

## The UK Communications Infrastructure Report

Ofcom's proposed approach to its new reporting duty

Consultation

Publication date:

Closing date for responses:

22<sup>nd</sup> July 2010 30<sup>th</sup> September 2010

# Contents

Section		Page
1	Executive summary	2
2	Introduction, approach and timetable	5
3	Detailed requirements	10
4	Next steps	26
Annex		Page
1	Responding to this consultation	27
2	Ofcom's consultation principles	29
3	Consultation response cover sheet	30
4	Consultation questions	32
5	Digital Economy Act	34
6	Summary of proposed data requirements	36
7	Networks and services under scope	38

## Section 1

## Executive summary

- 1.1 The Digital Economy Act 2010, which came into force in June of this year, gives Ofcom a new duty to report to the Secretary of State every three years on the UK's communications infrastructure.
- 1.2 Communications networks and services form an increasingly important part of the UK's national infrastructure, both directly and as an input to other sectors such as utilities and banking. In assessing current and proposed policies, Government requires an accurate picture of the state of the country's communications infrastructure the new report will seek to provide this picture. The published version of the report should also prove valuable to consumers by giving them access to more information about the services they purchase, and rely on.
- 1.3 Conducting Ofcom's existing functions gives us considerable information about the UK's communications infrastructure, both from operators and from our own research. In cases where we have suitable data, we plan on using it for the report, seeking any required permissions where we have gathered it for other purposes. However we will need to collect additional data from industry in some areas.
- 1.4 Any collection of data by the regulator imposes a burden on industry and this new duty potentially calls for data across a wide range of metrics and companies. Ofcom is keen to work with industry to establish an efficient and proportionate process which ensures that the obligations under the Act are met and that the potential benefits of the new report can be realised while minimising the burden on operators. This consultation is the first part of that process, which we expect will continue with close engagement with stakeholders in the run up to the first report and beyond.
- 1.5 This document sets out our initial views on the types of technical data we think we will need to collect for the first report. The consultation process provides an early opportunity for stakeholders to offer views on these proposals and suggest alternatives, in light of our objective of minimising the burden while delivering a report of value to industry, Government and consumers. We are particularly interested to understand what data is already held by companies that could help us.
- 1.6 Drawing valid conclusions in the report will require the use of data provided by many different companies in order to develop a view of the overall state of UK infrastructure. Identifying and using 'industry standard' forms of data may lower the burden, improve comparability and should help make the reporting more effective. We are therefore particularly interested in suggestions for such standards and any practical problems with our current proposals.

#### Our proposed approach

1.7 The first report must relate to the position on a reference date not more than 12 months after the Act came into force and be submitted within two months of that date. Ofcom is then required to publish the report, although can withhold any information which would also be withheld in response to a request under the Freedom of Information Act 2000, for example on the grounds of commercial confidentiality or national security. To maximise the time available for industry

preparation, we propose that the reference date falls in June 2011, with the first report submitted in August 2011.

- 1.8 The Act gives Ofcom discretion over which networks and services to include in the report. We propose to include the most widely available and most commonly used public voice, data and digital broadcasting networks and services. We do not plan to focus on bespoke networks or services designed for larger businesses, but we do intend to cover basic voice and leased line connectivity for smaller businesses and smaller business sites.
- 1.9 Among these areas, we intend to focus on one or two topics of particular consumer or policy interest in each report. For the first report we plan to highlight broadband and 2G mobile coverage. We also intend to capture developments in important emerging technologies which are not on the regular reporting list. For the first report, next generation fixed and mobile broadband access is the expected candidate.
- 1.10 For each type of network and service in the report, we are proposing to ask at most the largest half dozen companies for detailed data. While this approach will not give us a complete picture of the UK's infrastructure, in most instances it will give coverage of the vast majority of the market and therefore a good view of the overall UK position.
- 1.11 The Act requires the report to cover a number of dimensions for each network and service we select. For the first report we propose to use the following data sources:
  - Ofcom data on frequency allocation and licensing to report on the **use of spectrum for wireless telegraphy.**
  - Industry data and our own coverage models and performance measurements to report on the **geographic** and **population coverage** and **capacity** of networks and services.
  - Information from network owners regarding use of any **shared passive infrastructure**, such as mobile masts, ducts, poles and other wayleaves, and any **wholesale access** to their networks.
  - Network and service provider summaries of relevant **risk assessments and mitigations** and any plans for, and tests of, **emergency response.** We also intend to collect information on cross-industry exercises, such as those performed through the EC-RRG<sup>1</sup>. For this aspect of reporting, we believe it may be important to include a small number of additional networks and services beyond our main list, which while generally smaller and more specialist, can have a disproportionate impact on the UK if they fail. An example would be the networks and services supporting high volume/high value financial transactions.
  - Publicly available **international data** to compare the UK's networks and services with those from other countries. For the first report we plan to look at coverage and capacity with a focus on next generation fixed and mobile broadband access networks.

