

Access to SFBB has changed perceptions of what can be achieved and delivered for both business customers and consumers and this puts additional pressure on fibre infrastructure to

deliver. Changing perceptions of what is possible and a growing reliance on fibre connectivity to accomplish business growth also places additional pressure on SMEs. It is interesting that participants were already considering the impact that a compromised service may have on business and this emphasises the value they place on the difference fibre connectivity has made. Whilst it is likely that knowledge gaps contribute to some SME concerns, other possibly more legitimate fears could be addressed through appropriate business packages that offer fail safe reliability and an optimum guaranteed level of service provided this is offered at an acceptable price point.

12.6 Communicating with those who do not have SFBB

One issue that participants had experienced was frustration in trying to deal with other areas of the UK or other countries that did not have access to fibre connectivity, or dealing with those who had not taken up the opportunity. Most of these problems involved trying to send large files:

> *"The only problem we are all getting is when we send big files to people, when we send video for example, which we can, we can send video to anywhere in the world now. The problem is whether or not they can actually receive that at the speed at which we can send."* Creative media and design

> *"I find when you are working with other countries that there is a bottle neck with the country you work with because they don't have sufficient bandwidth... you can send very large files and basically they are on dial-up in Mozambique or whatever, and they just can't receive it."* Management consultancy

> *"I haven't had a problem with London...but I have had problems with filling up remotely...their inboxes actually filled up, so in other words, I haven't had the problem, but they have. The emails come back saying 'unable to accept this amount of data,' so in fact, the business from that view point has been hit slightly because we are so fast we can send so much so quickly and the recipient often finds their mail box is full up and cannot accept that amount of data."* Accountancy

Such problems exist even in dealing with government departments and for some participants this had created difficulties:

> *"It's not just that they can't accept that amount of data, some people refuse to...a lot of our work now, rather than producing paper copies of things and depositing planning applications and business regulations applications, we actually deposit online. Yet the planning portal, which is government sponsored, where you can deposit planning applications, can only accept a 25 megabyte upload which is pathetic, and therefore you cannot use your advantage of producing amazing things, like doing photo lift realistic renderings using Cloud computing and incorporating that in a deposit, because their system won't take it."* Architecture

> *"It does mean that you have got a disadvantage because you cannot communicate with all of the people who haven't got it."* Transport

"In January we spend most of the day locked onto Her Majesty's revenue site...we've literally physically got up at 4 o'clock in the morning to get through the gateway. It's nothing to do with our computers at all, so to some extent you are limited when you are doing your job to what's at the other end..." Accountancy

Others reported difficulties in using Skype with those without access to SFBB:

"It is really frustrating because when it works it's fantastic and you can have 2 or 3 conversations going on between the office and Plympton or Birmingham, it's fantastic but yeah, that is the limiting thing when the other party hasn't got Superfast and hopefully in time it will resolve itself." Financial services

Some participants talked about the reverse situation being true for those who had even greater fibre connectivity in other countries, dealing with those who 'only' had SFBB:

"What about the people in Japan or China who have this amazingly fast speed, how do they feel when they are contacting to people here who only have Superfast?" Creative media and design

"I was in Tokyo a few years ago and I had to send a 40 meg file back to Cornwall. I went on to YouSendIt and it said the programme is updated so do you want to update, so I updated it and sent the file and it was whoosh, gone! I thought blimey, this is fantastic, so when I got onto the net and looked at the hotel we were in it had like a 50 meg connection, so at the time it was just incredible." Management consultancy

Although participants were frustrated in dealing with companies and government departments that did not have SFBB, most participants were aware of Cloud-based options such as Dropbox to help overcome these difficulties, even if they were not considered to be ideal:

"There are systems out there now where you can upload a file and they can go to that particular site and download it." Education and training

"That slows the procedure down a bit because then they have to go to that place to retrieve the information..." Fire and flood restoration

"You can do it. Hotmail does that with the SkyDrive and that is automatic because it emails you a link to a temporary area in the SkyDrive." Digital services

But not everybody thought this was an effective solution:

"I can't say this can be done through Hotmail, they'll say, 'tough mate!' They won't accept it!" Business services

"It's a question of the rest of the world catching up with us in a way." Publishing

As the quote above suggests, 'it's about the rest of the world catching up' and although this is causing some difficulties at present, it is actually a good problem to have. As indeed 'the rest

of the world' does catch up and switches to fibre connectivity, the problem is likely to disappear.

13   Conclusion

To date most of the studies concerning the introduction of fibre connectivity have focused on fibre access infrastructure. There are very few studies of the advantages that fibre connectivity offers to SMEs over and above operating faster and more efficiently, hence this study helps to fill that gap. As findings from Phase 1 of our research suggested, there is a great appetite among business in Cornwall for improved broadband speeds and the consistency and reliability that fibre can deliver. Our research indicates an exceedingly positive outcome of upgrading to SFBB for rural SMEs, even though our sample had only had access for up to twelve months.

