



# The Impact of Public Sector Interventions on Broadband in Rural Areas

2003

## TABLE OF CONTENTS

<b>Executive Summary</b>	4
<b>1. Introduction</b>	9
 <b><u>Part I – Broadband in Rural Areas</u></b>	
<b>2. Why Broadband Matters in Rural Areas</b>	10
<b>3. Current Broadband Coverage</b>	11
 <b><u>Part II Supporting Broadband Provision in Rural Areas</u></b>	
<b>4. Funding Sources</b>	14
4.1 UK Broadband Fund	14
4.2 RDA Single Pot	15
4.3 EU Structural Funds	15
<b>5. State Aid and Competition Issues</b>	16
5.1 State Aid	16
5.2 EU Competition Law and the New Electronic Communications Directives	16
5.3 Public Sector Interventions – Procurement, Investment, Subsidy?	17
<b>6. Models of Intervention for the Provision of Broadband in Rural Areas</b>	18
6.1 Infrastructure Provision	20
6.1.1 Definition of Infrastructure Provision	20
6.1.2 Examples	
• Coastal SuperHighway	20
• Scottish Borders Rural Broadband (SBRB)	21
• Norwich Ring Project	21
• Anglesey Connected	22
6.1.3 Issues	
• Compliance with State Aid Rules?	22
• Current Generation vs. Next Generation Broadband	23
• Potential State Aid Test Case on Public Sector Broadband Infrastructure Provision	24
6.2 Demand Aggregation	24
6.2.1 Definition of Demand Aggregation	24
6.2.2 Examples	
• UK Broadband Aggregation Project	25
• Wales	25
• Scotland	25
• Northern Ireland	26
6.2.3 Issues	
• The Implications of Making Value-for-money the Number One Objective of the BAP?	26
• How will the BAP impact on current broadband initiatives?	26
• Potential for Anti-competitive Exclusive Supply Agreements to Develop	27
• Procurement at the Regional Level may Reduce Local Partnering Opportunities	27
6.3 Public Private Partnerships	27
6.3.1 Definition of Public Private Partnerships	27

6.3.2 Examples		
• ACTNOW		28
6.3.3 Issues		
• Encouraging Partnerships		29
6.4 Subsidised Broadband Trials and Technology Pilots		29
6.4.1 Definition of Subsidised Broadband Trials and Technology Pilots		29
6.4.2 Examples		
• Remote Area Broadband Inclusion Trial (Rabbit)		29
• Satellite Subsidy Schemes		30
• Switch on Shropshire		30
• Power Line Technology Trial		30
• Buckfastleigh Community Network		30
• Alston Cybermoor		31
• Mini DSLAM ADSL Trials		32
6.4.3 Issues		
• Access to Public Sector Networks for Backhaul		32
• Provision of Service Level Agreements when Utilising Public Sector Backhaul		33
• Effectiveness of the Demand Side Subsidy Programmes		33
• Impact of Satellite Planning Regulations		34
• Power Line Technology		34
6.5 Promotion and Demand Stimulation		34
6.5.1 Definition of Promotion and Demand Stimulation		34
6.5.2 Examples		
• Demand Broadband		35
• BT Demand Registration Campaign		35
• Internet Service Providers (ISPs) and Demand Registration		35
• RDA and Devolved Administration Promotion Initiatives		35
• UK Online Centres		36
• e-Lessons: Broadband Content for Education		36
• The Broadband Show		36
6.5.3 Issues		
• The Lack of Awareness of the Benefits of Broadband Remains a Significant Problem in Rural Areas		37
• Need to Explain the Full Range of Broadband Technologies		37
• Sustainability of UK Online Centres		37
• The Success of BT's Demand Registration Campaign		37
6.6 Community Network Projects		38
6.6.1 Definition of Community Network Projects		38
6.6.2 Examples		
• Arwain Project		38
• Kingsbridge Link		38
6.6.3 Issues		
• Are Community Networks an Interim Solution?		38
<b>7. Conclusions</b>		<b>39</b>

## EXECUTIVE SUMMARY

The Broadband Stakeholder Group (BSG) was established to advise Government on the development and implementation of a strategy to enable the UK to meet the Government's target to have the most extensive and competitive broadband market in the G7 by 2005. The widespread availability of broadband in rural areas is a key part of this strategy.

Significant barriers exist to the extension of mass-market broadband coverage to rural areas. In some of the most remote parts of the country, the economics are so challenging that it is reasonable to assume that the market will probably not deliver to 100% of the population in the foreseeable future without some form of public sector intervention or support. To that end, in some areas of the UK, public sector funding/support may be required to ensure coverage. However, determining the appropriate level and mechanism to intervene will need to be considered in the context of the long-term impact on competition.

In recognition of this, the Department of Trade & Industry (DTI) developed the £30 million UK Broadband Fund to help RDAs and Devolved Administrations stimulate supply and demand for broadband services in rural areas. This fund helped spawn the creation of many initiatives and models of public sector intervention.

With the UK Broadband Fund coming to an end, and in light of e-Commerce Minister Stephen Timms' recent call for broadband coverage to be extended to every community by the end of 2005, as well as recent announcements from BT regarding their demand registration campaign, it is important to look at what types of initiatives have worked and what have not and what the requirements for public sector intervention might be going forward. The overall question is how do all of these initiatives impact on the Government's objective to have the most extensive and competitive broadband market in the G7 by 2005 as well as the achievement of availability to 100% of communities by the end of 2005.

The purpose of this report therefore is to provide a picture of where we currently stand with regard to the deployment and take-up of broadband in rural areas.

### **Why Broadband Matters to Rural Communities**

The deployment of mass-market broadband services is still a relatively recent phenomenon and the impact of broadband on economic growth has still to be assessed. Nevertheless, many economists continue to predict significant economic benefits from the proliferation of broadband networks; it has real potential to accelerate the five key drivers of economic growth: enterprise; innovation; competition; investment and skills.

Broadband should be particularly beneficial for rural areas as it allows people to communicate and share information regardless of their physical location. Broadband can help to strengthen rural communities by making community services more easily accessible and can also help in rural regeneration. Broadband also facilitates more flexible working patterns. Home working or secure corporate teleworking required by major organisations and public sector management is proving to be a major driver of demand, reducing operating costs for commercial and public sector organisations, and reducing the need to commute to urban areas (with significant environmental benefits for the UK).

## Current Broadband Coverage

As at 30 September 2003, approximately 80% of the UK had access to a mass-market broadband solution – that is one that is targeted at residential or small business users. Satellite services (both 2-way and 1-way hybrid services) are already being used in a number of different ways (for both single access and shared access) to deliver access to consumers and SMEs.

Wireless broadband services have so far only had limited impact on the UK broadband market to date, although the actual extent of wireless broadband deployment is probably underestimated.

Broadband availability is highest in urban and suburban areas (where 75% of the UK population live), where economies of density make the deployment of broadband relatively cost effective. However, broadband availability falls significantly in market towns, rural villages and remote areas (home to 25% of the UK population).

In September 2003, BT announced plans to bring ADSL availability potentially within reach of 90 per cent of UK homes by 2004. More recently, BT has announced that it is setting trigger levels for an additional 2300 BT exchanges providing a route-map for extending ADSL coverage to more than 99% of UK homes and businesses.

However, both BT and the government accept that taking broadband to the last 10% of communities will require concerted action on the part of both the public and private sector and that private investment alone will not be sufficient to complete this task. As is explained in this report a range of models now exists for extending broadband coverage and achieving the goal of reaching 100% of communities by the end of 2005.

## Funding Sources

The Government provides several sources of funding for broadband initiatives to stimulate broadband provision in rural areas in both the public and private sectors in England and a number of the RDAs allocate a significant proportion of their budgets to this cause. Similarly, the Devolved Administrations have devolved responsibility for many aspects of public expenditure and utilise their own funds to finance broadband initiatives.

## State Aid and Competition Issues

Public sector bodies in the UK are becoming increasingly significant stakeholders in the provision of broadband infrastructure/services and as such, must be sensitive to EU State Aid, competition law and the new electronic communications directives. In order to minimise the potential for transgressing these rules, public sector interventions must be clear about the objective(s) they are seeking to achieve and the tools they use:

- Procurement: services purchased to meet clearly defined public sector requirements, with competitive tendering to assure best value for money.
- Investment: all public funds injected into a project have a good prospect of generating a market rate of return proportional to the risk of the project.
- Subsidy: intervention to meet particular social policy objectives, normally justified by presence of market failure.

## Models of Intervention for the Provision of Broadband in Rural Areas

A range of broadband initiatives are being implemented across the UK and they all differ in terms of the level of public sector intervention and the extent to which they combine elements of procurement, investment and subsidy. At one end of the spectrum are schemes that involve the Government directly providing broadband infrastructure for use by the private/public sector.

At the other end, are private sector or community led initiatives that involve little to no public sector involvement/expenditure. In addition to the level of public sector intervention, these initiatives vary greatly in terms of their scale with some projects being rolled out at national or regional level but with the vast majority occurring at the local/community level. A number of examples of different types of initiatives and interventions are outlined in this report.

<b>Models of Intervention</b>	<b>Characteristics</b>
<b>1. Infrastructure provision</b>	Public sector subsidises the investment in, or procures the network or network elements for use by both the public and private sector.
<b>2. Demand Aggregation</b>	Procurement by the public sector provides a demand stimulus for private sector provision
<b>3. Public/Private Partnerships</b>	Multiple partners from both the public and private sector cooperate to share the investment and operational risks. These projects often combine supply side initiatives with demand stimulation.
<b>4. Subsidised broadband trials and technology pilots</b>	Demand subsidies to trial a broadband technology and supply subsidies for community broadband networks and to trial new technologies
<b>5. Promotion and content commissioning</b>	Demand registration schemes; marketing and promotion events; public broadband centres; Commissioning content creation
<b>6. Community Network Projects</b>	Receive minimal or no Public Sector assistance. Delivered through 'grassroots' community action

### Key Issues

In order to draw conclusions on the collective impact of these initiatives on extensiveness and competitiveness as well as the achievement of availability to 100% of communities by 2005, it is necessary to identify issues associated with each.

#### *Infrastructure Provision*

The provision of infrastructure by the Public Sector either through procurement or investment raises a number of issues:

- Uncertainty regarding EU State Aid rules and the extent to which the Public Sector can invest in, procure, and/or subsidise broadband infrastructure; and
- The appropriateness of deploying current generation as opposed to next generation broadband in rural areas.

#### *Demand Aggregation*

The Government have recently announced their major broadband aggregation project, "BAP". The specifics of the project raise a number of issues:

- The implications of making value-for-money the number one objective of the BAP;
- How will the BAP impact on current broadband initiatives?
- Potential for anti-competitive exclusive supply agreements to develop; and
- Procurement at the regional level may reduce local partnering opportunities.

### *Public/Private Partnerships*

The BSG has always been supportive of public/private partnerships. It remains to be seen how aggregation of public sector demand programmes including the BAP, encourage and complement these partnerships.

### *Subsidised broadband trials and technology pilots*

Public sector subsidies are being used in a number of different ways for either encouraging users to take-up broadband services (demand side) or encouraging the deployment of broadband in rural areas (supply side). These subsidies present a number of issues:

- The rules around the use of public sector networks for the delivery of commercial broadband services is unclear;
- The long-term viability of using public sector backhaul for community networks;
- The effectiveness of the demand side subsidy schemes in encouraging broadband take-up;
- The impact of satellite planning regulations with regard to administering satellite subsidy schemes; and
- The potential role and applicability of Power Line Technology.

### *Promotion and Demand Stimulation*

The take-up of broadband in rural areas as well as urban areas continues to remain a significant issue in the UK and a number of initiatives are trying to address this problem. These initiatives raise a number of issues:

- The lack of awareness of the benefits of broadband remains a significant problem in rural areas;
- Many people are not aware of the full range of broadband technologies available;
- The sustainability of a number of UK Online Centres; and
- The success of BT's Demand Registration Campaign.

### *Community Network Projects*

There are a number of do-it-yourself community networks using a variety of technologies in different spectrum bands developing across the country, however, the question remains as to whether these projects only provide an interim solution in the absence of a strategic broadband scheme.

## **Conclusions**

The overall aim of this report was to gain a picture of the collective impact the current broadband initiatives being deployed in rural areas will have on extensiveness and competitiveness as well as the achievement of availability to 100% of communities by 2005.