<sup>&</sup>lt;sup>1</sup> Electronic Communications Resilience and Response Group

#### Next steps

1.12 This consultation will close on 30 September 2010, although we expect the process of engaging with operators to continue beyond this. Based on the feedback we receive, we currently expect to publish formal information requests in early 2011. (For areas of particular focus such as mobile coverage, we may start this process in 2010, in order to allow time to ensure the quality and completeness of the data). We are planning to collect data in two stages. The first request will ask for data which is not particularly time dependent, with a second request to be made nearer to the reference date, asking for data relating to the availability of networks and services.

### Section 2

## Introduction, approach and timetable

#### Introduction

- 2.1 The Digital Economy Act ("the Act") was granted Royal Assent on 8 April 2010. It gives Ofcom a number of new duties, including a duty to report on the UK's communications infrastructure, which came into force on 8 June 2010.
- 2.2 These reports are designed to give Government a coherent picture of the state of the UK's key networks and services. They are also intended to help identify areas where greater investment may be needed in order to maintain high-quality infrastructure and prepare for the next generation of communications services. The sections on availability and resilience will better inform the Government on the health of critical national network infrastructure.
- 2.3 Some of the information generated for these reports could also benefit the wider public. In particular, data on capacity and the coverage of networks may help consumers when selecting a provider. As far as possible given issues such as commercial confidentiality, we intend to make this data accessible in a published version of the report that we submit to Government.
- 2.4 This consultation sets out Ofcom's plans for discharging this new infrastructure reporting duty. In particular, it explains the types of technical data we think we will require and seeks views on their relevance and availability, given the need to minimise operator burden while delivering a report of value to industry, Government and consumers.

#### Scope of the report

2.5 Government published guidance about the intention of the reporting duty during the passage of the Digital Economy Bill through parliament<sup>2</sup>. It stated that the purpose of the report is to:

"Provide Government, industry and consumers with a clear indication of the state of the health of the communications infrastructure."

- 2.6 The Act gives Ofcom discretion to select the networks, services and providers it thinks are appropriate in order to provide this assessment. However, it specifies a range of reporting dimensions including coverage, availability, capacity, sharing and wholesale arrangements, and emergency preparedness. International comparisons are also required, in particular information on the coverage and capacity of networks.
- 2.7 This raises questions over the scope of the report. The greater the number of networks, services and operators we choose to cover, the more complete the picture of the broadcasting and telecoms sectors that we can paint. However, the wider the scope, the more data we are likely to need to gather and therefore the greater the potential resource burden on industry.

<sup>&</sup>lt;sup>2</sup> A factsheet on "Ofcom's duties", Dec 2009 -

http://www.bis.gov.uk/assets/biscore/corporate/docs/digital-britain/factsheets/factsheet-ofcom.pdf

- 2.8 We think Government will get most value from the report if we focus our efforts on the most widely available and most commonly used public networks and services and on the largest providers for each. These are also the areas where we are likely to have the highest level of existing data. However, we expect that for each report there may be particular issues or small but emerging networks which merit additional attention.
- 2.9 This approach would mean providing less information about bespoke and private networks for businesses. For the first report, we expect to gather some information on the resilience of these as a part of our discussion with the EC-RRG (Electronic Communications Resilience and Response Group). However, other reporting dimensions will be out of scope for these networks; they are designed to serve particular customer needs, so capacity and coverage are negotiated on a commercial basis. The competitiveness of many of these services has been reviewed by Ofcom in the past in the Business Connectivity Market Review<sup>3</sup>.
- 2.10 Due to different internal reporting processes and inherent variations in networks and services, the data from different providers may require additional processing and careful handling in order to ensure the validity of any direct comparisons. We will seek to harmonise the data we receive wherever possible and will work with industry to improve comparability over time. With subsequent infrastructure reports, we will collect time-series data, from which the relative changes will provide more insight into trends in each of the reporting areas.
- 2.11 We therefore propose that for each report, it is proportionate to:
  - Focus on time-series data which monitor key metrics for the principal networks and technologies which reach most parts of the UK, and which underpin today's most-used communications services (see Table 1 below). These have a major impact on the users of communications services as they largely determine service coverage and availability.
  - ii) **Prioritise one or two issues of particular consumer or policy interest**. For the first report we think 2G mobile coverage and broadband speed availability may be important as these are UK-wide topical issues in which infrastructure plays a key role. However, our reporting focus will ultimately be guided by the data we collect.
  - iii) Include a supplementary section describing any important emerging technologies. We think in most instances it would be burdensome to ask for much additional operator data on these, so we would instead seek to provide a narrative based on publically available information. Over time, if their impact merited, some of these networks or services may move to the main body of the report. For the first report, we think that next generation fixed and mobile broadband access and services come under this category.
  - iv) Apply a threshold to determine which operators to include for each network and service. In most cases, the bulk of the market for any network or service is accounted for by a fairly small number of operators. We do not think it would be proportionate to attempt to cover all of a market, or report on large numbers of smaller operators. For example, we currently plan to seek information from the six largest fixed broadband service providers, which together account for over 90% of connections (see Annex 7).