We uncovered new and unexpected ways of working in the SME community as a result of taking up the SFBB opportunity, and a number of benefits that span a range of businesses processes. Many more benefits are likely to be accrued over time, compounded by the benefits discovered in the early stages of adoption. Our findings suggest a significant impact of SFBB that is already playing a key role in increasing SME competiveness and agility, and stimulating productivity, growth and enhanced business innovation. Even though the shift from ordinary broadband to fibre connectivity is less tangible than the switch from dial-up to broadband, for many SMEs it represents the same kind of step change. Whereas the move from dial-up to broadband created a change in the way the Internet is accessed, the move from broadband to fibre has changed what is accessed and how SMEs use the greater connectivity it provides. SFBB is not just quantitatively better, it is qualitatively improved.

We offer the following key conclusions:

- Our research provides unequivocal evidence that SFBB is serving businesses well and is changing the way SMEs operate, increasing agility and productivity in new and novel ways. The main drivers for SFBB adoption in the SME community are frustration with poor connectivity, a desire for business growth and expansion, access to improved upload capacity, ability to use Skype and Cloud services effectively, a desire to keep up with technological innovation and a need for better reliability.
- There are many advantages of being able to work faster but SFBB offers SMEs far more than this and more than addresses the problems of slow connectivity that have hampered business efficiency and productivity. We have uncovered a virtuous circle of connectivity through a chain of interdependent benefits that make SFBB a 'must have,' not just for the greater productivity and efficiency gains it currently provides but for different and improved ways of working and conducting business. The benefits SFBB affords have become so important to SMEs they have become far more reliant on fibre connectivity than they were on regular broadband. As SME reliance on those benefits grows it increases and reinforces their value, new dependencies are

forged and a new set of innovations and benefits emerge that are used to even greater effect.

- SFBB is revolutionising the workplace and the way SME's conduct business. It provides a vehicle that changes how they communicate, how often they communicate and with whom, creating potential for new markets and empowering dispersed collaboration and access to international markets that could not have occurred before. It positively impacts agility and flexibility and the way in which SMEs manage business processes, when they work, where they work and how they work. It is the critical enabler in business transformation, opening up opportunities that were previously impossible, unrealised and had not even been conceived of, providing benefits far and above those of regular broadband provision.

- Within the SME community we found compelling evidence of significant business innovation, the creation of new revenue streams and an enthusiasm to embrace the exciting opportunities that are possible with fibre connectivity. Economic benefits may take time to be fully realised and are likely to vary according to business sector and it is still very early to be looking for evidence of substantial job creation. However we have already found evidence of job and business retention and an increase in international trade and networking as a direct result of access to SFBB. Retaining business in the region is good for the local economy and is likely to impact job creation and employment opportunities in the future.

- There is a skills gap that is unrecognised by SMEs and there is still a knowledge gap in understanding the differences between broadband delivery over copper and delivery over fibre and this leads to misconceptions about the capacity and capability of fibre provision. SMEs are concerned about limitations that only apply to copper delivery, imagining they apply equally to fibre; they also have concerns about reaching the limits of fibre capacity. It is possible that some SME concerns regarding FTTC may be legitimate in that as a cabinet is filled up, contention ratio problems may be become apparent, but this is not the case with FTTP.

13.1   Recommendations

Key recommendations based upon our data are as follows:

- There is evidence of a skills gap that is largely unacknowledged by SMEs. Rather than offer training opportunities that are unlikely to be taken up by those who do not recognise their need, a business mentoring scheme is likely to be more effective. This could be focused on enabling businesses to reflect on their current business practices and to use SFBB and ICT generally to be more efficient, effective and productive.

- There is a lack of technological skills in some parts of the SME community and this leads to erroneous beliefs and unfounded fears. In order to promote greater uptake and further innovation with SFBB it would be useful to devise an awareness campaign to address known issues, challenge and dispel misconceptions and educate SMEs around how the technology stack works and what any limitations might look like. This would help unlock the full potential of investment in SFBB for SMEs in terms of improved

efficiency and productivity and for ISPs who can overcome barriers to uptake and offer a wider range of SFBB associated services.

- In the current economic climate access to fibre connectivity has never been more important; it helps SMEs to perform more efficiently and productively, enables business to grow and fosters innovation. For those who have not yet taken up the opportunity it is necessary to actively promote the benefits of SFBB and the Superfast Cornwall site provides many examples and case studies that accomplish this effectively. However, there is also value in providing SMEs with facilities to try out SFBB and see for themselves how it can increase their agility and competitiveness and enable them to cope with day to day tasks they find difficult or impossible to achieve with regular broadband.

- There is scope to devise an appropriate and compelling business package option for rural SMEs in order to address the 'forced' migration to attractive consumer packages that include entertainment. This is likely to be popular with micro businesses and those who work from home and might include on-demand bandwidth capacity, dedicated business only traffic options, guaranteed minimum service levels, a sliding scale of options to share bandwidth capacity with one/many others, a consistent and reliable 24/7 helpline, and a facility to speak to a manned help desk. Since micro business needs are diverse and their requirements are likely to fluctuate, we are unlikely to find a 'one size fits all' solution. Instead it might be useful to offer a 'basic' micro business package that includes entertainment with a suite of add ons so that micro businesses can mix and match according to their requirements and opt in or out as and when they need, perhaps on a monthly/quarterly basis. Further research is required to establish a robust business case for developing and offering such a business package.