Over the last two years real progress has been made in the deployment of broadband services to rural areas. In October 2001, availability was at 60%<sup>1</sup> and currently we are at 80% with this figure expected to continue to rise over the next two years. The most significant driver in the extension of broadband availability during this period has probably been BT's demand registration campaign – a market led initiative, which has provided an innovative new mechanism for enabling BT exchanges.

---

<sup>1</sup> BSG Report and Strategic Recommendations, November 2001

The recent announcement setting trigger levels for another 2300 exchanges has provided welcome clarification of how BT intends to approach the remaining 20% of unserved areas.

Whilst recognising the significance of the demand registration mechanism, it seems likely that the existence of broadband initiatives such as those outlined in this report has provided an additional stimulus to BT's plans for addressing rural coverage. As both the Government and BT have recognised reaching the last 10% of communities will require concerted action on the part of both the public and private sectors. A range of models now exists for extending broadband coverage and achieving the goal of reaching 100% of communities by the end of 2005. A number of lessons can be drawn from the UK experience so far:

- Extending broadband coverage is not simply a supply side issue. Demand stimulation must be a core component of any broadband initiative or strategy.
- As a matter of principle, public sector intervention should be kept to the minimum level necessary to stimulate the provision of services.
- Although defining the minimum level of intervention is quite difficult in practice particularly as market conditions evolve, excessive intervention should be avoided
- The Public Sector should not intervene where a competitive market is already operating.
- The role of Government should be to create the conditions for competition rather than act as a direct competitor to suppliers/operators themselves.
- Some models of intervention are more benign than others from a State Aid and EU Competition law perspective. Further clarity is required on how State Aid and EU Competition laws apply.
- The Public Sector initiatives must be clear about the objectives they are seeking to achieve. Particular care is required where subsidies (which should be used as a last resort) are being provided.
- The outcome of the EU Commission Inquiry into Scottish Enterprise's Project Atlas will likely serve as a test case on the application of state aid to public sector broadband infrastructure provision, and the issue of current vs. next generation services. The outcome, which is expected early in 2004, will therefore be very significant and should provide further legal clarity on the issues related to public sector infrastructure provision.
- Further innovation by Community Networks should be encouraged however this model should not be regarded as a panacea for the last 10%.
- Clarification of rules relating to the long-term use of public sector networks for backhaul by the private sector is required, as well as the development of alternative backhaul products for rural areas.
- We should not lose sight of the goal of promoting competition whilst addressing issues of extending broadband deployment.
- If the UK is to reach 100% broadband availability to all communities by the end of 2005, decisions will need to be made as to which of these models is most suitable to achieve the objective.
- All Government interventions should remain technology neutral.

In conclusion, the availability and take-up of broadband in rural areas will require continued concerted efforts by both the Public Sector and industry to achieve the 100% objective by the end of 2005.



## 1. Introduction

Approximately 80% of the UK population has access to a mass-market broadband solution – that is one that is targeted at residential or small business users. Broadband availability is highest in urban and suburban areas (where 75% of the UK population live). However, broadband availability falls significantly in market towns, rural villages and remote areas.

Significant barriers exist to the extension of mass-market broadband coverage to rural areas. The high costs involved in deploying new networks in areas of low population density<sup>2</sup> make it difficult for operators to build sustainable business models to justify investment, particularly given the challenging commercial conditions faced by the ICT sector. Even wireless networks, which are cheaper and easier to deploy than fixed networks, have only so far been deployed on a relatively small scale. These problems are exacerbated by uncertainty about the level of demand.

Nevertheless, in some of the most remote parts of the country, the economics are so challenging that it is reasonable to assume that the market will probably not deliver to 100% of the population in the foreseeable future without some form of intervention or support. To that end, in some areas of the UK, public sector funding/support may be required to ensure coverage. However, determining the appropriate level and mechanism to intervene will need to be considered in the context of the long-term impact on competition (a similar view was echoed in the recent OECD paper “Broadband Driving Growth: Policy Responses”<sup>3</sup>).

Recognising that regional authorities and devolved administrations have a pivotal role to play in harnessing private sector investment, regional funding and public sector demand for broadband, the Department of Trade & Industry (DTI) developed the £30 million UK Broadband Fund to help them stimulate supply and demand for broadband services in rural areas.

When the DTI announced the Fund in 2001, the UK broadband market was at a nascent stage and it was not clear what the most appropriate public sector interventions to stimulate supply and demand for broadband services in rural areas might be. Although designed to run to March 2004, the Fund was not intended to work in isolation and there were many other significant local, regional and central Government and European interventions that operated along side it.

With the UK Broadband Fund coming to an end, and in light of the recent call by the e-Commerce Minister Stephen Timms for broadband coverage to be extended to every community by the end of 2005, it is important to look at what types of initiatives have worked and what have not and what the requirements for public sector intervention might be going forward. Moreover, with the DTI announcing its aggregation programme and BT's intention to rollout ADSL to 90% of the country by 2004 (as well as setting trigger levels for another 2300 exchanges that could potentially enable more than 99% of UK homes and businesses to be connected to BT ADSL exchanges), it is necessary to consider how some of these schemes are likely to evolve or even become obsolete. The overall question is how do all of these initiatives impact on the Government's objective to have the most extensive and competitive broadband market in the G7 by 2005 as well as the achievement of availability to 100% of communities by the end of 2005?

---

<sup>2</sup> Rural areas comprise groups of dispersed population clusters (market towns and their serviced communities around); overall the population density is low but the majority (>65%, 80% is fairly common) live within 4.5 km of the centre of a market town.

<sup>3</sup> <http://www.oecd.org/dataoecd/18/3/16234106.pdf>

The purpose of this report therefore is to provide a picture of where we currently stand with regard to the deployment and take-up of broadband in rural areas. To construct this picture, we have taken a number of examples from all of the RDAs and Devolved Administrations and have categorised these initiatives in terms of the scope and scale of public sector intervention. In addition, it has been necessary to set this impression against the backdrop of sustainability, replicability, scalability and legality (EU State Aid rules and competition law).

The report is based on collected information from reports and documents including the recent Environment, Food and Rural Affairs (EFRA) Committee Rural Broadband Report<sup>4</sup>; and the Countryside Agency Broadband in rural areas: Best Practice Study<sup>5</sup>; as well as informal conversations with the DTI, Regional Development Agencies (RDAs), Devolved Administrations (Northern Ireland, Scotland and Wales), County Councils, Local Authorities, community champions, businesses and individuals involved in rural broadband.

It should be noted, this report does not advocate any one technology for the delivery of broadband as broadband can be delivered over a variety of platforms (wireless, fixed, satellite etc). The BSG have released two separate reports on wireless broadband, which are available on the BSG website<sup>6</sup>.

## **Part I – Broadband in Rural Areas**

### **2. Why Broadband Matters to Rural Communities**

The deployment of mass-market broadband services is still a relatively recent phenomenon and the impact of broadband on economic growth has still to be assessed. Nevertheless, many economists continue to predict significant economic benefits from the proliferation of broadband networks. These predictions have driven a number of governments around the world to act and to prioritise broadband deployment as a matter of government policy. South Korea put broadband at the heart of its strategy for transformation towards a knowledge-based economy, and as the world leader in broadband it is now starting to derive real economic and social benefits, from its success including the rapid development of e-commerce, e-learning, e-government and e-growth<sup>7</sup>.

Broadband has real potential to accelerate the five key drivers of economic growth: enterprise; innovation; competition; investment and skills<sup>8</sup>.

A view supported by a 2002 US Department of Commerce report<sup>9</sup> predicting that the specific regional economic development benefits resulting from greater broadband deployment and use would include:

- Job creation and retention
- Reduced traffic congestion
- More successful industrial growth, recruitment and retention
- Improved education and health systems
- More productive research and development
- Increased start up and entrepreneurial activities

<sup>4</sup> <http://www.publications.parliament.uk/pa/cm200203/cmselect/cmenvfru/587/587.pdf>

<sup>5</sup> [http://www.countryside.gov.uk/Publications/articles/ca\\_148\\_broadband.asp](http://www.countryside.gov.uk/Publications/articles/ca_148_broadband.asp)

<sup>6</sup> [www.broadbanduk.org](http://www.broadbanduk.org) "Options for accelerating the deployment of terrestrial wireless broadband services by 2005" and "BSG Wireless Report November 2002"

<sup>7</sup> Source: Investigating Broadband Technology Deployment in South Korea, Brunel/ DTI July 2002  
[http://www.broadbanduk.org/reports/SKorea\\_report.pdf](http://www.broadbanduk.org/reports/SKorea_report.pdf)

<sup>8</sup> See BSG Report and Strategic Recommendations November 2001

<http://www.broadbanduk.org/reports/report03.htm>

<sup>9</sup> Understanding Broadband Demand, Office of Technology Policy, US Department of Commerce, September 2002

- Improved government efficiencies and service delivery

As globalisation continues, countries and regions will compete with each other on the quality and pervasiveness of their high-speed communications networks and therefore the successful rollout and take-up of broadband is of central importance to the health and future prosperity of the United Kingdom.

Broadband should be particularly beneficial for rural areas as it allows people to communicate and share information regardless of their physical location. Broadband can help to strengthen rural communities by making community services more easily accessible and can also help in rural regeneration. By enabling companies and organisations located in rural areas to engage with clients and suppliers anywhere in the world broadband provides new opportunities for growth, job creation and economic diversification. There is already evidence of some SMEs moving out of urban areas to broadband enabled rural locations to take advantage of cost savings and other benefits associated with rural life (conversely, the same is true for some rural businesses relocating to urban areas due to the lack of broadband availability in their rural location). Broadband also facilitates more flexible working patterns. Home working<sup>10</sup> or secure corporate teleworking<sup>11</sup> required by major organisations and public sector management is proving to be a major driver of demand, reducing operating costs for commercial and public sector organisations, and reducing the need to commute to urban areas (with significant environmental benefits for the UK).

Moreover, broadband is becoming increasingly a significant source of social cohesion for rural areas. This is because rural communities are continuing to lose a number of essential utilities and services such as post offices and banks so the only alternative in many cases to regain this loss is through electronic participation; a possibility realised with ICT and broadband. Andrew Pinder, the e-Envoy recently argued that "Given that most new employment these days is IT-based, we need to have IT connectivity, particularly broadband, for industry to go to a rural place. So for the health of our rural communities, we just need to have broadband there. If we don't, we're going to end up with an empty countryside, and that's really bad for everybody; an empty and poor countryside."<sup>12</sup>

Notwithstanding the above and despite the acceptance by most RDAs that broadband is important for economic regeneration, some scepticism still remains about the economic significance of broadband. During recent informal conversations with the RDAs, one commented that they are yet to be convinced about the case for broadband when resources could be spent elsewhere to promote economic regeneration.

### 3. Current Broadband Coverage

As at 30 September 2003, approximately 80% of the UK had access to a mass-market broadband solution<sup>13</sup> – that is one that is targeted at residential or small business users. Satellite services (both 2-way and 1-way hybrid services) are already being used in a number of different ways (for both single access and shared access<sup>14</sup>) to deliver access to consumers and SMEs. Broadband availability is highest in urban and suburban areas (where 75% of the UK population live), where economies of density make the deployment of broadband relatively cost effective. However, broadband availability falls significantly in market towns, rural villages and remote areas (home to 25% of the UK population).

<sup>10</sup> [www.intellectuk.org](http://www.intellectuk.org)

<sup>11</sup> According to the Internet Service Providers' association ([www.ispa.org.uk](http://www.ispa.org.uk)), BT currently has 4,000 home workers in the UK, making a saving of 12.5m commuter miles per year and saving 1,000 tons of CO2 emissions.

<sup>12</sup> "Broadband divide will wreck rural economy says e-Envoy" Graeme Wearden, 26/9/03, [Silcon.com](http://Silcon.com)

<sup>13</sup> Approximately 97% of these customers live close enough to the exchange to receive ADSL.

<sup>14</sup> A number of Community Networks use 2-way satellite connections (for backhaul) in combination with Wi-Fi to provide affordable broadband access to a local community.

Figure 1 shows the coverage of fixed line mass-market broadband technologies in the UK as at the end of September 2003. As the map demonstrates, broadband remains a relatively 'urban' phenomenon. The high costs associated with the roll-out of new broadband networks and uncertainty about the level of demand are major barriers to market-led broadband deployment in less densely populated areas.

It should be noted, wireless broadband services<sup>15</sup> have so far only had limited impact on the UK broadband market to date, although the actual extent of wireless broadband deployment is probably underestimated as many of the smaller community and public sector networks are not included in official broadband coverage estimates.