<sup>&</sup>lt;sup>3</sup> <u>http://www.ofcom.org.uk/consult/condocs/bcmr/</u>

Recurring networks and services					
Services	Networks	Technologies			
Fixed voice Fixed broadband	Twisted copper pair Cable (HFC) Satellite broadband	PSTN voice voice overlay service ADSL/ADSL 2+, ISDN, DOCSIS 2			
Basic business connectivity	Twisted copper pair, fibre, wireless point-to-point	ISDN, low bandwidth leased lines (<=8Mbit/s) - xDSL, Ethernet, SDH			
Mobile voice	2G	GSM, GPRS, EDGE,			
Mobile broadband	3G	W-CDMA/UMTS-FDD, HSPA			
Television broadcast	Terrestrial/DTT Satellite	DVB-T and T2 DVB-S and S2			
Radio broadcast	Digital radio	DAB			
Priority areas for 2011 report					
Торіс	Network/Technologies				
Mobile coverage	2G				
Broadband service speed	Twisted copper pair Cable (HFC) 3G				
Emerging technology for 2011 report					
Торіс	Network/Technologies				
Fixed and mobile next generation access networks	Copper delivered (e.g. FTTC/VDSL) Fibre delivered (e.g. FTTP) Cable delivered (DOCSIS 3) Mobile delivered (e.g. LTE)				

#### Table 1: Networks and services we propose to include in infrastructure reports

Note: we do not plan to report on networks and services which are excluded from this table, including, for example, IPTV, analogue radio and television, and higher-speed business connectivity. However, we welcome comment on whether it would be appropriate to do so.

#### Data sources

2.12 To deliver a report which covers all of the aspects of networks and services specified in the Act, Ofcom will require extensive data. Some of this can be achieved using information gathered as part of Ofcom's existing activities (although where this has involved Section 135 requests we can only use data for the purpose for which it was collected). However, in other cases, we believe we will need to collect additional data using the extended powers available to us in the Act. We need to ensure that any such requests are proportionate, as described by Government in its guidance:

"Much of the information that Ofcom needs to compile the reports will be information that they have or gather anyway in the course of their regulatory duties. Where this is not the case and they have to seek additional information they will be bound by existing provisions in the Communications Act that require them to keep those requests to the minimum required to prepare the reports."

2.13 We are conscious of the need to balance the value of the report with the burden any data collection places on industry. For example, gathering accurate predictions of mobile coverage on a very granular basis, common across all providers, may be useful for Government and consumers. However, some providers may simply not have the required information available. In other cases, existing data which the provider holds may be suitable but require significant amounts of effort to export in a form which would allow comparisons to be drawn. We plan to work with network and service providers to overcome such barriers and improve the level of detail and the value of comparisons that can be included in subsequent reports.

