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**PUBLIC BROADBAND
SCHEMES**

A Best Practice Guide

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Ofcom
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Executive Summary

This guidance is designed to help those responsible for making decisions about public investment in broadband schemes. It sets out the factors, which should be considered before determining whether to use public monies to intervene in the broadband market. This guidance is being produced at this time to assist those who are considering public intervention to upgrade network infrastructures.

Following the continuing success of broadband deployment in the UK, there is a growing interest in the next generation of higher bandwidth broadband services. Given experiences with the availability of current broadband services, some public sector organisations, including RDAs, devolved authorities and local authorities are currently considering pre-emptive schemes to intervene to ensure the accelerated delivery of higher bandwidth broadband services.

There are a number of rationales for public sector intervention in the provision of higher speed broadband services – market failure, distributional policy objectives (including equity and social inclusion) and regional competitiveness. However, any intervention, regardless of the rationale, risks distorting competition. This could end up disadvantaging commercial companies, perhaps deterring private sector investment for a long period, or duplicating investment that would have been made by the market. Such distortions should be avoided wherever possible and public interventions should only take place where the market has failed.

Whatever the rationale for public intervention, it is important that schemes consider the relative benefit and cost of intervention. For example, schemes that aim to bring disadvantaged consumers or areas up to the same level of service as offered elsewhere are easier to justify than schemes, which aim to increase regional competitiveness.

Any public scheme to deploy higher speed broadband infrastructure should also be designed to increase competition among broadband providers as far as possible: this can result in significant consumer benefits from reduced prices, increased choice and the development of innovative new services. Competition at the infrastructure level, rather than at the service level, is likely to deliver the most choice and innovation for consumers.

Any public sector organisation seeking to intervene in the provision of broadband access infrastructure must ensure that the proposed scheme is compatible with state-aid rules.

Public broadband schemes have the potential to deliver the benefits of broadband to regions, which would otherwise be disadvantaged, increasing business competitiveness and improving consumers' access to new online services. However, it is critical that these schemes are well targeted and well structured, or they risk distorting competition between commercial operators, and/or resulting in avoidable use of public funds.

The issues outlined in this guidance document are designed to address this danger; we recommend that they be applied to all prospective public broadband schemes.

1. Introduction

Broadband has been shown to bring significant benefits to consumers and businesses that are able to access it. It can lead to productivity gains as businesses make use of electronic supply chains and can market themselves on the web, and it can allow employees to work more flexibly at home. Consumers can access online public services and be a part of new, online societies.

A number of public sector organisations are considering how to ensure these benefits are achieved, and are considering the possible need for direct public intervention to make sure that investment in higher speed broadband infrastructure takes place.

This document is aimed at those public sector organisations considering intervention in the provision of higher speed broadband networks, including RDAs, devolved authorities and local authorities. It seeks to set out the main considerations when assessing if public intervention in this area is desirable and proportionate. The document only considers supply side interventions – those that result in the deployment of additional infrastructure and an increase in the availability of higher bandwidth services. It does not address public sector schemes aimed at demand side stimulation, such as schemes to increase take-up of broadband services in specific areas.

Any public sector organisation seeking to intervene in the provision of broadband access infrastructure must ensure the proposed scheme is compatible with state-aid rules. Although there are many common principles, it should be noted that the European Commission's state aid assessment process encompasses a wider range of criteria for assessment of projects than are addressed in this paper¹. Further information on the Commission's approach to state aid, and the procedure for notifying schemes, can be found from the DTI's State Aid Branch².

Central government has a responsibility to create the right conditions for business to succeed in highly competitive global markets. This means that it should support enterprise and innovation and help create sustainable businesses and aid competitiveness. In addition, Regional Development Agencies (RDAs) are mandated to eliminate economic disparities between regions, through capital investment programmes where appropriate.

Differences are likely to arise in the availability of broadband services in different areas, in particular for future new, higher bandwidth services. Future services may offer higher bandwidths than today's ADSL or cable technologies can deliver, or offer new features and characteristics. However, the market alone may not deliver these services to areas with lower population densities or physically remote locations, or may deliver them much later than they are available elsewhere.