- We have evidence that SFBB is helping to retain business in the region and this is good for the local economy and may generate further employment opportunities as businesses expand. In order to hasten growth opportunities and maximise exploitation of SFBB it should be recognised that the opportunity for inward investment to the region is not limited to the 'head start' period and a dedicated programme to attract more businesses and start-ups could greatly enhance employment prospects in Cornwall.

- By necessity, and given the nature of the roll out programme, our research was confined to SMEs who had experienced access to SFBB for up to 12 months. Whilst this has undoubtedly been a valuable exercise in elucidating the business impact and benefits of fibre connectivity for SMEs it is limited to providing insights following a relatively short period of use. Having created a baseline study of attitudes and expectations prior to the introduction of SFBB and a usage study of business impacts and benefits in the first 12 months of the SFBB experience, it would be useful to follow up with a third study of 2 years plus use. This would serve to uncover how the nascent and novel innovations, collaborations and different ways of conducting business in Cornwall's SME community have developed and evolved to inform other

NGA areas. In effect this would provide the first longitudinal study of the SME journey prior, during and after the introduction of SFBB.

Appendix

Superfast Cornwall after SFBB SME Focus Group Moderator Guide

Introduction

Welcome, introductions, consent, recording, use of data

- confidentiality
- right to withdraw
- incentive arrangements
- fire exits
- purpose of groups (very brief description of Superfast Cornwall project, our need to understand customer needs, expectations and experience)
- what we will do with the data
- One rule: one person one voice

Round table, participants to introduce selves: name, what your company does, your role/responsibilities.

Expectations

1) What made you decide to upgrade to SFBB?

2) Do you know what kind of speeds you are getting now with SFBB compared with previous BB provision?

3) Is your experience of SFBB what you expected? Is it better/worse/same? How does it compare with the move from dial up to BB?

4) Has anyone opted for the faster (80/20Mb) FTTC product?
   Prompts: What influenced that decision?
                        Experience of the product/value to business
                        How does it compare with previous speeds?

5) Is SFBB good value for money?

6) Do you intend to keep SFBB/upgrade?

7) Are you with the same ISP now as you were for BB? (Quick round up of who they are with) Is anyone thinking of changing? Why?

Business Impact

1) What impact has SFBB had on your business and how important is that to

you?

Prompts: Working faster/more efficiently/effectively

                  Increased productivity

                  Develop new products/services *(identify potential case studies)*

                  Work/life balance

                  Has it changed how/when you work? How/in what way?

                  What sort of problems has it helped you to overcome?

2) Has SFBB enabled you to:

                  Make use of different applications/services e.g. Cloud, video conferencing?

                  Take advantage of improved upload and download speeds?

                  Take on more employees/expand business – was this partly/wholly due to SFBB?

                  Might you take on more staff in the course of the next two years as a result of SFBB

                  Work with a wider range of people either as employees - or extending your customer base

                  Use more flexible working practices

                  Connect more people/devices

                  Change working patterns/practices/do things you couldn't do or were difficult to do before

                  Create new business/more jobs

                  Build better collaborative networks

                  Achieve tasks in house that were previously outsourced

                  Combat current economic conditions/increase competitiveness

                  Make more/better use of social networking sites for business

                  Accomplish more online e.g. reduce the need to travel/use of couriers to send large files etc

Ask how important each of the issues above is to participants and in what way it has improved business.

3) Do you think SFBB will enable you to decrease your carbon footprint? How important is this to you? Introduce carbon calculator tool, provide handouts

4) Has SFBB enabled you to do things that you hadn't previously thought of ?

Prompts: Get examples, e.g. new products/services or ways of doing things.
What difference does that make to your business?

5) Has SFBB availability impacted your ability to stay located in Cornwall?

6) Whether or not you are now doing things differently, what is the most important difference SFBB has made to your business and why?

Maximising SFBB benefits

1) Do you feel you know enough about SFBB capability to take full advantage for your business?

2) Is there anything that could improve your SFBB experience?

3) Do you need different/additional skills to make the most of SFBB?
   Prompt: What kind of skills, where/how will you acquire them?

4) Have you changed/upgraded IT kit as a result of getting SFBB? Do you think you need to/will in the future?

5) Do you have any security or privacy issues with SFBB over and above any issues you might have had before with BB? E.g. using new services
   Prompt: Examples/ what are you doing about it?

6) Are you experiencing or do you anticipate any problems with SFBB?

Future aspirations

1) What kind of new services could SFBB offer that would appeal to you?

2) How do you see your business in 5 years time and how important is SFBB to achieving that?

3) Is there anything that you don't think SFBB can do that you wish it could?

4) Do you think SFBB provision in Cornwall will attract inward investment?

What difference could that make to the region?

Wrap up

Is there anything we haven't talked about that you wish we'd covered?

Thank you all for coming and taking part, it's been really useful for us, don't forget to collect incentives, if anyone has any questions etc, etc.