BIS | Department for Business Innovation & Skills

BROADBAND DEPLOYMENT AND SHARING OTHER UTILITIES' INFRASTRUCTURE

A discussion paper

JULY 2010

Contents

Superfast broadband deployment and sharing other utilities' infrastructure

The Coalition Agreement committed the Government to introducing measures to ensure that the rapid roll out of superfast broadband across the country. The agreement also said that the Government would ensure that BT and other infrastructure providers would allow the use of their assets to deliver such broadband, and seek to introduce superfast broadband in remote areas at the same time as more populated areas.

This discussion paper looks at the benefits and problems associated with sharing other non-telecommunications utilities infrastructure, and invites comments on the issues raised.

This discussion paper is an informal consultation with key questions listed later on to help stimulate debate and gauge initial thinking on the policy.

Issued: 15th July 2010

Respond by: 16th September 2010

Enquiries to: Jeanne Grey
Broadband Policy and Programmes Team
Tel: 020 7215 3729
Fax: 020 7215 5442
jeanne.grey@bis.gsi.gov.uk

1. Foreword from the Secretary of State for Culture, Media & Sport

The Government is committed to securing a world-class communications infrastructure for the UK and ensuring the benefits of superfast broadband are available to everyone. Superfast broadband deployment will involve large investments, and the Government believes that wherever possible the market should lead the way. We want to ensure that any obstacles, that could potentially delay or compromise private sector investment in new superfast broadband networks, are removed, and that we provide the right incentives for investment.

Ensuring that BT and other infrastructure owners allow access to their infrastructure will help reduce the cost of deployment. Civil works account for up to 80% of the investment in network roll-out, so the potential savings, if the cost of those works can be reduced, are significant. There are, I know, a number of complexities in opening up access to infrastructure owned by other utilities, such as electricity companies and water companies, and the Government is keen to understand whether these are best addressed through legislation, or by regulatory or other means. Legislation will only be considered as a last resort.

I hope this discussion paper will prompt a dialogue between infrastructure owners and telecoms companies to achieve a better understanding of the issues involved, which will encourage them to work together in the interest of the needs of the UK.

2. Executive Summary

1. Countries around the world are moving ahead with rolling out superfast broadband. The next generation of broadband is a vital enabler for economic growth and essential to our future prosperity. The UK has made a start on deployment, but we want to go further. Steps taken now to reduce the cost could make a significant contribution to availability and open the market to new players. BT and other utilities have existing infrastructure that can be shared with telecommunications companies which could help reduce the capital cost of new network deployment and increase deployment.
2. The purpose of this document is to initiate discussions with utility infrastructure owners and telecommunications companies on infrastructure sharing. We consider the benefits and problems associated with infrastructure sharing and set out some initial thinking based on discussions with stakeholders to date. To help stimulate debate we set out a number of questions and intend to arrange stakeholder roundtables to facilitate further discussions on the questions raised.

Responses are sought specifically on the following questions:

i) Do you agree that the ability to share other utilities infrastructure would reduce the costs of rolling out superfast broadband and facilitate investment?
ii) We think that encouraging infrastructure sharing might help companies extend the reach of their networks further into harder to reach rural and remote areas. What infrastructures would be most useful in achieving this objective? How much difference do you think that more infrastructure sharing would make to the ability to reach these areas?
iii) What do you see as the main barriers to infrastructure sharing?
iv) What benefits are there for utility infrastructure owners in making their infrastructure available for sharing?
v) What additional incentives would infrastructure owners like to see in place to encourage more sharing?
vi) What government action would be most likely to ensure the quickest and most effective deployment of broadband through infrastructure sharing? Is legislation likely to be required or would industry co-operation be quicker and more effective?

3. How to respond

4. When responding please state whether you are responding as an individual or representing the views of an organisation. If you are responding on behalf of an organisation, please make it clear who the organisation represents by selecting the appropriate interest group on the discussion paper response form and, where applicable, how the views of members were assembled.