Requirement	Ofcom	Communications Provider
Type of network/service	Use current market data to	Supplementary information
	identify the most important	from communications
	networks and services	providers (CPs)
Use of spectrum for wireless	From Ofcom licensing data	We do not intend to ask for
telegraphy		first report, but may be useful
		in future reports
Coverage (geographic and	Broadband speeds and	Supplementary data from
population)	mobile coverage research	CPs, including predicted
	projects	coverage from computer
		models and network records
Capacity	Ofcom's telecoms	Additional information from
	performance data tables	CPs required
Infrastructure sharing	From existing data sources	Additional information from
	and market data	CPs required
Wholesale service provision	Market review remedies	CP data required
Availability		CP data required
Response in emergencies		CP data required
International comparisons	Ofcom research	

#### Table 2: Sources of data for infrastructure reports

#### **Reporting timetable**

- 2.14 The Act specifies that the initial report must relate to a date falling within the 12month period starting 8 June 2010, in effect offering a 'snapshot' view of the UK's communications infrastructure. In order to allow time for this consultation process, and to give stakeholders an opportunity to gather any necessary data, we propose to select a date in June 2011 as our reference point. The second report would then cover the three-year period beginning with that date.
- 2.15 The Act requires us to submit the report to the Secretary of State within two months of the reference date. We therefore propose to request less time-sensitive information and data from operators in early 2011. This includes plans for network sharing and emergency responses, which are normally agreed well in advance. We plan to work with operators to understand the degree to which network coverage and capacity also fall into this camp.
- 2.16 The principal metric which we see as being highly time-sensitive is network and service availability. This can be affected by planned engineering works, but is also subject to technical or other failures that occur on the day. To address this we intend to request availability data covering the three-month period up to the reference date. We would need to receive this within a week of the reference date in order to allow time to incorporate the information in the report.

Date	Requirement
8 <sup>th</sup> April 2010	The Digital Economy Act granted Royal Assent
8 <sup>th</sup> June 2010	Infrastructure Reporting requirements come into force
30 <sup>th</sup> Sept 2010	This consultation ends
Dec 2010	Statement, indicating the data we will require
Early 2011	Information request for early data collection*
Spring 2011	Deadline for early data submission
April 2011	Formal request for data on availability of networks and services*
June 2011	Reference date for the Infrastructure Report
June 2011	Deadline for data relating to availability of networks and services
August 2011	Deadline for submission of first report to the Secretary of State
Autumn 2011	Publication of public report and key data placed on Ofcom website

#### Table 3: Proposed timeline for the first report

\* It is possible that we may issue additional requests for data at other times in the event we identify a gap in our information and an important policy need.

#### Impact Assessment

2.17 We have not conducted a separate Impact Assessment in this consultation, as we have sought to set out the impact alongside the more detailed proposals which we outline in the next section. We do not think that our proposals will have an adverse impact on equality so have not carried out an Equality Impact Assessment.

#### Consultation questions

Question 1. Have we got the scope right? Is the set of networks, services and operators we propose to report on appropriate and is our approach to data gathering and analysis correct?

Question 2. Do you agree with our approach to classifying different types of networks and services? Are there better ways to define them?

Question 3. Do you agree with our proposal to prioritise 2G mobile coverage and broadband speeds for the first report?

Question 4. Do you agree with our proposed reference date for the report as a date in June 2011 and are we allowing enough time for the provision of data?

Question 5. How can we improve the comparability of data between different operators?

## Section 3

# Detailed requirements

#### Introduction

3.1 This section summarises the infrastructure reporting requirements inserted into the Communications Act 2003 by the Digital Economy Act 2010. It then goes on to describe the approach we plan to take for each requirement in turn.

# Requirements of the Communications Act (as amended by the Digital Economy Act)

- 3.2 The Act<sup>4</sup> requires us to report to the Secretary of State on the following:
  - the different types of electronic communications networks and services provided in the UK;
  - the geographic and population coverage of these networks and services;
  - their availability, and the steps taken to maintain or improve this;
  - the preparations made by providers to respond to an emergency and to restore normal network or service operation; and
  - international comparisons, particularly in terms of coverage and capacity.
- 3.3 In addition, for networks (but not services) we are required to report on:
  - the extent of infrastructure sharing;
  - network capacity; and
  - the extent to which network providers allow other communications providers to offer services on their networks.
- 3.4 We must also report on the use of spectrum for wireless telegraphy in the UK.
- 3.5 Our first report must refer to the state of the communications network on some date within one year of the relevant statutory provision coming into force (i.e. before 8 June 2011). It must be sent to the Secretary of State within two months of this reference date. Subsequent reports must cover the three-year period which follows the reference date used in the first report, and be sent to the Secretary of State "as soon as practicable after the end of the relevant period".
- 3.6 Each report must also be published "as soon as practicable" after it is sent to the Secretary of State, and in such a manner as we consider appropriate for bringing it to the attention of those with an interest in it. However, we can exclude any information from this published version if we consider that we could refuse to disclose it in response to a request under the Freedom of Information Act.