In September 2003, BT announced plans to bring ADSL availability potentially within reach of 90 per cent of UK homes by 2004 through the utilisation of new technologies<sup>16</sup>, and cost saving initiatives. More recently, BT has announced that it is setting trigger levels for an additional 2300 BT exchanges providing a route-map for extending ADSL coverage to more than 99% of UK homes and businesses.

However, both BT and the Government accept that taking broadband to the last 10% of communities will require concerted action on the part of both the public and private sector and that private investment alone will not be sufficient to complete this task. Additionally, there remains an issue for the 600 of the very smallest exchanges without a trigger level. Although each of these exchanges serve less than 300 customers, collectively, according to BT, they serve around 100,000 households.

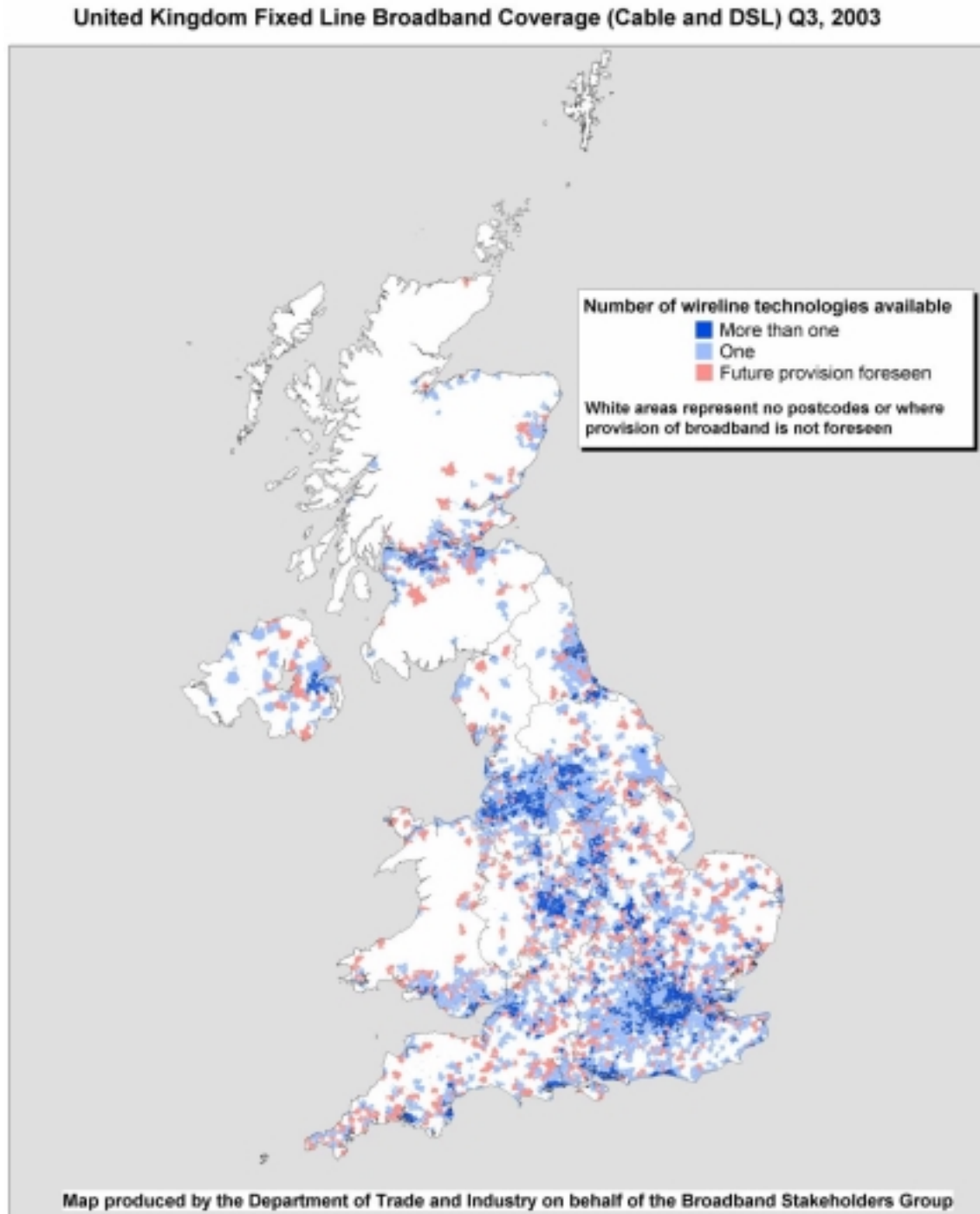
As is explained in this report, a range of models now exists for extending broadband coverage and achieving the goal of reaching 100% of communities by the end of 2005.

---

<sup>15</sup> Excluding the market for 'indoor' WLAN access products and WLAN hotspots which has shown significant growth in the last 12 months

<sup>16</sup> Following successful trials, the reach of broadband in enabled exchange areas would be extended to homes within approximately 6km line length of the exchange, subject to line test. This move, extending the previous limit of approximately 5.5km line length, increases the proportion of people who can receive broadband in enabled areas from approximately 94 per cent to 97 per cent. The new extended limit for broadband is based on 60dB of signal loss on the line (typical line length about 6km). The previous limit, 55dB, equates to approximately 5.5km line length (Source BT).

Figure 1



Current coverage includes exchanges that have been committed to be enabled by the end of 2003.

\* 2-way Satellite services are also available across the UK and some terrestrial wireless services have been deployed in a number of locations.

\*\* Future provision foreseen is any BT exchange that currently has a trigger level set

This map is reproduced from Ordnance Survey material with the permission of Ordnance Survey on behalf of the controller of Her Majesty's Stationary Office.

©Crown copyright. All rights reserved. DTI, 106637368, September 2003.

## **Part II Supporting Broadband Provision in Rural Areas**

### **4. Funding Sources**

The Government provides several sources of funding for broadband initiatives to stimulate broadband provision in rural areas in both the public and private sectors in England and a number of the RDAs allocate a significant proportion of their budgets to this cause. Similarly, the Devolved Administrations have devolved responsibility for many aspects of public expenditure and utilise their own funds to finance broadband initiatives.

In the examples we refer to in this report the funding primarily comes from sources identified below. Other examples of funding for broadband are contained within the OGC Guide – “Public Sector Funding for Broadband: A Guide”<sup>17</sup>.

#### **4.1 UK Broadband Fund**

In 2001 the UK Government announced the establishment of the £30 million Broadband Fund. The Fund was established to encourage the development of innovative broadband schemes in areas where residents did not have access to a mass-market broadband solution. To equitably distribute the Fund, each of the Devolved Administrations (Scotland, Wales and Northern Ireland) and RDAs were allocated an amount based on the number of residents in each region who do not have access to an affordable broadband connection.

The Devolved Administrations and RDAs were given a broad remit regarding the types of projects they may wish to undertake but guidance provided to the Devolved Administrations and RDAs suggested the development of demonstrator or pilot projects aimed at raising awareness amongst businesses and consumers; feasibility studies to ascertain whether the proposal is achievable or the appointment of a project manager to develop broadband action plans<sup>18</sup>. The first allocation of funding was made available in January 2002, with the funding due to end in March 2004.

All RDAs and DAs have taken advantage of the UK Broadband Fund and all have developed broadband programmes. However, some RDAs and DAs reported that their allocation was exhausted quickly while others are still yet to fully commit the expenditure.

<b>Region</b>	<b>Allocation</b>
North East	£ 1,460,000
North West	£ 2,680,000
Yorkshire & Humberside	£ 3,100,000
East Midlands	£ 2,090,000
West Midlands	£ 2,080,000
East	£ 3,220,000
London	£ 113,000
South East	£ 2,900,000
South West	£ 3,780,000
Scotland	£ 4,390,000
Wales	£ 2,670,000
Northern Ireland	£ 1,460,000

#### **UK Broadband Fund Allocation**

Source: Department of Trade & Industry

<sup>17</sup> [www.broadband.gov.uk/html/ukbroadband\\_task\\_force/Final%20Guidance.pdf](http://www.broadband.gov.uk/html/ukbroadband_task_force/Final%20Guidance.pdf)

<sup>18</sup> The UK Broadband Fund: Guidance for Devolved Administrations and Regional Development Agencies, DTI

## 4.2 RDA Single Pot

The RDAs have been allocated a single budget ('Single Pot') by the UK Government to promote regional growth and economic regeneration in their region. The Single Pot allocation for the 2002-2003 period amounted to around £1.75 billion. Under the Single Pot, the RDAs are awarded a degree of funding flexibility and can access this fund to address regional priorities (subject to the approval by Government of their corporate plans and European Commission rules on State Aid; there is also an additional requirement that RDA expenditure of funds must be split evenly between capital and running costs). In real terms this means that they can transfer a proportion of their budget to meet specific needs when the scope of existing programmes is too narrow. Several RDAs have used this flexibility to provide substantial additional funding to their UK Broadband Fund projects or in fact have absorbed the UK Broadband Fund into their single pot allocation.

Many RDAs are committing substantial money out of the RDA Single Pot for broadband, for example, the South East of England Development Agency (SEEDA) have a £5 million Broadband budget for 2004.

### RDA Single Pot funding of broadband projects

Region	£ million					
	Total	2000-01	2001-02	2002-03	2003-04	2004/5/6
North East	48.165	2.000	2.780	3.385	40.000	Ongoing
North West	142.777			1.777	141.000	Ongoing
Yorkshire & Humberside	2.132		0.296	0.478	0.658	0.700
East Midlands	0.560			0.200	0.360	
West Midlands	21.149			1.145	8.252	11.752
East of England	12.530			4.300	3.350	4.880
London	1.700				1.700	Ongoing
South East	6.300			1.300	5.000	
South West	0.370				0.370	
Total	235.683	2.000	3.076	12.585	218.022	

Source: Department of Trade & Industry

## 4.3 EU Structural Funds

The European Union has four Structural Funds, however, it is the European Regional Development Fund (ERDF) and the European Social Fund (ESF), which are most relevant to broadband and are being used in some parts of the UK to part fund broadband projects. The UK has been allocated £10.7 billion in structural funds for the 2000-2006 period.

The EU Structural funds are designed to concentrate on three objective areas: Objective 1 is about promoting the development and structural adjustment of regions whose development is lagging behind the rest of the country; the Objective 1 regions are West Wales and the Valleys, Cornwall, Merseyside and South Yorkshire (Objective 1 transitional programmes for the Highlands and Islands of Scotland and for Northern Ireland are also in place.) Objective 2 is about supporting the economic and social conversion of areas facing structural difficulties and Objective 3 is to support the adaptation and modernisation of policies and systems of education, training and employment.

Under the ERDF and ESF schemes projects are not 100% funded and require additional sources of funding - match funding. This source of funding is the amount organisations give towards the eligible costs of a project. Match funding can be either public funding or a contribution of public and private funding. For example, under the ERDF programme, the EU contributes a maximum of 50 per cent of the eligible cost, although it can be as much as 75 per cent for projects in Objective 1 regions. The ESF programme requires that at least 10% of the costs are obtained from public sources as match funding.

## 5 State Aid and Competition Issues

Public sector bodies in the UK are becoming increasingly significant stakeholders in the provision of broadband infrastructure/services and as such, must be sensitive to EU State Aid, competition law and the new electronic communications directives.

### 5.1 State Aid

The EU Treaty enforced by the European Commission requires that any subsidy provided by the Government, either indirectly or directly must not constitute illegal State Aid<sup>19</sup>. It is up to the Commission to decide if it believes an intervention distorts competition and has an effect on trade between member states. State Aid rules are a significant consideration for the funding of broadband programmes and officials must take account of all the possible impacts their programme may make. Failure to give due consideration to State Aid rules can result in penalties ranging from the cessation of a programme to the full recovery of aid received (and with interest). Moreover, the very threat of a company making a legal challenge on State Aid grounds is a significant deterrent to intervention.

It should be noted, there are some exemptions<sup>20</sup> to the State Aid rules, for example on public subsidies in the regions that are eligible to receive EU regional funds. Some broadband programmes have utilised this exemption. Guidelines<sup>21</sup> are available from the Commission and the Government on what aid can be approved.

### 5.2 EU Competition Law and the New Electronic Communications Directives

In addition to the State Aid requirements, it is also necessary to take into account EU competition law and the new electronic communications directives. To accommodate these requirements, the role of Government should be to create the conditions for competition rather than act as a direct competitor to suppliers/operators themselves.