5. The responses can be submitted by letter, fax or email to:

Jeanne Grey
Broadband Policy & Programmes Team
Department of Business, Innovation and Skills
Fourth Floor
1 Victoria Street
London SW1H 0ET
Tel: 0207 215 3729
Fax: 0207 215 5442
Email jeanne.grey@bis.gsi.gov.uk

6. A list of those organisations and individuals consulted is in Annex A. We would welcome suggestions of others who may wish to be involved in this consultation process.

7. We intend to hold a series of stakeholder events and we encourage interested parties to participate in these events.

8. You may make copies of this document without seeking permission. Further printed copies of this discussion paper can be obtained from:

BIS Publications Orderline
ADMAIL 528
London SW1W 8YT
Tel: 0845-015 0010
Fax: 0845-015 0020
Minicom: 0845-015 0030
www.BIS.gov.uk/publications

4. Confidentiality & Data Protection

9. Your response may be made public by BIS. If you do not want all or part of your response or name to be made public, please state this clearly in the response. Any confidentiality disclaimer that may be generated by your organisation's IT systems or included as a general statement in your fax cover sheet will be taken only to apply to information in your response for which confidentiality has been requested

10. Information provided in response to this discussion paper, including personal information, may be subject to publication or release to other parties or to disclosure in accordance with the access to information regimes (these are primarily the Freedom of Information Act 2000 (FOIA), the Data Protection Act 1998 (DPA) and the Environmental Information Regulations 2004). If you want information, including personal data that you provide, to be treated as confidential, please be aware that, under the FOIA, there is a statutory Code of Practice with which public authorities must comply and which deals, amongst other things, with obligations of confidence.

11. In view of this it would be helpful if you could explain to us why you regard the information you have provided as confidential. If we receive a request for disclosure of the information we will take full account of your explanation, but we cannot give an assurance that confidentiality can be maintained in all circumstances. An automatic confidentiality disclaimer generated by your IT system will not, of itself, be regarded as binding on the Department.

5. Help with queries

12. Questions about the issues raised in the document can be addressed to:

Jeanne Grey
Broadband Policy & Programmes Team
Department of Business, Innovation and Skills
Fourth Floor
1 Victoria Street
London SW1H 0ET
Tel: 0207 215 3729
Fax: 0207 215 5542
Email Jeanne.grey@bis.gsi.gov.uk

6. Facilitating the roll-out of superfast broadband

Superfast broadband

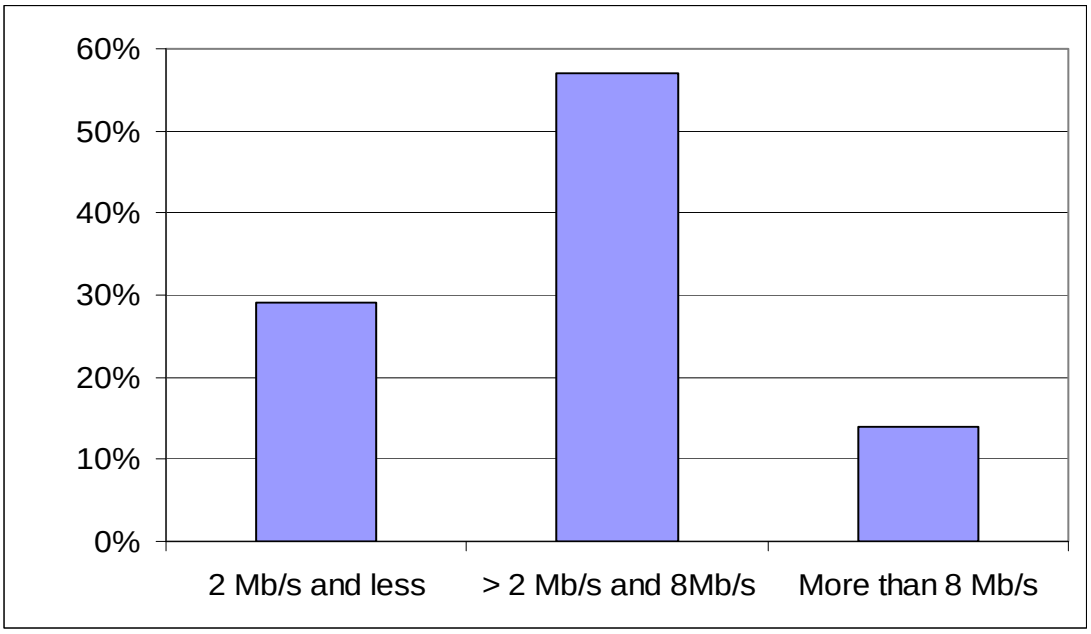
13. The coalition agreement set out the Government's objective to ensure the rapid roll-out of superfast broadband across the country.