<sup>&</sup>lt;sup>4</sup> Section 1(1) of the Digital Economy Act 2010 amends the Communications Act 2003, including by inserting sections 134A and 134B which address Ofcom's infrastructure reporting duty.

3.7 The Act also requires Ofcom to report on internet domain names if instructed by the Secretary of State. We do not address this duty here and propose to take action only if we receive this instruction.

Reporting requirement	Network operators	Service providers	
Types of network/service	$\checkmark$	$\checkmark$	
Use of spectrum		$\checkmark$	
Geographic coverage	$\checkmark$	$\checkmark$	
Population coverage	$\checkmark$	$\checkmark$	
Extent of infrastructure sharing	$\checkmark$		
Capacity	$\checkmark$		
Extent of providers using other networks	$\checkmark$		
Availability	$\checkmark$	$\checkmark$	
Resilience	$\checkmark$	$\checkmark$	
International comparisons	$\checkmark$	$\checkmark$	

#### Table 4: Summary of reporting requirements

#### Use of electromagnetic spectrum

- 3.8 The Act requires Ofcom to report on the use of the electromagnetic spectrum by wireless telegraphy services in the United Kingdom.
- 3.9 The electro-magnetic spectrum is a scarce resource which is becoming increasingly important as the take-up of wireless communications grows. Information on how spectrum is currently used will help Government understand the pressures on this national asset, and help Ofcom in its duty to ensure its optimal use.
- 3.10 For the first infrastructure report we do not plan to ask industry for data on spectrum. Instead we intend to use three sources:
  - Frequency Allocation Table Ofcom publishes information on how different parts of the spectrum can be used in the Frequency Allocation Table<sup>5</sup> and there is other detailed information on spectrum use published on the Spectrum Information System<sup>6</sup>.
  - Ofcom licence data provide an indication of the demand for spectrum. We propose to report on the number of licences by band and by licence type. (For future reports we may consider carrying out studies to provide us with additional information on licence-exempt bands such as the 2.4 2.4835 GHz band widely used for Wi-Fi).
  - Data on the actual utilisation of spectrum Licence data do not always give a complete picture of actual use. Some applications use spectrum on an intermittent basis (e.g. radar), while others, such as broadcasting, use it continuously. Additionally, licence holders may own the right to use spectrum across the whole of the country even though in practice they only operate in a particular geographic area. Therefore if it helps to improve understanding we may supplement licence data with some data on the actual utilisation of spectrum obtained from our monitoring programmes. We do not intend to ask providers for any usage data for the first report.

<sup>&</sup>lt;sup>5</sup><u>http://stakeholders.ofcom.org.uk/spectrum/spectrum-management/UK-FAT-Table-2008/</u> <sup>6</sup> <u>http://spectruminfo.ofcom.org.uk/spectrumInfo/</u>

#### Consultation question

Question 6. Do you agree with our approach for reporting on the use of electromagnetic spectrum?

#### Coverage

- 3.11 The Act requires Ofcom to report on "the geographic coverage of the different networks and services" and also on "the proportion of the population covered by the different UK networks".
- 3.12 A strong communications ecosystem in the UK demands the availability of highquality broadcast and telecommunications networks throughout the UK. Ensuring extensive coverage of key networks in rural regions helps promote social cohesion. Better information on current availability and performance can help inform future policy on promoting widespread investment in faster access networks and the transition to digital platforms.
- 3.13 We think that the communications infrastructure report should improve the way that coverage data is collected and presented by industry in a way which helps consumers compare similar types of networks and services. We plan to work with industry to investigate the improvements that can be made over time.
- 3.14 For the first report we intend to rely primarily on data held by the operators in its existing form. In doing so, we are seeking to minimise the burden on industry as we are not trying to apply new measurement standards. Where operators are unable to provide us with comparable data, we will seek to supplement and calibrate this with Ofcom's own coverage research.

#### Fixed networks

- 3.15 For the fixed telecoms networks (twisted copper pair and HFC cable) we propose to report on coverage by asking operators for data on premises passed at full postcode level. In the case of Openreach and KCom (in Hull), which are subject to a Universal Service Obligation, we plan to request data on the number and location of premises that they have deemed as too expensive to serve.
- 3.16 These networks serve the majority of fixed residential demand. While this is increasingly true also for small businesses and business sites, there is still considerable use of other services such as ISDN and low bandwidth leased lines (not greater than 8 Mbit/s, using traditional and Ethernet delivery). We therefore also propose to report on the coverage of other basic fixed connectivity services purchased by businesses, by asking operators for the same postcode level data as above. We understand the low bandwidth leased lines can be provided via a number of different networks and technologies; our focus here will be on the coverage of the services and not on any specific network.