---

<sup>19</sup> Under EU rules, illegal State Aid is any aid that distorts or threatens to distort competition within the Community and does not fall within the scope of any exemptions provided by the EU treaty. State Aid will only be present if all four tests are met: 1. Is the measure granted by the State or through State resources? 2. Does the measure favour certain undertakings or the production of certain goods? 3. Is the activity tradable between member states? 4. Does the measure distort or have the potential to distort competition? (DTI – European Community State Aids)

<sup>20</sup> There are a series of exemptions in the Treaty itself (Article 87), and three block exemptions introduced by regulations covering aid to SMEs, training and de minimis aid. To qualify under de minimis aid a company must not receive more than €100,000 aid over three years from all sources (DTI – European Community State Aids).

<sup>21</sup> [www.europa.eu.int/comm/regional\\_policy/newsroom/index\\_en.htm](http://www.europa.eu.int/comm/regional_policy/newsroom/index_en.htm). Although these Guidelines focus on the usage of EU structural funds for broadband deployment, it can be safely assumed that similar principles would also apply to the usage of national public funds for the deployment of broadband. It would be illogical for the Commission to apply different rules for EU funding and national funding.



To that end, it may be necessary to restrict Government supply-side interventions to investment in or procurement of the lowest most basic infrastructure level, and then, only when there is insufficient commercial incentives to provide services on a purely commercial basis. Moreover, any supply-side intervention should be made available on open, non-discriminatory terms to the private sector<sup>22</sup>.

### **5.3 Public Sector Interventions – Procurement, Investment, Subsidy?**

Public sector interventions must be clear about the objective(s) they are seeking to achieve:

- Procurement: services purchased to meet clearly defined public sector requirements, with competitive tendering to assure best value for money.
- Investment: all public funds injected into a project have a good prospect of generating a market rate of return proportional to the risk of the project.
- Subsidy: intervention to meet particular social policy objectives, normally justified by presence of market failure.

Some interventions will be pure procurement, investment or subsidy, but many will involve a blend of two or possibly all three. Particular care is required where interventions contain an element of subsidy as it may impact on State Aid and EU competition law as identified above.

---

<sup>22</sup> Guidelines on Criteria and Modalities of Implementation of Structural Funds in Support of Electronic Communications 2003 requires state-owned infrastructure to be open access to all operators and internet service providers.

## 6. Models of Intervention for the Provision of Broadband in Rural Areas

A range of broadband initiatives are being implemented across the UK and they all differ in terms of the level of public sector intervention and the extent to which they combine elements of procurement, investment and subsidy. At one end of the spectrum are schemes that involve the Government directly providing broadband infrastructure for use by the private/public sector. At the other end, are private sector or community led initiatives that involve little to no public sector involvement/expenditure. In addition to the level of public sector intervention, these initiatives vary greatly in terms of their scale with some projects being rolled out at national or regional level but with the vast majority occurring at the local/community level.

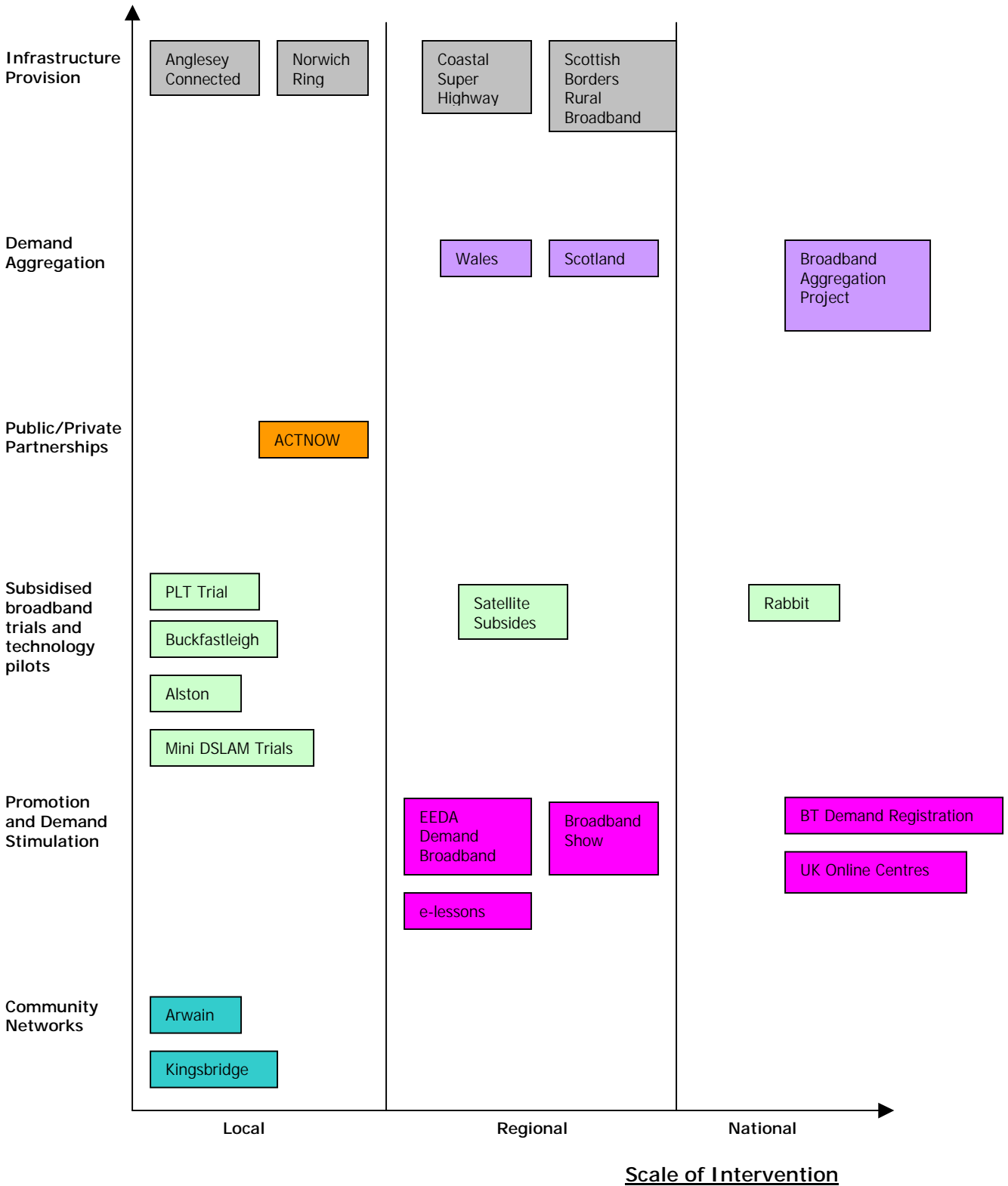
The categories of intervention for the projects highlighted in this report:

<b>Models of Intervention</b>	<b>Characteristics</b>
<b>1. Infrastructure provision</b>	Public sector subsidises the investment in, or procures the network or network elements for use by both the public and private sector.
<b>2. Demand Aggregation</b>	Procurement by the public sector provides a demand stimulus for private sector provision
<b>3. Public/Private Partnerships</b>	Multiple partners from both the public and private sector cooperate to share the investment and operational risks. These projects often combine supply side initiatives with demand stimulation.
<b>4. Subsidised broadband trials and technology pilots</b>	Demand subsidies to trial a broadband technology and supply subsidies for community broadband networks and to trial new technologies
<b>5. Promotion and Demand Stimulation</b>	Demand registration schemes; marketing and promotion events; public broadband centres; Commissioning content creation
<b>6. Community Network Projects</b>	Receive minimal or no Public Sector assistance. Delivered through 'grassroots' community action

Due to the large number of initiatives being developed or deployed within each RDA or Devolved Administration across the country, it has not been possible to provide details on each. However, in each intervention section there are examples taken from a cross section of regions around the country. While all initiatives differ slightly in terms of structure, funding and development status (some are still in the proposal phase) they belong in their respective categories because they all match broadly the same criteria (see Figure 2).

Figure 2 - Scope and Scale of Interventions in Rural Areas – some examples

Scope of Intervention



## 6.1 Infrastructure Provision

### 6.1.1 Definition of Infrastructure Provision

A number of fully publicly funded broadband infrastructure projects have been approved for deployment in rural areas. These projects are characterised as being 100% publicly funded (sometimes including European Union funding) and are examples of where the public sector subsidise the investment in, or the procurement of a network or elements of a network for use by both the public and private sector. In these projects, it is the public sector that bears the risk (at least initially) and it represents the most direct form of public sector intervention in the UK broadband market.

### 6.1.2 Examples

#### Coastal Superhighway

The Coastal Superhighway is a proposal to develop an open-access backhaul fibre connection linking Kent and East Sussex with London and Brighton. It is designed to provide high-capacity broadband connectivity to the public sector initially with a view to expanding to the private sector as the project progresses.

In early 2003, SEEDA undertook a commercial demand analysis to investigate the potential demand for broadband connectivity using fibre-optic networks linking the coastal towns of Kent and East Sussex with London and Brighton.

The study found that there was demand for high-capacity connectivity in Kent and East Sussex and as such, SEEDA are currently tendering for a contractor to build the Coastal Superhighway, of which the first phase is expected to deliver capacity at the end of 2003.

The Coastal Superhighway project is an example of how an RDA can act as an anchor tenant to stimulate supply of "next generation" broadband technology. Essentially SEEDA are funding a single carrier to procure bandwidth (most companies will have some of the fibre and some of the Points-of-Presence, but not all) on their behalf thereby establishing a 2.4 Gbps fibre connection to these towns. Once this link is established, the carrier will re-sell bandwidth to operators wanting to offer broadband solutions to public sector bodies (it is also envisaged that the carrier will sell excess bandwidth not required by SEEDA to operators wanting to offer mass-market broadband solutions to the private sector and residential users). Recognising the differing requirements of end-users, multiple bandwidths will be offered to different categories of users and it will compete with ADSL solutions currently available in these towns.

SEEDA are funding the project for 3 years primarily from their Single Pot allocation (which absorbs the UK Broadband fund) at a cost of £2.5 million. The Coastal Superhighway will pass through about 70% of SEEDA's 119 most deprived wards, including two hot spots, Hastings and Thanet. In the longer term it is expected that this one-off public sector demand side investment will stimulate sufficient subsequent private sector investment such that it will be self-sustaining and generate revenue for all commercial players involved. Moreover, SEEDA view the consequent reduction in leased line prices and possible introduction of competition as being a significant win in these areas.

It should be noted, while SEEDA have not formally notified the Commission of the project, they did get support and a written response from the DTI's State Aid Policy Unit. SEEDA's interpretation of this advice suggests that because they are procuring a 'managed service' they believe the project does not qualify as State Aid or infringe on EU competition law.

In addition, the project was subject to the Official Journal of the European Union (OJEU) tendering process, which included an expressions of interest round, to which they had no State Aid complaints from any carrier.

### **Scottish Borders Rural Broadband (SBRB)**

SBRB will deliver broadband to unserved rural areas in the Scottish Borders. It will be an open-access (i.e. to all Internet Services Providers) backhaul fibre network linking Edinburgh to 11 Borders towns. The last mile will be delivered through a wireless connection (procured by the carrier) with end-users experiencing a symmetrical service (upload and download speed) of 512 Kbps and a contention ratio of 1:30.

Scottish Enterprise Borders are delivering this project and has set up a subsidiary company (Scottish Borders Rural Broadband Ltd) to manage the project for the next 5 years. The project is funded by Scottish Enterprise and the UK Broadband fund.

SBRB Ltd is set up to act as a wholesale provider of network services to Internet Service Providers (ISPs). It does not provide broadband service directly to the public. SBRB Ltd. enables ISPs to use its network for the delivery of broadband services to businesses and residences in communities in the Scottish Borders.

Based on the present schedule, the intention is that the SBRB service will be rolled out over a six month period to 11 locations beginning in September 2003. SBRB Ltd. services will be available to both business and residential customers.

These services will be provided through ISPs that contract with SBRB Ltd. to resell its wholesale broadband service product. It is anticipated that the first community will be online before the end of 2003.

### **Norwich Ring Project**

The Norfolk County Council have been investigating the possibility of deploying a public infrastructure utility network capable of providing high-capacity broadband services for the greater Norwich area similar to those operating in Stockholm and Antwerp.

In a public infrastructure utility network, the primary infrastructure (trenches, ducts, poles, masts and buildings) is separated from the networks and the services that operate over the network. The appeal of this model is that it addresses the high cost of primary infrastructure because the County Council provides publicly subsidised primary infrastructure and as a result, scarce private sector capital can be used to fund the secondary and tertiary infrastructure levels, i.e. the transmission systems and the network intelligence and services.