14. Superfast broadband networks are available to around 50% of UK households as a result of commercial investment to date, and over time it may be commercially viable to extend the roll-out to around 70% of the population. However, investment in superfast broadband involves higher costs, longer pay back periods and continuing uncertainty about consumer demand. These factors together may contribute to reduced incentives and willingness to carry out further investment, thus delaying further increases in the reach and coverage of superfast broadband to the rest of the country.

15. Hence the potential benefits stemming, for example, from new advanced education and healthcare services which superfast broadband will enable, may not be available for many consumers for a number of years, and UK businesses will be less able to exploit new opportunities created by the global move to superfast broadband. This will typically be in the more rural areas of the country, but may also include other areas.

16. At present, Ofcom data suggests that over 99 per cent all households and businesses are able to receive broadband which is always on and at a speed of at least 512kb/s, which is just sufficient for streaming services such as i-Player, but not for other services such as two-way video conferencing, and delivery of health care services which require higher speeds. There is also considerable variation in speeds across broadband users with just 14 per cent of households currently connecting at speeds of 8Mb/s or above (see chart below). Across the UK, there are a large number of localised areas - known as "not-spots" - in which households and small businesses are experiencing poor levels of connectivity and speeds significantly below that advertised by broadband providers.

Chart 1: UK residential broadband connections by headline speed, April 2009



Source: Ofcom (Broadband Speeds 2009)*, based on data provided by the UK's nine largest ISPs by retail market share (representing over 90% of the total market)*

17. Superfast broadband will provide consumers and businesses with higher speed and more capable services, which are likely to enable the use of a wide range of new and innovative applications

18. Superfast broadband could also yield employment benefits as a result of the construction and maintenance of the broadband infrastructure. Work carried out by the London School of Economics (LSE) and the Information Technology and Innovation Foundation estimated the impact of investment in broadband networks on employment. In their study, they estimate that a £5 billion investment would support 280,000 jobs for a year[1]. Other research conducted by NESTA suggests that if the UK mirrored the South Korean upgrade to super-fast broadband then 600,000 jobs could be created in 4 years[2].