#### Mobile networks

3.17 It is more difficult to report accurate coverage data for wireless networks, as the reception from each transmitter is affected by local terrain factors such as trees or the construction of buildings. We are aware that mobile operators already provide coverage estimates using their preferred computer modelling parameters although, as with all models, it is important to understand that these will be inaccurate in

some cases. We propose to ask for these coverage estimates and to seek to understand the key assumptions used in the modelling, such as the signal level at which coverage is considered to exist, so that we can judge the extent to which it is possible and appropriate to make comparisons. We welcome stakeholder views on the extent to which operators could adopt a common set of modelling tools and parameters which would allow a direct comparison of coverage predictions.

- 3.18 For the data to provide useful indications of population coverage, we think that they should be of an appropriate granularity. We believe that mobile operators generally use 100m x 100m "tiles" when predicting coverage and suggest this level of granularity be adopted. This geographic coverage data can then be weighted according to population density data from Office for National Statistics to produce population coverage estimates.
- 3.19 In addition to predicted coverage data from operators, we also plan to use any relevant data that comes out of Ofcom's own research into mobile coverage. This should be particularly valuable as a means of normalising operator data to improve comparability.

#### **Broadcast networks**

- 3.20 Ofcom already has access to models for predicting the coverage of terrestrial television, through our involvement in the Joint Planning Project (JPP). These assess coverage using 100 metre square grids at a 90% confidence level. We think this will give us an accurate picture of coverage and do not propose to seek any new data on this from network operators.
- 3.21 However, we do not hold accurate models for DAB coverage or satellite coverage information. We plan to ask operators for data which could assist us. For example, for DAB coverage, we plan to ask operators of national DAB networks to provide us with their coverage estimates. For satellite operators we plan to ask for estimates of the number of UK premises which may find it difficult to install a satellite antenna due to planning or line of sight issues. These data will also inform our understanding of the coverage of satellite broadband services.

Network	Data to be gathered	Source of
Fixed telecoms (twisted copper pair and HFC cable)	Postcode-level coverage data on actual premises passed Premises uneconomic to serve under the USO	Provider
Mobile (2G and 3G)	Predicted geographic and population coverage split by data transmission technology (e.g. GPRS, Edge, HSPA), by service (voice, data at various speeds), at a granular level (postcode or 100 metre squares)	Provider predicted coverage models supplemented with Ofcom data where possible
Digital terrestrial television / digital radio	Predicted geographic and population coverage for DVB-T / T2 and DAB using 100 metre square grids at a 90% confidence level	JPP models for DTT and provider predicted coverage models for DAB

#### Table 5: Proposed reporting of network and service coverage

Digital satellite	Predicted number and location of households unable to receive digital satellite (including DVB-S and S2 at 28 degrees east) signals due to line of sight or planning constraints	Provider
Service	Data to be gathered	Source of
Fixed data / broadband (including low bandwidth leased lines)	Postcode level data on actual premises passed split by network technology (e.g. ADSL, ADSL2+, VDSL, FTTP, DOCSIS, DOCSIS 3)	Provider
Wireless (mobile and satellite) data / broadband	Assume to be available where a satellite or 3G mobile signal is available	Derive from satellite and mobile networks
Fixed voice	Assume to be available where a fixed network is available	Derive from fixed telecoms networks
Mobile voice	Assume to be available where a mobile network is available	Derive from mobile networks

#### Consultation questions

Question 7. Do you agree with our approach to measuring coverage?

Question 8. How do you think we should establish an appropriate level of granularity and the right technical assumptions to make the data useful?