There may be three main rationales for public intervention in broadband services – and in particular in future new, higher bandwidth services:

- addressing market failures, where the market is unlikely to deliver the most efficient outcome;
- achieving distributional policy objectives e.g. social inclusion, or reducing a digital divide; and

¹ <http://ec.europa.eu/comm/competition/publications/cpn/>

² <http://www.dti.gov.uk/bbf/state-aid/index.html>

- facilitating regional development through increased competitiveness, focusing on addressing regional economic disparities or promoting a region's competitiveness, for example through the acceleration of next generation access deployments.

It is important that, in considering the rationales for public sector intervention, schemes are clear which of these objectives they are seeking to achieve. For example, whilst a scheme may be designed both to provide competitive advantage for a region and to address potential social exclusion resulting from the lack of a commercially-delivered infrastructure, both of these objectives ought separately to be identified.

Well-targeted public sector schemes can result in significant benefits to consumers, businesses and regional economies, without damaging competition between broadband suppliers. Examples of this include Regional Development Authorities' recent investments to enable broadband services in those local telecoms exchanges considered by the market to be uneconomic for broadband services. Another example is the FibreSpeed project, which is deploying higher speed fibre links to business parks in Wales where the market has shown no appetite to invest.

At the same time, it is important that broadband schemes are structured in the right way, and put in place only where such schemes are warranted. Poorly targeted schemes have the potential to result in considerable harm, especially where public interventions risk distorting commercial companies' incentives for efficient investment. Such market-led investment is beneficial to consumers as it is more likely to result in competition at the deepest level of infrastructure, which in turn is most likely to deliver consumer benefits in terms of choice, price and innovation. In addition, competition between commercial operators can lead to a 'virtuous circle' of investment, with operators continually investing in new applications, services and technologies in order to maintain competitive advantage. If public interventions reduce the incentives for commercial companies to invest efficiently, these benefits may be lost.

It is therefore important that the objectives, expected benefits and potential costs of public schemes, including the risk of reduced commercial investment, are well understood.

2. Rationales for public intervention

The three main rationales for public intervention in broadband infrastructure provision can be ordered in terms of the ease with which the case to support them can be built:

- A. Addressing market failures.
- B. Achieving distributional policy objectives.
- C. Increasing regional competitiveness.

These justifications also vary in terms of the level of risk they incur. Generally, public sector interventions in broadband infrastructure risk:

- distorting competition and disadvantaging commercial companies, perhaps deterring private sector investment for a long period. In the long run, this can reduce the level of innovation, competition and choice that consumers are offered; and
- duplicating investment that has been or would have been made by commercial telecoms companies in due course, or investing in equipment that becomes obsolete over time.

The likelihood of public interventions resulting in these risks increases as their rationale moves down the list above; from addressing market failures towards a more general aim of increasing regional competitiveness.

A. Addressing market failures

In general, the market rather than the regulator or public sector is best placed to assess the most efficient outcome, for example in terms of the reach of higher bandwidth broadband networks. In addition, the market is also best placed to react to any new or improved information and adjust its production decisions accordingly.

However, it may be that the market led outcomes result in deployments only to specific areas of the UK. Strictly speaking, the failure of a market to supply a broadband service, even where some people want it, is not necessarily what economists call a market failure. It may just be that the costs of supplying the service exceed what customers would pay for it, in which case - in economic terms - it wouldn't be an economically efficient investment to have made.

Of course, people may still be disadvantaged as a result of not having access to a broadband service. Access to the service may be important for their inclusion in society, and this may justify intervention. But if so, this would be justified on the basis of distributional policy objectives, which are discussed below, rather than to address a 'market failure'.

There may be a number of types of market failure in supply of broadband services. One important case of a market failure is when, as a result of one provider having market power, the market restricts output to increase profits. Ofcom's ex ante regulatory policies are designed to address such market failures. For example, the existence of market power can be addressed by reducing the barriers to entry to a market for competitors.

Any concerns on the potential existence of market failures, or evidence that the market is not delivering an efficient outcome, should be raised with Ofcom, as it is responsible for the application of ex ante regulation to communications markets.