The City of Norwich was selected as a candidate for this type of network as it was thought that there were good economic reasons for upgrading the existing network infrastructure to deliver high-capacity broadband services to accommodate their burgeoning media industry. As a result, the East of England Development Agency (EEDA) agreed in principle to fund two thirds of the project costs and the Norwich Ring Project was formed.

The initial part of the funding was used to undertake research into the predicted demand for this type of network, and a consultant's report was recently released outlining the findings. The report concluded that there was not sufficient demand for this type of high capacity network, at least in the immediate future so the project is currently on hold. The reasons cited included that many larger businesses have already devised their own high-capacity solutions in the form of leased lines and the SME and residential sector in Norwich are already well served by ADSL.

In addition, one of the other reasons why the project is currently on hold is because of the uncertainty around its compliance with the State Aid rules.

The Norfolk County Council is currently reviewing the findings, and have not ruled out the possibility of deploying this type of network in the medium to longer term. However, they recognise that there is a significant demand building exercise ahead of them and engagement with local community champions will be required to catalyse this demand for the 123,000 strong city. Moreover, they recognise that building this type of high capacity next generation network has to be reconciled with the current lack of broadband availability in the more rural parts of Norfolk; they also need to ensure the project is compliant with State Aid rules.

### **Anglesey Connected**

The island of Anglesey off the coast of Wales is a rural area, serviced by only one ADSL enabled exchange (two others have trigger levels set) whose reach does not extend to the entire 67,000 residents. Concerned by the lack of available access to broadband services and the ability to achieve the broadband aims of the Welsh Assembly, Peoples Network and Lifelong Learning initiative, the Isle of Anglesey County Council decided to initiate a wireless broadband project - 'Anglesey Connected'.

Anglesey Connected is funded through the Welsh European Funding Office, National Grid for Learning, New Opportunities Fund, Objective One ERDF and the Local Regeneration Fund. This funding allows the county council to deploy a high capacity (100 Mb licensed radio links) wireless wide area network using numerous locations on the island to act as staging posts.

The Council is currently implementing the first phase of the project to deliver broadband connectivity to public sector institutions such as schools and libraries. The Council hopes second and third phases could extend this reach to SMEs and residential users thereby providing ubiquitous broadband coverage across most of the island.

The backhaul infrastructure is not strictly open infrastructure like the Coastal Superhighway initiative and is provided by the Lifelong Learning Network for Wales (LLNW). However, the Council is investigating whether it can legitimately provide wholesale bandwidth to a third party by providing them with a Point of Presence (POP) and selling them wholesale backhaul to that point.

This project is unique in the UK for a number of reasons: firstly, the infrastructure is wholly owned by the public sector (the County Council), secondly the network attracts minimum revenue costs because they provided the capital to buy the equipment upfront and because they own the infrastructure they don't have to pay rental costs.

Thirdly, because the project is based on high capacity next generation infrastructure, the County Council believes the network is future-proofed for at least ten years and finally, it is unique because it provides ubiquitous broadband coverage across the entire island.

### **6.1.3 Issues**

#### **Compliance with State Aid Rules?**

All of the initiatives outlined above demonstrate that the public sector is becoming more involved in the broadband value chain either through the provision of infrastructure or through procurement. In the Anglesey example, the presence of market failure was used to justify the public sector intervening in the market.

However, it is unclear what effect this will have on long-term competition as the DG Regio Structural Funds Guidelines suggest that public financing of installations and equipment owned by the private sector and which is not open to all may constitute as illegal state aid (subject to exemptions<sup>23</sup>). Therefore, in order to extend service provision from the public to the private sector it is necessary to provide "open access" to other service providers and operators who may wish to provide services in the same market.

In the case of the Coastal Superhighway, it is clear that this public sector investment is designed to procure an open infrastructure network. However, how the Commission will interpret the public sector involvement in all of these networks as they develop will largely be determined on a case-by-case basis. In fact, there is already some evidence that projects are altering their scope to avoid State Aid and EU competition law concerns. For example, the geographical coverage of the Scottish Borders Network was adjusted at the planning stage when BT announced that it would be rolling out ADSL to some of the exchange areas, which it had previously indicated would be unserved. In addition, the Norwich Project has been temporarily halted with one of the reasons cited due to State Aid concerns.

The uncertainty surrounding the State Aid rules and the extent to which the Public Sector can invest in, procure, and/or subsidise broadband infrastructure has led some RDAs to suggest that now is the appropriate time to have an industry/government discussion as to the relative merits of declaring broadband a Service of General Economic Interest<sup>24</sup>. Notwithstanding the outcomes of any such discussion, it is clear that it would be beneficial if the Government (DTI) provided additional guidance on State Aid Rules (and EU competition laws) as they relate to the public sector support for broadband, a call which was also echoed in the recent EFRA Committee Rural Broadband Report. For this guidance to be meaningful, it would have to incorporate case study examples of projects where it has been uncontested.

### **Current Generation vs. Next Generation Broadband**

In the examples provided, there is a distinct difference in terms of the type of network being procured. In the Coastal Superhighway and Norwich examples, the focus is on Next Generation Broadband, designed to compete in areas where current generation broadband services have been deployed. In the case of Anglesey who are also developing a next generation broadband network, they are looking to use the network to provide high-capacity broadband connectivity to an area largely un-served by any broadband services. The Scottish Borders Network example is focussing on current generation broadband (ADSL equivalent) for a currently "unserved" area.

The issue of deploying current generation as opposed to next generation broadband in rural areas attracts two schools of thought. On one hand, commentators argue that because of the inherent geographical difficulty in deploying broadband in rural areas as quickly and efficiently as urban areas, there is an additional need to future-proof rural networks so that they are sufficiently advanced to compete with potential rapid investment of high-capacity broadband networks in urban areas. In addition, high-capacity connectivity is all the more important to isolated rural areas to enable services like video-conferencing which help to promote social and economic inclusion.

---

<sup>23</sup> See 13 above

<sup>24</sup> Article 36 of the Charter Of Fundamental Rights says "The Union recognises and respects access to services of general economic interest as provided for in national law and practices, in accordance with the Treaty establishing the European Community, in order to promote the social and territorial cohesion of the Union." The term "service of general economic interest" is used in Articles 16 and 86(2) of the Treaty Of Rome, but is not defined by it. The de facto agreement is that it refers to services of an economic nature with the Member States subject to specific public service obligations by virtue of a general interest criterion. Providers of SGEI are exempted from application of Treaty rules to the extent that is necessary to allow them to fulfil their general interest mission. The characteristics of an SGEI include a combination of universal service obligation, continuity, quality of service, affordability and consumer protection, however the way in which these characteristics apply can vary greatly from service to service.

An opposing point of view is that instead of focussing on next generation connectivity in some parts of the region, there is a need to ensure that all residents in the region have access to at least current generation technology before this route is pursued. Moreover, it is important that a two-tier rural divide does not develop that sees broadband connectivity in urban areas significantly “leap-frogging” current generation broadband in rural areas.

There is no easy answer to this question and the evidence of the demand for high capacity networks in the UK is mixed even within the examples outlined. For example, the Coastal Superhighway project predicts significant demand for this type of network where as, the demand for next generation networks was not able to be proven in the Norwich Ring Project initial feasibility study.

It is worth noting that from a UK competitiveness point of view, a number of countries are making progress in deploying or planning for the deployment of next generation broadband networks. The usual examples include Korea, Japan and Sweden however, recent developments in the US and France should also be noted. Of interest to the rural economy is that the development of these networks is either being achieved through governments taking on the financial risk through subsidies and loans etc or through regulatory decisions that reduce the regulatory risk for operators. Although it should be noted, Japan, Korea and the US are not subject to the EU State Aid rules and France has mitigated this issue by declaring broadband an SGEI.

### **Potential State Aid Test Case on Public Sector Broadband Infrastructure Provision**

Scottish Enterprise's Project Atlas (Accessing Telecoms Links Across Scotland), which was developed to provide next generation broadband services to 13 business parks across Scotland has come under legal challenge and is currently the subject of an EU Competition Commission Inquiry.

A complaint was brought against the project by a telecommunications operator on the grounds it interfered with the free market and constituted illegal State Aid. While Scottish Enterprise (SE) has argued that it was responding to market failure, the company that brought the complaint claims that the project is competing with commercial operators in breach of Article 87(1) of a European treaty on competition. A number of commercial companies are already providing network services in several of these business parks and they claim that Project Atlas distorts the market because SE does not have to seek a commercial rate of return like other businesses.

This is an important test case on the application of state aid to public sector broadband infrastructure provision, and the issue of current vs next generation services. The outcome, which is expected early in 2004, will therefore be very significant and should provide further legal clarity on the issues related to public sector infrastructure provision.

## **6.2 Demand Aggregation**

### **6.2.1 Definition of Demand Aggregation**

Public sector demand aggregation is where the procurement of broadband services for the public sector provides a stimulus for private sector provision. Recently, the Government has taken a number of steps with regard to public procurement of broadband including the launch of the Broadband Aggregation Project (BAP) announced earlier this year.



## 6.2.2 Examples

### UK Broadband Aggregation Project (BAP)

The Government has recently committed to the BAP, a major broadband initiative for England, which aims to:

- Provide a cost-effective way of meeting the broadband needs of individual Government organisations whilst meeting their procurement targets;
- Enable the extension of broadband networks to increase the availability to the wider community, thus contributing to regional economic development objectives and national targets; and to
- Ensure value for money for the public sector as a whole.

The project will aggregate public sector broadband demand and procure connectivity on a regional basis through nine Regional Aggregation Bodies (RABs) overseen by a national aggregation body and a policy body. The Government views aggregation at the regional level as the best model to deliver "value for money" availability as they understand local needs and national organisations already procure their broadband needs at the regional level (e.g. schools and universities).

The RABS will serve the public sector only at this stage owing to the complexities and size of the procurement exercise but this may be reviewed if there is a significant customer requirement and business case to aggregate demand for the private sector and whether it is legal for the RAB to do so. However the government believes that aggregation of demand at the public sector will be sufficient to stimulate private sector demand and investment activity.

### Wales

Aggregation of demand activity has been ongoing in Wales for almost 2 years, beginning in the education sector. In October 2001, the Welsh Assembly initiated a multi million pound lifelong learning network to provide broadband connectivity to schools (2 megs in primary 8 megs in secondary), learning centres and libraries in Wales. In March 2002, the Assembly Government signed a contract for the provision of a countrywide broadband network linking all 22 Local Education Authorities in Wales and eight University sites. This core network was in place in August 2002 and connected to the Internet via the Joint Academic Network (JANET). All Local Authorities have now signed up to using the Lifelong Learning Network.

The Welsh Assembly Government is currently investigating the benefits of aggregation for all public sector organisations operating in Wales and over the next 18 months will be looking at joining up the health and education networks, which currently operate separately. In addition, in the longer term, they will be investigating the feasibility of opening up public sector networks to the private sector, which they support in principle.

### Scotland

The Scottish Executive have taken a different approach to the aggregation of demand. Rather than implement a nationwide programme they have instead opted to run two pilot projects in the Highlands and Islands and the South of Scotland to aggregate public sector demand for broadband infrastructure. At the moment the projects are in the midst of the procurement process: shortlisted companies have produced outline proposals and these are currently being examined.

Broadband services provided as a result of the procurements will be funded out of the Scottish Executive's own budget as well as that of the associated local authorities. The project's aim is to procure broadband services for health, school and other local authority sites but it is hoped that the availability of the network provided for this purpose will increase the availability of broadband to business and the wider community, although it is recognised that this cannot be guaranteed.

From informal discussions with the Scottish Executive, there is a general feeling that it is too early to ascertain whether aggregation can be applied more widely throughout the country.

### **Northern Ireland**

Northern Ireland are currently not running any aggregation of demand programme or pilots although, they have recently commissioned a scoping study into the viability of aggregating demand and are still awaiting the results. However, there are indications that they strongly believe that private sector/public sector aggregation should be kept separate, which is fairly consistent with the views of the BAP and the other Devolved Administrations.

### **6.2.3 Issues**

The BAP is a huge undertaking on the part of the Government in terms of both investment and timeline for deliverables (the RABs are intended to be in operation by December 2003). The Project therefore requires significant cross-departmental and regional co-ordination if it has any chance of succeeding in achieving its three objectives. To that end, it is critical that both the Department of Health (DOH) and the Department for Education and Skills (DfES) have committed to serve as 'anchor tenants' for the project, for without their commitment, the project would be unlikely to succeed. However, notwithstanding the above, there remain some issues that need to be addressed and these issues will have bearing on similar aggregation projects being undertaken or proposed within the Devolved Administrations.