#### Infrastructure sharing

- 3.22 The Act requires Ofcom to report on "the extent to which network providers share infrastructure".
- 3.23 Infrastructure sharing is the practice by which different operators use the same underlying physical infrastructure, often to help lower roll-out costs. Information about infrastructure sharing can help improve our understanding of the role this plays in extending coverage and promoting investment in next generation networks.
- 3.24 Sharing arrangements are of most interest where there are multiple network providers. We therefore think that this information is most usefully gathered for mobile and fixed telecoms, rather than radio and television broadcast networks, where Arqiva is the only commercial provider. We propose to focus on three areas where infrastructure sharing is most common: mobile transmitter masts, TV and radio transmitter masts, and the ducts, poles and associated facilities used for fixed networks.
- 3.25 To report usefully on infrastructure sharing we propose to collect information on:
  - the number of network sites where sharing takes place, including mobile masts, ducts, poles and other wayleaves;
  - the proportion of the network that uses shared infrastructure, for example, the number of masts and miles of duct that are shared, compared with the total;

- we are interested in reporting on such data on a geographic basis where this might help to assess the impact of sharing on rural coverage or regional variations in network resilience; and
- whether (and where) other forms of sharing take place, such as co-location of equipment (for example in BT exchanges).
- 3.26 We already hold some high-level information on mast sharing arrangements between mobile network operators, but it may not be up-to-date. We have much less information on fixed network sharing, although we believe activity to date has been limited. For both areas we intend to ask operators to provide us with further details.

#### **Consultation question**

Question 9. Do you agree our proposed approach will enable us to report adequately on arrangements for infrastructure sharing? Are there reasons why network operators would be unable to provide us with the data we have proposed to collect?

#### Wholesale network access

- 3.27 The Act asks Ofcom to report on "the extent to which the providers of different UK networks allow other communications providers to use their networks to provide services".
- 3.28 Wholesale access is the process by which a network operator sells products to third party service providers which serve as an input to their offering to end users. A network operator may offer wholesale products for a number of reasons, for example, to maximise the revenue from an asset base or due to regulatory intervention.
- 3.29 A comprehensive picture of wholesale network provision is important to Government and Ofcom because it can help identify the degree of interdependency between operators and in assessing levels of competition.
- 3.30 Arrangements between wholesale network providers and users are generally conducted on a commercial basis, and we do not propose to seek information on the terms of these arrangements for this report. However, to give us an overview of wholesale network access in the UK we propose to collect data from network operators on:
  - which (parts of) networks offer wholesale access;
  - the number of service providers which use wholesale access on each network;
  - the number and proportion of end users on the networks which are served via these wholesale arrangements; and
  - the amount and proportion of wholesale traffic carried over each network.
- 3.31 Most UK communications networks, offer some sort of wholesale access, although this generally differs between the telecommunications and broadcasting industries. In telecommunications networks, wholesale services offer a way for communications providers to enter the market without needing to deploy additional

infrastructure. In broadcast networks, wholesale access allows multiple services (e.g. television channels) to reach a single end user device (e.g. a television set). We plan to report at a high level on each of these but to focus our attention on wholesale services in telecommunications networks, and particularly on mobile and broadband.

3.32 We think that we have a reasonable overall picture of the number of users of wholesale access services each year through the Ofcom tariff process whereby we recover Ofcom costs. (This involves identifying all Communications Providers with revenue above certain thresholds. For example in 2008/09 we charged all Network and Service providers which generated annual revenue of £5m or more - see <a href="http://www.ofcom.org.uk/telecoms/ioi/g\_a\_regime/">http://www.ofcom.org.uk/telecoms/ioi/g\_a\_regime/</a> for more detail). However, we think that we need more information from telecoms and broadcast network operators on which parts of their network offer wholesale access, the number of service providers they support and the extent of access traffic.

#### Consultation question

Question 10. Do you agree our proposed approach will enable us to report adequately on the provision of wholesale network access? Are there reasons why network operators would be unable to provide us with the data we have proposed to collect?

### Capacity

- 3.33 The Act requires Ofcom to report on the capacity of UK networks. It does not specifically require Ofcom to report on the capacity of services but in practice it is often not possible to differentiate between service and network capacity. We therefore intend, in some instances, to use service capacity as a proxy for network capacity.
- 3.34 The Act does not provide a detailed description of the type of network capacity we should consider. We think that our primary reporting objective should be to establish whether capacity is increasing in line with rising end-user demand.
- 3.35 Operators undertake ongoing capacity planning and capacity upgrades in order to meet changes in end-user demand. This tends to be easier for mature networks carrying established services, such as fixed-line voice, where demand is stable and predictable. Planning is more difficult where future demand is less predictable and further complexity is added if long lead times are required to implement capacity upgrades.
- 3.36 We recognise that reporting on capacity supply and demand is not a perfect proxy for the end-user quality of experience. For example, traffic management and data caching can be used to utilise available capacity more efficiently, or to prioritise certain data or services at times of unanticipated network loads. However, broadly speaking we expect that capacity supply will need to track demand if quality of experience is to be maintained.
- 3.37 We propose to focus on those networks for which the demand for capacity is rising most rapidly and/or unpredictably, thereby increasing the risk that supply falls short of demand. We think that fixed and mobile data networks are particularly important in this respect, although we also plan to gather data on the capacity of broadcast networks and fixed voice services.