B. Distributional policy objectives

As mentioned above, even if the market delivers the most efficient outcome, and there is no market failure in the technical sense, public intervention may be warranted to achieve public policy objectives about distributional concerns. This includes objectives relating to wider public policy, including social equity and inclusion. In assessing the distributional issues in a region, two main tests can be applied:

- a) Comparative service availability - are the kind of services the scheme will deliver widely available in other areas in the UK?
- b) Likelihood of commercial services - are commercial companies unlikely to invest even when there is a proven demand to deliver the kinds of service that the scheme aims to provide?

If the answer to both of these questions is yes, then it is likely that there may be an area where efficient market outcomes will not deliver some services to consumers in certain areas. These are the areas in which distributional concerns about availability are valid. We consider both of these tests below.

- a) Are the kinds of services the scheme will deliver widely available in other areas in the UK?

Public broadband schemes may aim to offer services that are widely available in other parts of the country, but which are unavailable in a particular area. In this case, they are seeking to address potential disadvantages arising for businesses and consumers in areas where these services cannot be accessed. Using public funds to address these variances in availability can be a good use of public funds as it addresses social exclusion or economic disadvantage issues arising from the so called 'digital divide'. This is analogous to forms of social exclusion that can arise as a result of inferior transport links for example, including physical, geographic and economic exclusion. In addition, they are less likely to result in competitive distortions.

If the services the scheme will deliver are not widely available in other parts of the UK, it is difficult to argue that consumers in a particular area are being relatively disadvantaged as a result of not having these services. It is more likely that the objective of the scheme is to provide an advantage to an area through the launch of new services not available elsewhere. Public broadband schemes, which aim to achieve this objective, are less likely to be a good use of public funds, and we discuss this in the next section on regional competitiveness.

b) Are commercial companies unlikely to invest even when there is proven demand to deliver the kinds of service that the scheme aims to provide?

If, once there is a proven demand, commercial companies could be expected to provide similar services to those proposed by a public broadband scheme, any proposed scheme is more likely to cause harm by distorting competition. This is because a public scheme, by its nature, involves longer payback on infrastructure than commercial operators would need. This makes it hard for commercial operators to compete with the publicly-sponsored infrastructure for a very long time to come, and is likely to reduce competition in the long term, with consumers and businesses missing out on the benefits that such competition may bring.

Public authorities may nonetheless be concerned about the delay between timing of commercial deployments and when leading edge businesses and consumers start to demand these services. Where it is anticipated that commercial deployments may lag customer demand, there may be calls for public schemes to address the lack of supply. However, in general, commercial companies are best placed to assess the levels of business and consumer demand for services and react accordingly. Therefore, it is still likely that commercially led deployments rather than public sector schemes will result in an efficient outcome.

One example of this was the deployment of current generation broadband services. Initially, the expectation was that ADSL coverage would only reach around 70% of UK homes. This led to calls for interventions to increase the overall coverage. However, as the market demand became clearer, the level of coverage delivered by commercial operators increased beyond these initial expectations to over 95% of households, before public intervention to fill in the gaps became necessary.

C. Increasing regional competitiveness

Regional Development Authorities have an objective of promoting economic development and reducing inequalities between regions, in part through the increased competitiveness of the region.

One mechanism to increase a region's competitiveness is to generate a competitive advantage through early investment in higher speed broadband access infrastructure. For example, a region's competitiveness may be improved as a result of an increase in the level of innovation following the launch of a higher bandwidth broadband network.

However, the justification for public interventions to promote competitiveness may be weaker than those aimed at addressing distributional objectives as they may pose a greater risk of:

- a) distorting competition;
 - b) technology obsolescence;
 - c) duplicative investment;
 - d) transient benefits; and
 - e) not standing up to a public value test.
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- a) Distorting competition - public schemes aimed at improving competitiveness of a region may risk distorting competition more than schemes aimed at achieving distributional objectives. This is because these schemes may be focused on regions that would have witnessed commercial deployments in NGA infrastructure in time. They therefore risk distorting the incentives for future efficient investment by the market.
 - b) Technology obsolescence - investing in advance of the market also increases the risk of technological obsolescence, where the public sector scheme may choose to deploy a specific technology which is superseded by later market led developments.
 - c) Duplicative investment – schemes to increase regional competitiveness in the short term may result in infrastructure investment that would anyway have been made by the market in due course, or act as a substitute for existing broadband infrastructures. In both cases, public intervention may not result in the most efficient outcome. Avoiding this situation requires a good understanding of how demand for higher bandwidth services may differ from existing broadband services, and where the market is and is not likely to deploy infrastructure. Both of these are relatively difficult to assess in advance.
 - d) Transient benefits – competitive benefits achieved from the acceleration of higher speed network in a particular area may be transient, with subsequent commercial or public sector deployments in broadband infrastructure in other regions eroding the competitive advantage gained.
 - e) Not standing up to a public value test - if the scheme delivers services that aren't widely available elsewhere in the UK, demand by consumers or businesses for the new services is likely to be hard to determine. Overseas demand for these types of service is not always a good indicator of likely demand in the UK. Similarly, it may be hard to determine the level of interest from the providers of new applications that the new infrastructure may enable. In the absence of proven demand from customers or application providers, it is more likely that the investment may not be efficient.

These risks can be mitigated to some degree by ensuring that any intervention is targeted at a specific region or set of customers. The outcomes and impacts of such schemes are easier to assess and manage than larger, more general interventions. Approaches to focus interventions in these ways are explored in the next section.

3. Structuring public interventions to deliver maximum value

Any public intervention is only warranted if the resulting benefits exceed the cost. The justification for any public intervention can be improved by maximising the benefits or by minimising the costs. Specifically, consideration should be given to:

- How material are the drawbacks for consumers or businesses in those areas without access to these services?
- What are the costs of providing services to consumers in these areas – including both the costs of network roll out, and potential long term effects of intervention on competition and innovation?
- Whether greater benefits could be obtained by using the funds intended for broadband intervention for alternative uses?

Benefits can be maximised, and costs minimised, by choosing the best structure for the scheme. For example, public broadband schemes are best structured if they:

- make long term public sector aggregation contract tender processes accessible to private sector players at the point of tender; and
- first consider alternative activities the public sector could adopt, besides infrastructure investment, to support development of high speed broadband in the area concerned, such as demand side stimulation activities.

One aim of any public broadband scheme should be to increase the level of competition as far as possible. Promoting competition can result in significant consumer benefits from reduced prices, increased choice and the launch of innovative new services. Ideally the competition should be at the infrastructure level, rather than solely at the service level, since this is likely to deliver the most choice and innovation for consumers.

Public schemes have the opportunity to promote competition most effectively by focusing on the specific parts of a telecoms network where there is unlikely to be investment by commercial companies. The scheme should then provide open access to these parts of the network. In general, these parts of the network are likely to be those elements that cost the most to build, notably physical duct and laying of cables. Limiting public sector intervention to these parts of a network will have several benefits:

- minimising use of public sector resources and ensuring that public sector funds are only used where private sector investment will not go;
- increasing competition at a level in the network which will deliver greatest choice for consumers and levels of new service innovation; and
- minimising the risk that service providers will not connect to the network. As more elements of a network are provided through public schemes, the risk increases that this network will differ from commercial deployments elsewhere. For example, ducts and dark fibre are common to all networks, whilst more complex wholesale products may vary between different networks. If the public scheme results in unique wholesale products (i.e. different to those widely available from commercial operators elsewhere) there is a danger that service providers may be unwilling to invest to be able to connect to networks in order to offer retail services in that area.

4. Conclusions

Public broadband schemes have the potential to deliver the benefits of broadband to regions, which would otherwise be disadvantaged, increasing business competitiveness and improving consumers' access to new online services.

However, it is critical that these schemes are well targeted and well structured, or they risk distorting competition between commercial operators, and/or resulting in a bad use of public funds.

The issues outlined in this guidance document are designed to address this danger; we recommend that they be applied to all prospective public broadband schemes.

If you have any comments or questions about these guidelines or wish to discuss any of the issues raised, please contact either Andy Carter (Andy.Carter@dti.gsi.gov.uk) on 020 7215 3694 or Clive Carter (clive.carter@ofcom.org.uk) on 020 7981 3541. In addition, more information can be found on Ofcom's website: www.ofcom.org.uk.

This guidance will be reviewed annually to ensure that it is commensurate with economic competitiveness and social policy.