### **The Implications of Making Value-for-money the Number One Objective of the BAP?**

The way the BAP is structured means that the RDAs are not required to use the RABs to procure their broadband connectivity. As a result, there is a concern that the RABs will drive down price in order to secure business and therefore may have to sacrifice the extension of broadband connectivity in order to achieve the value-for-money objective. This issue is of concern because the Government has allocated a significant amount of money to this project that could have been used to fund other broadband initiatives and it would be unfortunate if the BAP does not significantly increase the number of broadband connections in rural areas.

### **How will the BAP impact on current broadband initiatives?**

Some RDAs view aggregation as an effective route to deploy broadband connectivity within their regions, while others are more measured in their response. Not surprisingly perhaps, some of the more 'rural' regions are more supportive of the project given that their region contains several areas where ADSL broadband provision presents challenges but even then, there are common questions as to how the project will relate to current initiatives.

A number of the RDAs have innovative broadband projects in operation and are unclear as to how the BAP aligns with these – some are concerned that their projects will become redundant once broadband connectivity is put in place through aggregation or fear that aggregation will not provide the level of connectivity derived through their own project (the BAP project defines broadband as faster than 256 kps but recognises that this is a moving target). In addition, it is not clear how large scale public sector infrastructure projects such as the Coastal Superhighway will complement the BAP project in the longer term.

It is worth noting, some RDAs believe they have seen some impacts of the Project already in their region even before it has formally commenced as the BAP announcement may have provided an incentive for BT to rapidly progress the enablement of BT exchanges to ADSL. At the end of the project, it may be hard to separate the enablement of exchanges attributed to BAP or BT action i.e. public sector action vs. market forces.

### **Potential for Anti-competitive Exclusive Supply Agreements to Develop**

As is the case with the other large-scale infrastructure projects outlined above, there is some concern that as the BAP progresses, it could have the potential to conflict with EU competition law. Because the RABs have been instructed to procure regionally (and achieve best value for money), they may be tempted to enter into what could effectively become exclusive supply agreements with one operator (or consortia of operators) with sufficient economies of scale to supply the required services. However, it has been argued that an exclusive supply agreement for more than 30% of the market may be viewed as anti-competitive<sup>25</sup>.

There is also a concern that because the RAB has provided a significant level of guaranteed demand to the operator who wins the tender, it makes it commercially less attractive for other operators to enter the market because two of the biggest public sector bodies (DoH and DfES) have already been supplied. In a market with significant barriers to entry, the potential for an operator to become a monopoly supplier to the rest of the market needs to be considered.

### **Procurement at the Regional Level may Reduce Local Partnering Opportunities**

Some wireless operators have expressed concern that because a significant number of them tend to market their services at the local county council level, they feel that procurement at the regional level will less likely provide them with business opportunities. Many smaller operators feel it is unlikely that regional contract awardees will approach (or even be aware) of the services these smaller wireless operators can provide. In other words, there is a possibility that the potential benefits of partnering to facilitate the aggregation of demand will not be realised under the BAP.

The potential market distortion outlined above raises all kinds of competition issues at the national and European level and will need to be managed to ensure it does not inhibit private sector investment and supply of broadband services, which is a key aim of the BAP.

## **6.3 Public Private Partnerships**

### **6.3.1 Definition of Public Private Partnerships**

Integrated Public/Private Partnerships are focussed around the dual objectives of extending coverage and stimulating demand. They involve multiple partners from both the public and private sector who work together and in doing so, tend to share the responsibilities with regard to investment, risk, support, training, motivating people to use broadband and to ensure there is a range of compelling applications relevant to the local community, businesses and citizen.

---

<sup>25</sup> '...It is for these reasons that for final products at the retail level significant anti-competitive effects may start to arise taking into account all other relevant factors, if a non-dominant supplier ties 30% or more of the relevant market. For a dominant company, even a modest tied market share may already lead to significant anti-competitive effects. The stronger its dominance, the higher the risk of foreclosure of other competitors'. It is also important to note that according to paragraph 2 of the same Guidelines: 'Throughout these Guidelines the analysis applies to both goods and services...'. In other words, the term products includes both goods and services. Official Journal of the European Communities, Commission Notice, Guidelines on Vertical Restraints (2000/C 291/01)

Apart from providing broadband connectivity, the characteristics of this type of partnership could include, pre and post sign-up advice; the provision of computer equipment and broadband connection options to suit the needs of individual businesses; financial support for the cost of the equipment; and privileged members' access to information/community websites.

### 6.3.2 Examples

#### ACTNOW

The ACTNOW Project is an example of an integrated public/private partnership, where multiple partners have worked collectively to deploy an ADSL service in Cornwall through the use of both demand (marketing and support) and supply (a subsidy to drive down the price) stimulation.

The Actnow project aims to bring ADSL connectivity to 3300 of the approximately 17,000 SMEs in Cornwall. It was officially launched in early 2002 and represents a partnership involving the South West Regional Development Agency (SWRDA), Cornwall County Council, Cornwall Enterprise, Business Links, Cornwall College and BT. It is part funded under Objective 1 funding (£5.25 million) and out of SWRDA's regional pot and County Council funding.

BT were appointed through an open tender to offer a choice of subsidised ADSL packages to SMEs ranging from a line connection only to integrated business solutions through to complete networked solutions (including supply of PCs). All packages come complete with customer support and a one-off installation fee rebate.

The subsidies awarded to the SMEs are provided through match funding from the partners, including BT. In addition, funding was awarded to BT towards the capital cost of the equipment in their exchanges (35% of the costs).

As a result of the Actnow scheme, 31 BT exchanges in Cornwall have been upgraded to deliver ADSL technology which has seen the total number of ADSL connections rise to over 9228, of which over 2500 are SMEs. In terms of SME take-up, it has been as high as 20% in some of the more rural villages surrounding Cornwall and is higher than the national average, which is predicted to reach 13% by the end of 2003<sup>26</sup>.

Following the success of this scheme, several other partnerships are in development across the south west including Devon, Wiltshire, Gloucestershire, Somerset and Bournemouth, Dorset and Poole. Although these schemes share similar characteristics to Actnow, they all differ in terms of scale, funding and structure (Devon for example, has a wireless partner involved - Chronos/Bluewire).

For example, the partnership in Devon, which was launched on 17 November 2003, will focus less on demand raising (the broadband message has already been communicated in Devon) and more on exploring measures to provide connectivity further into small communities in Devon. Following informal discussions with both BT and the SWRDA, they are exploring the option of moving into more regional based partnerships to complement the regional focus of the RABs.

The integrated public/private partnerships being rolled out across the south west are technology neutral (a wireless operator won the tender for the Broadband 4 Devon campaign) but there is some recognition more generally, that ADSL will be the most common form of access for the majority of the region over next 8 years given the continued rollout of ADSL.

---

<sup>26</sup> DTI

### 6.3.3 Issues

#### Encouraging Partnerships

Integrated public/private partnerships have the potential to have a positive effect on both deployment and take-up of broadband because they address both issues at the same time rather than simply focussing on the deployment of infrastructure. The Actnow project provides a comprehensive offering to users but it is interesting to note that very few people have taken up the hardware offer as most were simply interested in the subsidised service.

The BSG has always been supportive of public/private partnerships and in fact made a recommendation in our November Report<sup>27</sup> last year that the government should help to develop effective public/private partnerships. It remains to be seen how aggregation of public sector demand programmes including the BAP, encourage and complement these partnerships.

### 6.4 Subsidised Broadband Trials and Technology Pilots

#### 6.4.1 Definition of Subsidised Broadband Trials and Technology Pilots

Public sector subsidies are being used in a number of different ways for either encouraging users to take-up broadband services (demand side) or encouraging the deployment of broadband in rural areas (supply side). The demand side subsidies are being used to fund individual users and SMEs to trial the use of a broadband technology that they were perhaps previously unaware of. The supply side subsidies have been used by community organisations to develop community broadband networks in their region and to trial new technologies. Typically the subsidies represent a one-off singular cash injection designed to kick-start the initiatives.

#### 6.4.2 Examples

##### Remote Area Broadband Inclusion Trial (Rabbit)

The Rabbit project provides selected SMEs across a number of regions with financial assistance to use a particular broadband technology for a trial period.

Rabbit is funded from the UK Broadband fund and is an example of a joint broadband project co-supported by SEEDA, SWRDA, East Midlands Development Agency (EMDA), Advantage West Midlands (AWM), EEDA and Northern Ireland. It has been set up to promote the use of broadband to small businesses and organisations in remote areas and to evaluate the effectiveness of the available solutions. It is aimed at small businesses that cannot receive ADSL or Cable solutions, but who are willing to trial alternative technologies, including satellite and wireless.

Under the project, financial assistance of between £400 to £700 is available to those accepted onto the trial for the first year and it has resulted in 1456 applications being approved nationwide so far. However, even though most RDAs are using Rabbit, there are significant differences in how the subsidy is viewed by different RDAs.

For example, some RDAs use the project to disseminate broadband subsidies to SMEs with a view to extending longer term coverage in their region (assuming people opt to continue with the service once the funding runs out) where as other RDAs view it more as a technology trial to test whether the technology warrants consideration for further deployment/funding.

---

<sup>27</sup> The Broadband Stakeholder Group Second Annual Report and Strategic Recommendations November 2002

## **Satellite Subsidy Schemes**

A number of the RDAs and Devolved Administrations are running satellite subsidy schemes to provide selected SMEs with a subsidised satellite broadband connection for a trial period. For example, Yorkshire Forward have a scheme running as part of their 'Business Insight' project. Under this scheme, SMEs are provided with a satellite broadband connection (delivering between 512k and 1mb) free for one year, with the option to commercially renew after the free period. In addition, a website portal was created to help stimulate demand for broadband services, generate interest in the subsidy scheme and to ascertain what type of broadband services the SME community would find useful. To date, 450 SMEs have signed up to the service with 200 being in rural areas.

## **Switch on Shropshire**

Switch on Shropshire (SOS) is a £4.8m project led by Shropshire County Council, which is promoting, developing and providing access to mass-market broadband infrastructure for businesses and communities in the Objective 2 and Rural Regeneration Zone areas of the county.

Phase 1 of the project (until December 2004) will research, deploy and evaluate broadband technology across Shropshire in two ways. By providing subsidised connectivity for businesses using ADSL/terrestrial where appropriate and available and utilising PLC, wireless and satellite based systems to connect community facilities (village halls, etc.) and businesses based in rural locations across Shropshire where fixed line solutions are not available.

Phase 2 (2005-2007) will involve these resources being rolled out on a wider basis with a package of grant aid on offer to support both phases of SOS and encourage take-up of the connectivity offered by the project.

## **Power Line Technology Trial**

Scottish Enterprise (SE) and Highlands and Islands Enterprise (HIE) are currently piloting two Powerline technology trials in the rural communities of Crieff (SE) and Campbeltown (HIE) with funding from the UK Broadband fund. SEEDA are also trialling a pilot in Winchester, Hants. The concept of PLT has been around for a number of years but various issues have prevented it from being deployed on mass scale. PLT uses the existing power line infrastructure to provide broadband services (ADSL equivalent) over the electricity network. Because the electricity network already covers almost the entire country it has the advantage of providing a potential mechanism for reaching rural areas because it eliminates the need to conduct civil engineering.

## **Buckfastleigh Community Network**

The Buckfastleigh Community Network is an example of the public sector subsidising the provision of a community wireless network and local access centre for a trial period to establish whether there is sufficient demand for broadband services in the area. Following the trial, it is envisaged that the network will be able to be sustainable enough to provide a commercial broadband service.

SWRDA provided £500,000 worth of UK broadband funding to a local community organisation (BB Ltd) to supply a broadband service in the town of Buckfastleigh in Devon (population approximately 3600).

The funding was used to develop a network that consists of a South West Grid for Learning (SWGfL) broadband connection to the local primary school for backhaul and the contracting of a wireless provider to provide the onward wireless connections to key public facilities with further links to other users including a connection to two neighbouring hamlets, Holne (population approx 700) and Scoriton (population approx 300). In addition, the funding was used to develop an Internet Access Centre in the middle of Buckfastleigh where residents can experience the benefits of broadband and learn about its use for business, education and health.

In terms of take-up, around 1800 people have used the Internet Access Centre and they currently have around 30 – 40 residential and business trial users connected to the network; residential users (and visitors) can tap into the network for free if they have the necessary kit to access the network through wireless hotspots located around the town.