Overview of the broadband market

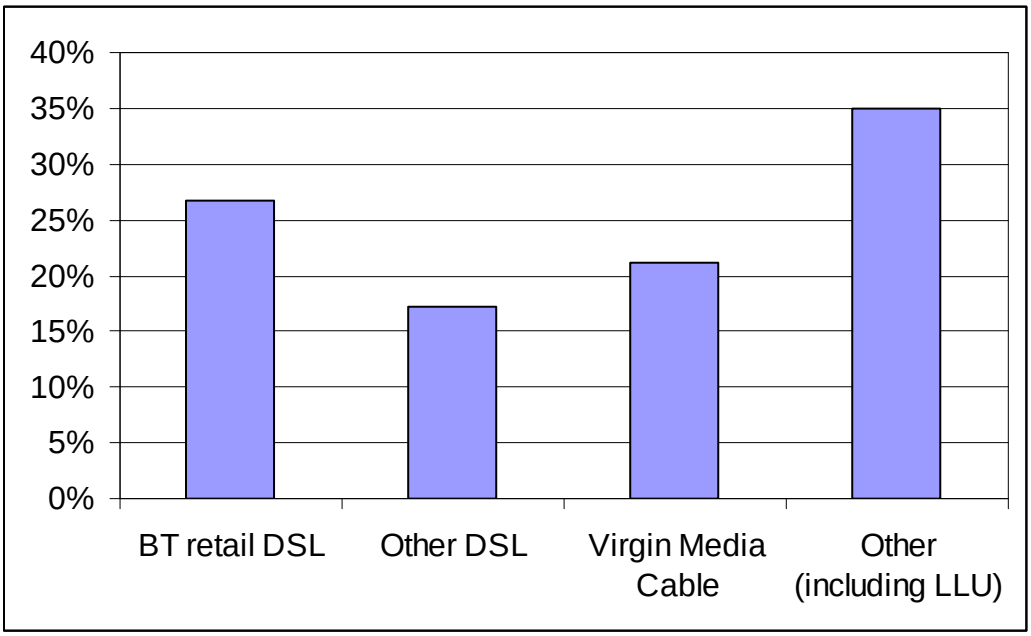
19. The broadband market is highly competitive with BT, the incumbent operator, accounting for a share of 27 per cent of the retail market followed by Virgin Media with 21 per cent (Chart 2).

20. Local loop unbundling (LLU) of BT exchanges has provided consumers with greater choice over their telephone and broadband services,

[1] http://www.itif.org/files/digitalrecovery.pdf
[2] http://www.nesta.org.uk/library/documents/Getting-up-to-speedv5.pdf

allowing companies install to their own exchange equipment and manage the network from exchange to customer premises. Companies such as Sky, Talk Talk, O2 and Orange provide fierce competition to BT and Virgin Media.

Chart 2: Share of retail and small business broadband connections



Source; Ofcom (Telecommunication market data tables, 4th Quarter 2009)

21. Both BT and Virgin Media are driving the delivery of next generation super fast broadband. Virgin Media has completed its rollout of 50 Mb/s across its cable network, some 46% of households. Furthermore, Virgin Media has announced plans to extend its fibre optic network, covering around 13 million homes, to 500,000 new homes and has identified more than one million homes in parts of the UK that stand to benefit from deployment over telegraph poles[3]. Meanwhile, in May, BT announced that provided that there was an acceptable environment for investment, it would invest an additional £1 billion on top of the £1.5 billion it had previously committed to extend fibre based broadband to around two-thirds of UK homes by 2015, a further advance from its original target of reach 40% of UK homes by 2012.

Benefits of Infrastructure sharing

22. Infrastructure sharing is regarded as a pro-competitive means of promoting broadband because it reduces the high costs of deploying infrastructure through Fibre to the Cabinet (FTTC) or Fibre to the Home (FTTH). Civil works account for up to 80 per cent[4] of the total cost of deployment – thus lowering the barriers to entry for communication

[3] http://pressoffice.virginmedia.com/phoenix.zhtml?c=205406&p=irol-news&nyo=0
[4] Analysys Mason (2010) Operational models for shared duct access

providers committed to infrastructure deployment, although some construction activity may still be needed. Meanwhile, there are also other benefits such as additional revenue for infrastructure owners as well as the potential for avoiding disruption to society such as congestion and noise associated with civil works.

23. Research by Analysys Mason[5] suggests that there are potentially significant cost savings from re-use of infrastructure owned by utilities

(Table 1).