All the network administrators require is that users advise them of their intention to use the network. It should be noted, that while the network is still in the trial phase, bandwidths and service level guarantees are not offered to the trial users.

This project is funded until the first quarter of 2004 and the aim of the project is to create a sustainable model to deliver broadband in the area on a commercial basis. However, an issue emerges under this particular network structure because the broadband connection is based on backhaul infrastructure intended for public sector, which SWGfL have allowed Buckfastleigh to use during the current trial period. To address this issue, BB Ltd have considered several options including a leased line from BT but this was ultimately dismissed because it proved too expensive and totally changed the business model. BB Ltd are now trying to develop a commercial relationship with the SWGfL's commercial suppliers to develop a package economical for community organisations.

However, they are not looking to expand the network any further until the technology and business case is proven robust, then they will look at running it as a commercial community network.

### **Alston Cybermoor**

Alston Cybermoor is another example of a community wireless network built by the community, for the community to serve an area currently unserved by ADSL. However, what differentiates the Alston Cybermoor network from the Buckfastleigh community network is the fact that it is operating as a commercial operation and has a significant level of take-up.

The network uses 802.11b wireless technology, together with a backhaul link provided by Cumbria and Lancashire Online (a public sector network) to provide broadband connectivity to the town of Alston in rural Cumbria (population approximately 2200). In order to use the public sector network as backhaul, in-principle agreement from both the Department for Education and Skills and the DTI had to be secured.

The Alston Cybermoor network currently has 250 residential customers paying for the service and another 100 connected (but not being charged at this stage owing to connectivity problems). In addition, there are a small number of SMEs using the service (although some of these fall under the residential classification in that they operate from residential premises). In terms of take-up, these figures represent 26% take-up amongst residential households compared to the national average, which currently sits at around 9%<sup>28</sup>.

---

<sup>28</sup> DTI

The project is funded from several sources including grants from the Department for Education and Skills (DfES), the North West Development Agency (NWDA) and the Cumbria County Council. The funding was used to set up the network as well as help subsidise the cost of the connection (they offer a subsidised connection for low income earners).

The network is not based on open infrastructure because the service is owned and administered by Cybermoor, a social enterprise company. A social enterprise is a business with primarily social objectives whose surpluses are principally reinvested back in the business for that purpose, rather than the need to maximise profit. Under this model, each new subscriber becomes a member-shareholder in the network

At the time of writing, Cybermoor are investigating the possibility of expanding the service and attracting more subscribers. To that end, they are in the process of seeking additional public sector funding. They are also looking to offer committed bit rates for different classes of users once they are convinced the network model is robust enough to support it (they currently offer a limited SLA to SMEs but it is not 100% guaranteed owing to the community network status).

### **Mini DSLAM ADSL Trials**

BT have been partnering with the Devolved Administrations and an RDA to trial new mini DSLAM technologies designed for deployment in smaller exchanges that would not be commercially viable to ADSL enable. EEDA provided £10,000 worth of funding for the exchanges in Burnham Market and Norfolk out of its UK Broadband Fund. The money was used to sponsor the installation of the technology and the promotion of the scheme to local residents. Despite the project being considered a success and residents receiving a broadband service, EEDA have elected not to expand the pilots further as they felt it inappropriate to lend support to one type of broadband technology as it discourages competition.

On 21 July 2003, BT extended the trial nationally when it launched "Exchange Activate" a national community broadband project that makes use of mini-DSLAM technology. Under the Exchange Activate project, the mini-DSLAM requires a 'sponsor' to purchase a 30 end user block for £45,000, which covers rental costs for three years. The sponsor is then responsible for selecting an ISP to provide service to the end users. Each exchange with a mini-DSLAM can support up to four service providers.

### **6.4.3 Issues**

#### **Access to Public Sector Networks for Backhaul**

A number of community wireless schemes currently being trialled around the country utilise backhaul from the national learning network. Most of these projects are still in the pilot phase and are reliant on Government subsidy and it has been deemed acceptable in most cases to use the public sector network as an interim measure for backhaul connectivity. However, as many of these projects move towards the provision of commercial services, it is not clear whether they would be entitled to continue to use public sector networks for backhaul.

The rules around the use of public sector networks for the delivery of commercial broadband services is unclear and to the best of our knowledge, has not been legally tested. On one hand, Government legislation states that local authorities should not engage in commercial trade and if they open up their networks this could be considered as trading. However, on the other hand, this legality is seemingly at odds with the local authority's primary objective to promote economic regeneration. Moreover, the recent European Commission Guidelines on the implementation of structural funds in support of electronic communications adds a new dimension for consideration as well. In the face of these ambiguities, some local authorities are increasingly looking toward the creation of subsidiary companies to manage the network infrastructure.



Further clarification is required on this issue. While the Government (DTI) is not in a position to provide full legal certainty on such matters, work should be done to better understand and communicate the issues, allay unnecessary concerns, and focus on real issues of substance.

### **Provision of Service Level Agreements when Utilising Public Sector Backhaul**

The commercial use of public sector networks may be one potential mechanism to increase both availability and competition, however it should not be done at the expense of the public sector user i.e. schools and hospitals. In other words, the public sector should remain the primary beneficiary of these networks and as such, the commercial business case for private sector provision needs to be considered with this in mind, particularly as it relates to the provision of Service Level Agreements (SLAs) between ISPs and businesses.

Many community networks that rely on public sector backhaul are championed and supported by local businesses and it is for this reason perhaps, that quality of service level agreements are not currently over-emphasised because users accept the structure on which the community network is based is different from that of a commercial operator. In any event, many would agree that conditional broadband provision is better than no provision at all. However, it is difficult to argue that this level of acceptance will always remain the same.

As previously stated, the public sector should remain the major beneficiary of the network and as a result, businesses may have to accept a drop in the service at particularly busy public sector peak periods i.e. school opening hours. However, as businesses and residential users become more exposed to broadband technology they are likely to demand both increasing levels of bandwidth to cope with bandwidth content, applications and services as well as a reliable and efficient network.

It is therefore worth considering whether the long-term use of public sector backhaul for community networks is a viable option for the future; the Government and community network providers should therefore work together to push for the development of alternative rural backhaul products.

### **Effectiveness of the Demand Side Subsidy Programmes**

Despite the number of applications approved under Rabbit, take-up of the scheme has been mixed in some regions. In one case, it has been so successful that the regional allocation has run out, where as in others it has proven difficult to attract interest; the reasons cited include local exchanges becoming ADSL enabled and quality of service issues - some SMEs reported quality of service problems with their satellite connection. Moreover, informal discussions with some RDAs revealed that they are not as supportive of the scheme as they feel that the availability of the subsidy is artificially increasing prices of certain technologies and that administering a scheme to individual businesses is not as effective as clustering businesses together to deploy a service.

The Rabbit programme highlights a number of issues to do with technology and the effective allocation of broadband subsidies; it is a concern that some users have experienced quality of service issues with some of the technologies on the Rabbit trial and this issue needs to be addressed as it could have a negative impact on the take-up of other broadband technologies. Moreover, the effective allocation of these subsidies might need a review given the disparities in take-up across regions.

The BSG will be interested in the evaluation of this scheme (and other demand subsidy schemes identified) and whether many businesses continue with the service once the funding ends, although, in the case of Rabbit, the fact that the rural businesses selected were already strong internet users, suggests they may not be inclined to go back to narrowband after experiencing broadband. It will also be useful to ascertain whether the Rabbit scheme can be extended on a wider scale (to other areas of sustained market failure), perhaps targeting businesses who currently do not use the Internet as well as residential users.

### **Impact of Satellite Planning Regulations**

Some RDAs have experienced difficulties with regard to administering their satellite subsidy schemes because current UK planning regulations for satellite dish deployment effectively restricts a residential property to a single antenna (a second dish can only be deployed with planning permission). If the first dish is used for receiving digital television, it prevents the use of a second antenna for any other purpose. Despite this being a concern, the BSG remain hopeful that the recent consultation held by the Office of the Deputy Prime Minister will address this issue with the objectives of Broadband Britain in mind.

### **Power Line Technology**

The potential role and applicability of PLT is not yet clear. Based on informal discussions with the SE and HIE, they believe that PLT has value for certain small to medium sized rural communities. However, it needs to be determined if it proves a viable option for mass-scale distribution because the backhaul link required to link each electricity substation maybe problematic over greater distances. Moreover, the potential for interference resulting from the radio emissions is a concern of the Radiocommunications Agency.

Despite the uncertainty regarding PLT, HIE do believe it has the potential to compete directly with BT's Exchange Activate programme, which in itself is designed for smaller rural communities.

However, in order for it to compete in the market and operate in accordance with EU competition law, it will be necessary for it to be a self-sustaining commercial model without further public sector intervention.

## **6.5 Promotion and Demand Stimulation**

### **6.5.1 Definition of Promotion and Demand Stimulation**

As broadband services are gradually being deployed into rural areas, most RDAs, Devolved Administrations and other public sector bodies as well as private sector companies and community network schemes are focussing on the promotion of broadband and awareness raising for consumers and SMEs. This is because the take-up of broadband in rural areas as well as urban areas continues to remain a significant issue in the UK and these schemes are trying to address this problem. These promotion schemes include public sector and private sector led demand registration, marketing and promotion events and public centres where people can experience broadband first-hand.

In addition, a number of RDAs and Devolved Administrations are commissioning the creation of content designed specially to run over a broadband connection. The aim of these initiatives is two-fold, firstly, they are designed to enable the individual business or public sector institution to benefit from broadband content, applications and services, such as the ability to stream multi-media video, video-conferencing and interactive applications. Secondly, they are designed to promote wider interest and awareness of what broadband can offer businesses and public sector institutions by demonstrating how these organisations have benefited.

## 6.5.2 Examples

### Demand Broadband

Demand registration schemes are designed to gauge the level of interest in a particular community for broadband services. In June 2002, using the UK broadband fund, EEDA established their 'Demand Broadband' campaign and a website [www.demandbroadband.com](http://www.demandbroadband.com) was set-up to capture community, company, public sector and individual interest in broadband. Under this campaign, once a cluster of demand is established, EEDA act as an agent to procure the best service possible from a range of suppliers. At present, two clusters are in the process of being connected to broadband - Diss in Norfolk and Felaw Maltings in Ipswich.

### BT Demand Registration Campaign

In addition to public sector led demand registration campaigns, BT have been operating their own ADSL demand registration campaign since 2002. Under this campaign, BT's role was simply to set levels of demand necessary to trigger upgrades of exchanges to ADSL enablement. However, as the campaign progressed, it became clear that communities of interest were forming in these exchange areas and local people started working together to generate demand. Once BT realised that this was happening, they began to actively assist and encourage communities to generate demand and provided them with promotional material and advice to for this purpose.

The campaign has been successful in enabling deployment of ADSL in a number of regional areas - 900 exchanges have hit their demand trigger, more than 500 of these are live for broadband and the rest are in the process of being upgraded<sup>29</sup>. In addition, BT have recently set triggers for a further 2,300 exchanges, once these are enabled, more than 99% of UK homes and businesses would be connected to ADSL exchanges.

BT have invested a substantial amount of money in this initiative and it has been a significant driver of both availability of broadband in rural areas as well as take-up. It is also interesting to note that other countries are starting to follow BT's example with Australia's incumbent operator Telstra recently announcing a similar scheme citing the BT model.

### Internet Service Providers (ISPs) and Demand Registration

The ISP community have spent many millions on the promotion of broadband and working with BT on demand registration. ISPs have invested in call centre facilities to direct potential broadband subscribers to BT's system, processes for registering potential users with BT and in providing information to existing narrowband members as well as potential broadband members.

### RDA and Devolved Administration Promotion Initiatives

The Rabbit project has successfully used a variety of marketing mechanisms to communicate the availability of the subsidy to SMEs in the regions and Yorkshire Forward used a similar method to advertise its satellite subsidy scheme. In addition, most RDAs and Devolved Administrations are continuing to run promotion events. For example, in July 2003 and in partnership with the Institute of Directors, SEEDA ran six broadband promotion events.

---

<sup>29</sup> BT, 9 September 2003

## UK Online Centres

Government led UK Online Centres are designed to enable people to access the Internet and e-mail services no matter where they live in the UK and regardless of their technical knowledge or their financial circumstances. The centres are designed to help people develop the skills to use the Internet to access information, send email and explore the opportunities that new technologies offer. To enable access to as many people as possible, the centres are based in a multitude of locations including public libraries, Internet cafes and colleges.