Cost savings (£ millions)	Utilities (urban areas)	Utilities (nationwide)
FTTC/VDSL	295 (16%)	811 (16%)
FTTH/GPON	2427 (25%)	5654 (23%)
FTTH/PTP	3014 (26%)	7028 (24%)

FTTC – Fibre to the Cabinet
VDSL – Very high bit-rate Digital Subscriber Line
FTTH – Fibre to the Home
GPON – Gigabit Passive Optical Network
PTP – Point to Point

24. The deployment costs for FTTC, the cheapest technology could be reduced by 16% – a cost reduction of over £800m for nationwide

25. As for access to existing overhead pole infrastructure, Ofcom have noted that this would be mainly relevant for the deployment of FTTH and FTTP and therefore expects demand to be low in the short-term [6].

26. Research by Analysis Mason also suggests that if aerial deployment is possible in some parts of the country, then the total cost of delivering superfast broadband on a national basis could fall by around 10%. For FTTC it is estimated that the total cost would fall from some £5.1bn to £4.7bn while for FTTH the total cost would fall from some £24-28bn to £20-23bn depending on the technology solution adopted. This is based on the assumption that aerial deployment is used to deliver superfast broadband in rural areas and that new telegraph poles are used to achieve this. The lower costs may well tip the business case for expanding fibre into some rural areas. However, it is not completely clear that such savings are achievable everywhere which means that real cost savings could potentially be lower.

[5] Analysys Mason (2008) The costs of deploying fibre-based next generation broadband infrastructure
[6] Ofcom (2009) Delivering super-fast broadband in the UK

Types of infrastructure sharing

27. To facilitate investment in super-fast broadband, the Coalition Agreement stated that the Government would undertake to ensure that BT and other infrastructure providers allow the use of their assets to deliver such broadband.

a) BT's ducts and poles

28. Ofcom in its wholesale local access review consultation[7], published in March 2010, proposed that it would use its powers to require BT – given that it has significant market power - to offer access to its underground ducts and overhead poles so other companies can install their own fibre to deliver superfast broadband. Ofcom's proposed regulatory framework is designed to help encourage competition, whilst at the same time supporting investment and innovation. Subject to the outcome of Ofcom's consultation, the Government expects that sharing could begin in 2011.

b) Other telecommunications infrastructure

29. As for infrastructure owned by telecommunication companies other than BT, the revised EU Framework Directive – to be implemented in May 2011 – opens up the possibility of national regulatory authorities imposing infrastructure sharing obligations on such companies regardless of market power.

c) New overhead telecommunications cables

30. The 2008 independent review of barriers to investment in next generation access (NGA) in the UK[8], which was carried out by Francesco Caio, the former CEO of Cable and Wireless, recommended, amongst other things that the constraints on overhead deployment of telecoms lines should be relaxed. Research for the review estimated that communications providers may be able to save 50% on the cost of deploying NGA if at least some of the "final drop" between the exchange and the home were flown overhead.

31. On 4 September 2009, a consultation paper was published examining whether it was appropriate to amend the Electronics Communications Code to allow for the deployment of telecommunications equipment overhead via new pole or mast infrastructure, in particular to facilitate

[7] Review of the wholesale local access market http://www.ofcom.org.uk/consult/condocs/wla/

[8] Review of Barriers to Investment in Next Generation Access http://www.berr.gov.uk/files/file47788.pdf

the roll out of NGA in areas which may otherwise be unserved due to a diminishing business case.

32. The consultation response concluded that there was scope to seek to amend the Code to allow for the deployment of telecoms cables overhead, where local communities agreed that any impact on visual amenity was worth the prize of greater connectivity, whilst being clear that overhead deployment should not be the default option.

33. The Government agrees that there is scope for this to have an impact on delivering superfast broadband to rural areas, alongside the other possible options for infrastructure sharing, be it via BT's ducts and poles, the infrastructure of other telecommunications companies, or utilities. The Government will publish a further consultation later this year, which will set out exactly what the proposed changes to the Code shall be, and the proposed process by which local communities can engage with any local level consultation. It is likely that there will be a requirement for any new overhead deployment to be open to sharing.

CASE STUDY

Virgin Media fibre optic broadband trial over telegraph poles

In March 2010, Virgin Media announced a trial in Woolhampton, Berkshire, to work with local residents to deliver superfast fibre optic broadband via telegraph poles to homes and a local business. Overhead delivery of cable based services is common in the US, but had never been tried in the UK before.

The Woolhampton trial was an attempt to prove the concept of overhead delivery, understand local concerns and the practical and policy problems that would be associated with wide scale aerial deployment.

The Woolhampton trial highlighted a number of difficulties potential providers currently face including: uncertainty in the Electronic Communications Code about which operators are allowed to fly cables above ground and whether cables can be attached to new or existing telegraph poles; a lack of certainty on wayleave rates; and duplicated planning processes which take up unnecessary operator and local authority resources.

However, the trial has been practically successful in proving that technology is available to deliver fibre across telegraph poles, and that aerial delivery can be achieved in an unobtrusive way. The trial has shown that providing certainty for providers, streamlining processes and regulation, and getting buy in from local communities could make aerial deployment part of the toolkit for expanding superfast broadband around the UK.

d) Other utilities infrastructure

34. As noted previously, the focus of this discussion paper is on shared access to existing and new infrastructure owned by utility companies. We have found that there is no obvious legal barrier to infrastructure sharing between telecoms companies and utilities, be they water, sewerage, gas or electricity companies. We understand however that while the use of gas and water mains may be technically feasible, it is much more difficult and costly to use and therefore economically less attractive. Sewerage and electricity infrastructure appears to offer the best scope for helping reduce the cost of network deployment, with some sharing of sewerage and electricity infrastructure already taking place. For example, Geo who have a fibre network in the London sewer system, and H2O Networks who are installing a fibre network in Bournemouth and Dundee. Some telecoms providers already use elements of the electricity network to route their cables, for example using the overhead electricity routes in rural areas. In other countries, for example Portugal and Austria, there has been government action to ensure access to other types of ducts other than telecoms, especially energy and water.

35. While there is some evidence of infrastructure sharing, at present, it is perceived that the degree to which this occurs is less than socially optimal. Initial examination suggests that there may be specific market failures that hinder optimal access to infrastructure to enhance the reach and coverage of broadband infrastructure to deliver superfast broadband.

36. Such market failures may include:

- Co-ordination failures where disagreements between different companies on the nature of access to infrastructure, for example, safety issues, may prevent agreements to share infrastructure.
- Regulatory failure where planning regulations associated with wayleaves deter companies from seeking to apply to gain access to infrastructure because of time, complexity and resources.
- Imperfect information where companies are unable to identify the benefits of sharing infrastructure.
- Regulatory failure where price regulation may provide a disincentive for companies to seek to provide access to their infrastructure due to insufficient returns.

37. Government can take a variety of measures to compensate for these market failures. The main issues that have been raised in discussions with stakeholders to date are listed below together with possible solutions.

Issues raised	Possible solutions
a) **Health and Safety:** Some electricity utility owners are reluctant to share poles with telecoms operators because of health and safety concerns.	Develop an electricity industry pole sharing agreement which will apply to all telecommunications companies to replace the existing agreement with BT. The agreement could address not only the health and safety concerns but also cover price, procedures, liability and all aspects of pole access.
b) **Multiple lines**: Electricity owners are concerned that they might be required to hang multiple fibres on poles.	Only permit a single installation per pole, on a first come, first served basis, and then make available spare capacity on a non-discriminatory, open access basis.
c) **Price controls** : Utility owners reluctant to share infrastructure with telecommunications companies because of regulatory controls on revenue from non-core business	Encourage Ofwat and Ofgem to exempt or exclude some of the revenue from infrastructure sharing.
d) **Wayleaves**: Changing the use of passive infrastructure is likely to require renegotiation of wayleaves	There does not appear to be an obvious generic solution to this problem. However, wayleave negotiations are an everyday part of infrastructure deployment, and for new build, provision for telecommunications could be built into negotiations. For existing infrastructure there is no obvious barrier to commercial negotiations. Many rural communities have voiced their concern that they are falling behind in terms of access to broadband. We believe that there is an opportunity to work with these communities and with landowners on the issue of wayleaves for mutual benefit. We would be particularly interested to hear innovative solutions to the issues around wayleaves especially from landowners or their representative bodies who have direct experience. Land owners could perhaps be encouraged to engage constructively – especially where they would benefit from improved broadband infrastructure as a result.