In September 2002, the Government committed to the deployment of 6000 UK Online Centres by the end of 2002. In addition, it was envisaged that over half of these centres would be broadband enabled. To date, around 7000 have been deployed with almost half located in libraries (the People's Network), and of these libraries, over 85% are broadband enabled. To extend this reach further into rural communities, the Government is investigating the use of wireless technologies and extending the People's Network to museums and archive services, which are often located in rural areas.

## e-Lessons: Broadband Content for Education

EMDA has used the UK broadband fund to create a lessons authoring tool designed specifically to run over broadband. E-lessons combines streaming video with interactive content to provide school children with an engaging learning environment. Using the e-lessons tool, teachers can request homework, and in turn, have it submitted via broadband. In addition, they can create lessons with interactive elements to motivate and stimulate the children to want to learn. The developed applications are currently being tested in primary schools and secondary schools across the region with a view to rolling it out across the East Midlands Broadband Consortium (EMBC) network shortly. In fact, the e-Lessons tool has been endorsed by EMBC as a preferred content delivery mechanism across their network.

## The Broadband Show

The Broadband Show<sup>30</sup> is a demand generation initiative comprising of a website, roadshow and content commissioning fund. Unlike other demand generation initiatives, the Broadband Show focuses on demand for broadband content as opposed to connectivity.

The project was initiated by the Bristol Interactive Cluster and is funded to the sum of £1.5 million by the SWRDA out of their UK Broadband Fund allocation. The project commenced in March 2002 and the Broadband Show website went live in December 2002.

The Broadband Show website showcases a number of case studies demonstrating how broadband has helped businesses. Moreover, the case studies contained on the site are presented in a broadband environment, complete with multimedia and video presentations. For those unable to access the site via a broadband connection, the site directs users to the Broadband Roadshow Service.

The Broadband Roadshow is a demonstration centre that moves around the region providing hands-on access, support and mentoring for businesses to experience broadband content and applications. At present, the Roadshow focuses on the aerospace and tourism industry sectors and has run over 18 demonstrators to date.

The third component of the Broadband Show Project is the Content Commissioning Fund. Under this fund, SMEs in the tourism or aerospace industries are able to work with content developers to seek funding to develop broadband applications for their businesses.

---

<sup>30</sup> [www.broadbandshow.org](http://www.broadbandshow.org)

If successful, money is allocated towards the creation of the content and the end result is a working content solution for the business. The only major stipulation of the fund is that that some of the content created needs to be made available so it can be worked into a case study application for the Broadband Show website.

Over the next few months, content from the Broadband Show will be allocated to projects such as Actnow for their own promotional purposes. In addition, SEEDA are developing their own broadband roadshow and will be utilising some of the content from the Broadband Show.

### 6.5.3 Issues

#### **The Lack of Awareness of the Benefits of Broadband Remains a Significant Problem in Rural Areas**

There is still a relatively low awareness of what broadband is and the benefits/value it can deliver to the user. Although this is now improving as a result of increased promotion by the RDAs and Devolved Administrations as well as major commercial players, there is still a relatively low awareness of the full broadband value proposition, particularly for those in rural areas who until recently may not have had access to it.

#### **Need to Explain the Full Range of Broadband Technologies**

As detailed in the examples above, over the past two years the broadband message has been slowly filtering out across the country through the RDAs, Devolved Administrations and community led initiatives as well as through the large scale marketing campaigns by the leading service providers.

Many of these initiatives have provided people with a broadband experience utilising a variety of technologies and configurations and as a result have delivered variable amounts of bandwidth to the end users across the country, with several initiatives delivering higher capacity than current generation broadband. However, despite the above, for most people in rural areas ADSL will likely be their first experience with broadband. It is therefore important to communicate the message that ADSL is one type of broadband technology and that there are alternatives increasingly becoming available.

#### **Sustainability of UK Online Centres**

Many UK Online Centres located in premises others than libraries<sup>31</sup> were set up using the Capital Modernisation Fund (capital costs) and New Opportunities Fund (operation costs). However, once the New Opportunities funding period ends, they will need to find alternative sources of funding to remain in operation. While the Government is working to address this situation through the development of sustainability plans and the identification of alternative funding sources, it is important that the end result ensures that effective centres continue to operate in a sustainable matter. This is because UK Online centres are integral to digital inclusion and awareness for rural communities.

#### **The Success of BT's Demand Registration Campaign**

Despite the different models of public sector intervention being deployed across the UK, it is clear that the most successful scheme, at least in terms of extensiveness, involves no public sector intervention and comes in the form of BT's Demand Registration campaign, a simple, straightforward approach that worked.

---

<sup>31</sup> UK Online centres located in libraries are not as likely to be affected as the funding for staff and buildings infrastructure is covered by core library budgets (not the Capital Modernisation Fund).

Moreover, even though some public sector advocates may argue that the announcement of large-scale public sector initiatives such as the BAP have acted as a stimulus for such investment, it is doubtful that the public sector alone has driven this private sector investment and deployment; market forces must have played a significant part.

## **6.6 Community Network Projects**

### **6.6.1 Definition of Community Network Projects**

There are examples around the country where a local community or individual have built and managed their own local broadband network with minimum or no direct Government assistance. These types of networks represent the products of true 'grassroots' community action to deliver a broadband service to the community.

### **6.6.2 Examples**

#### **Arwain Project**

The Arwain project based in Cardiff is an example of a potentially large-scale community network (Cardiff has a population of around 315,000) being built from the ground up with no direct funding or assistance from Government. The Arwain project uses 802.11b wireless (WiFi) technology to provide free broadband access to residents and visitors in the Cardiff area. To build the network, an informal organisation was set up to encourage interested users to help build the network through the sharing of surplus bandwidth. People are encouraged to set up wireless nodes in their homes and offices to act a transmit point (subject to permission of their ISPs) to bring connectivity further into the community; it is creating a mesh network topology in which devices are connected with many redundant interconnections between network nodes.

Under the Arwain Project, access to the network is completely free. People are alerted to the presence of an access node through special signage in the street. Anyone with the appropriate access technology i.e. a wireless LAN card is able to access the network provided they are in appropriate range of the node. The bandwidth and quality will depend on the Internet backbone connection although access speeds of up to 10 Mbps are not unrealistic.

#### **Kingsbridge Link**

A similar network, albeit on a smaller scale has been deployed in the community of Kingsbridge (population of around 5,500). This network represents the efforts of a solitary community champion who through a small investment of his own money and time has enabled the creation of an eight node Wi-Fi network that has already attracted a great deal of interest as well as a small number of users.

### **6.6.3 Issues**

#### **Are Community Networks an Interim Solution?**

There are a number of do-it-yourself community networks using a variety of technologies in different spectrum bands developing across the country (estimates put the number of networks at around 200 and collectively they are providing around 2000 connections). On one hand, advocates argue that it is commendable that individuals and community organisations are able to deploy a low cost broadband network while at the same time catalysing community demand and providing local content. They also argue that if some of these models were replicated across the 3000 or so communities, they would collectively offer a model for extending broadband services to the last 10% of users in the most rural communities.

On the other hand, there is the counter argument that these projects probably only provide an interim solution in the absence of a strategic broadband scheme. Of particular note, is that most of these schemes are still in the formative stage and are using technologies, which are typically adhoc in nature. This is because many operate in the licensed exempt 2.4 GHz band which makes it difficult to guarantee quality of service to commercial companies in the long term or the scalability to make them a mass-market solution. (The recent liquidation of the commercial 2.4Ghz WIFI network operator Invisible Networks is indicative of the difficulties faced by community networks in moving to more commercially sustainable models - although their failure can in part be attributed to backhaul costs).

In addition, because the technology is built at the community grassroots level, they tend to be less formally organised which again is not conducive to quality of service guarantees. For example, it is unclear what would happen to these networks if one or more of the community champions were to leave the area or change their priorities. Moreover, it seems unreasonable to expect all communities to try and replicate these networks by adopting a do-it-yourself approach.

In regards to funding, it is not clear whether these networks are truly sustainable without some level of public sector financial assistance, as it is understood that both Kingsbridge Link and Arwain have indicated that they are interested in Government funding. In fact, some commentators believe that because there is continuing market failure, public sector funding will be continually required to support and expand these networks but as has been raised before, there may be longer-term EU competition implications in doing this. Moreover, the fact that many community networks rely on public sector backhaul or, in the case of Arwain, the sharing of a user's fixed ISP connection (many ISPs prohibit the sharing of fixed ISP connections), raises additional questions as to their long-term sustainability.

It is worth noting however, that campaigners such as the Access to Broadband Campaign (ABC) and the newly formed Community Broadband Network (CAN) are working to address many of the challenges facing community networks including the issues of sustainability and funding structures. In particular, they are working to develop the expertise needed to support community networks; to reduce costs by working on common back office functions; and to address the broader policy agenda. Moreover, they are providing support to assist these networks to move to a social enterprise business model – a business with primarily social objectives whose surpluses are principally reinvested for that purpose in the business or in the community, rather than the need to maximise profit.

In addition to the support provided by these organisations, SEEDA have recently launched a website ([www.seeonline.net/broadband/CommunitySelfHelp/](http://www.seeonline.net/broadband/CommunitySelfHelp/)) to assist those wishing to build a community network.

In the end, it may not be until after 2005 when we will see what role community wireless networks in general can play in the broadband market but we would like to think that we can learn something from these current community schemes (with the assistance of campaigners such as ABC and CAN) that can be used to develop strategic, scalable and sustainable broadband solutions for the last 10%; 200 potentially non-scalable, non-replicable and non-sustainable community schemes in isolation are unlikely to offer a full solution to the broadband rural divide.

## 7. Conclusions

The overall aim of this report was to gain a picture of the collective impact the current broadband initiatives being deployed in rural areas will have on extensiveness and competitiveness as well as the achievement of availability to 100% of communities by 2005.

Over the last two years real progress has been made in the deployment of broadband services to rural areas. In October 2001, availability was at 60%<sup>32</sup> and currently we are at 80% with this figure expected to continue to rise over the next two years. The most significant driver in the extension of broadband availability during this period has probably been BT's demand registration campaign – a market led initiative, which has provided an innovative new mechanism for enabling BT exchanges. The recent announcement setting trigger levels for another 2300 exchanges has provided welcome clarification of how BT intends to approach the remaining 20% of unserved areas.

Whilst recognising the significance of the demand registration mechanism, it seems likely that the existence of broadband initiatives such as those outlined in this report has provided an additional stimulus to BT's plans for addressing rural coverage. As both the Government and BT have recognised reaching the last 10% of communities will require concerted action on the part of both the public and private sectors. A range of models now exists for extending broadband coverage and achieving the goal of reaching 100% of communities by the end of 2005. A number of lessons can be drawn from the UK experience so far:

- Extending broadband coverage is not simply a supply side issue. Demand stimulation must be a core component of any broadband initiative or strategy.
- As a matter of principle, public sector intervention should be kept to the minimum level necessary to stimulate the provision of services.
- Although defining the minimum level of intervention is quite difficult in practice particularly as market conditions evolve, excessive intervention should be avoided
- The Public Sector should not intervene where a competitive market is already operating.
- The role of Government should be to create the conditions for competition rather than act as a direct competitor to suppliers/operators themselves.
- Some models of intervention are more benign than others from a State Aid and EU Competition law perspective. Further clarity is required on how State Aid and EU Competition laws apply.
- The Public Sector initiatives must be clear about the objectives they are seeking to achieve. Particular care is required where subsidies (which should be used as a last resort) are being provided.
- The outcome of the EU Commission Inquiry into Scottish Enterprise's Project Atlas will likely serve as a test case on the application of state aid to public sector broadband infrastructure provision, and the issue of current vs. next generation services. The outcome, which is expected early in 2004, will therefore be very significant and should provide further legal clarity on the issues related to public sector infrastructure provision.
- Further innovation by Community Networks should be encouraged however this model should not be regarded as a panacea for the last 10%.
- Clarification of rules relating to the long-term use of public sector networks for backhaul by the private sector is required, as well as the development of alternative backhaul products for rural areas.
- We should not lose sight of the goal of promoting competition whilst addressing issues of extending broadband deployment.
- If the UK is to reach 100% broadband availability to all communities by the end of 2005, decisions will need to be made as to which of these models is most suitable to achieve the objective.
- All Government interventions should remain technology neutral.

In conclusion, the availability and take-up of broadband in rural areas will require continued concerted efforts by both the Public Sector and industry to achieve the 100% objective by the end of 2005.

---

<sup>32</sup> BSG Report and Strategic Recommendations, November 2001