7. List of discussion paper questions

37. We would welcome your views on the questions raised below

i) Do you agree that the ability to share other utilities infrastructure would reduce the costs of rolling out superfast broadband and facilitate investment?

ii) We think that encouraging infrastructure sharing might help companies extend the reach of their networks further into harder to reach rural and remote areas. What infrastructures would be most useful in achieving this objective? How much difference do you think that more infrastructure sharing would make to the ability to reach these areas?

iii) What do you see as the main barriers to infrastructure sharing?

iv) What benefits are there for utility infrastructure owners in making their infrastructure available for sharing?

v) What additional incentives would infrastructure owners like to see in place to encourage more sharing?

vi) What government action would be most likely to ensure the quickest and most effective deployment of broadband through infrastructure sharing? Is legislation likely to be required or would industry co-operation be quicker and more effective?

8. What happens next?

38. This consultation will close on 16th September 2010. At that point the Department for Business will publish responses, which will be used to inform future policy development. We will consider all options to achieve our policy aims, up to and including new regulatory interventions, balancing these with the cost and speed of delivery.

Annex A: List of Organisations consulted

3
ABFL Groupe Intellex
Ace
Advantage West Midlands
Analysys Mason
Association of National Park Authorities
Association of preservation trusts
BASLIP
BBC
BSAC
BSG
BSkyB
BT
C&W
CABE
Cabinet Office
Cable & Wireless
Campaign for National Parks
CBI
Central Networks
Central Office of Information
Channel 5
Childnet
Citizens Online
Clearswift
CMA
COLT Telecoms
Coming Inc.
Commission for Rural Communities
Country Land and Business Association
Country Landowners Association
Countryside Alliance
Countryside and Community Research Institute
CPNI
CPRE
DCA
DCMS
Digital Tech. Advisory Ltd
Discovery
DMA
East Midlands Development Agency
East of England Rural Affairs Forum
Ironport
ISPA
ITV
LACORS
LDA
London Internet Exchange
Mayer Brown
Mcom
Merula
Message Labs
Microsoft
Middlesex University
Mobile Broadband Group
NAAONB
NCC
NCF
NEA
NFU
NOC
Nokia
Nominet
Nortel
NWDA
O2
Ofcom
Ofcom Consumer Panel
Office of Fair Trading
Ofgem
Ofwat
Olswang
ONE
Orange
Packet Vision Ltd
PCCW
PhoneAbility
PhonePayplus
Planning Inspectorate
Planning Officer Society
Point Topic
Political Intelligence
RADAR
Reuters

Easynet
EEDA
Electricity Northwest
EMDA
Energy Networks Association
English Heritage
ENPAA
Ericsson
Ernst & Young LLP
Eurim
FCS
FCS Business Radio Group & air-radio
FLA
Geo
Geoscan (UK) Ltd
Global Crossing
Google
Hearing Concern
Help The Aged
HM Treasury
ICO
ICSTIS
IET
Intellect
Interforum
INTUG
INWG
RIM
RNIB
RNID
Rural Services Network
SEEDA
Sense
Skype
Spamhaus
SSE Telecom
SWDA
Telcoconsulting
Telesphere Ltd
The Planning Institute
The Scottish Government
Timico
T-Mobile
Towerhouse Consulting
UK Broadband
UKCTA
Verizon
Virgin Media
Vodafone
Vtesse
Water UK
Welsh Assembly
Western Power
Yorkshire Forward

Department for Business, Innovation and Skills
www.bis.gov.uk

URN 10/1046