- 3.38 Ofcom does not currently hold detailed information on network capacity, although we do gather data on the consumer experience of using fixed and mobile services. We therefore plan to gather additional data on capacity from network operators.
- 3.39 For basic business connectivity, such as leased lines, we do not propose to gather capacity data. This is because we understand these services are typically provided on an uncontended basis, and with their capacity marketed as a clear part of the product offer.

#### Fixed broadband

- 3.40 We propose to gather data on broadband networks which are primarily used to provide residential broadband services i.e. ADSL and DOCSIS technologies used on twisted metallic pair 'telephone' networks and cable HFC networks.
- 3.41 The capacity of these networks is a function of their access and core/backhaul components. While the core networks associated with telephone and cable networks are similar, the nature of the different technologies used in the access networks suggests that different approaches to measuring capacity are required.
- 3.42 For ADSL access networks the available capacity is determined by the bit rate that can be supported on each DSL circuit. This in turn is dependent on the technology in use (ADSL, ADSL2+, VDSL) and factors such as line length, quality and interference. Capacity therefore varies from line to line, and on aggregate, from area to area. Available capacity is therefore closely related to coverage. As such we propose to collect information on available access capacity (i.e. access line speeds) along with coverage data. As a minimum we expect that the relevant data would include the modem sync speeds and IP profiles for each active line, but additional data on line attenuation and electrical noise could help provide further insight into the quality of the network infrastructure.
- 3.43 For DOCSIS networks, capacity in the access network is a function of the number of RF channels that have been allocated for broadband on the HFC network and the technology in use (DOCSIS 1, DOCSIS3). As with ADSL, this may vary from area to area and we therefore propose to collect information on available access capacity along with coverage data. Unlike ADSL, cable broadband access networks are a shared bandwidth medium. It is therefore necessary to know how many active end users are connected to each network node and RF channel (and the maximum speed of the broadband product they have purchased) to understand the average capacity per user.
- 3.44 We recognise that the average capacity per user on DOCSIS networks is not directly comparable with the average access line speeds on DSL networks. However, we consider that they are useful metrics for developing a time series over subsequent reports.
- 3.45 Establishing the supply of capacity in core networks is more complex than access networks due to the diversity of architectures and regional variations.
- 3.46 We welcome views on how capacity in core networks and/or end-to-end capacity can be measured for broadband networks. For example, information could be collected by router or traffic management equipment. Information on the network planning rules used to plan capacity upgrades would also provide a useful insight into core capacity supply.

- 3.47 Absent a more precise methodology, as a pragmatic alternative, we propose to use capacity demand as a proxy for capacity supply.
- 3.48 We propose to measure capacity demand by gathering data on the total volume of data downloaded by end users in a given period. We expect that this data is already available to ISPs as part of their enforcement of fair use policies and data caps. Where possible, it would be useful to measure traffic volumes at different times of the day to establish peak demand periods and establish an average data throughput in peak periods.
- 3.49 We welcome views on the extent to which actual traffic volume (particularly at peak times) is a suitable proxy for core network capacity and the practicalities of collecting these data. We are particularly interested to understand the extent to which use of traffic management techniques can affect the 'effective capacity' of a network i.e. provide an improved end-user quality of experience using less 'raw' capacity.
- 3.50 We intend to validate and complement data gathered from operators with our own research into the actual broadband speeds experienced by consumers of the largest internet service providers. This offers results at both a national and regional level. We also welcome views from stakeholders on what information they are able to provide on actual broadband performance.

#### Fixed voice

- 3.51 Due to the maturity of fixed voice networks and the predictability in demand forecasting we do not intend to collect detailed information on this service.
- 3.52 We propose to gather simple metrics of capacity demand as a proxy for capacity supply. These may include number of active voice lines, average calls per customer, average call duration, and maximum number of simultaneous calls experienced in a given period.
- 3.53 We also welcome operator views on whether data are available that provide an indication of the number of calls that have been blocked or dropped due to capacity constraints in a given time period.

#### **Digital broadcast**

- 3.54 Capacity of digital broadcast networks is measured in terms of available bit rate. This is a function of the number of broadcast digital multiplexes, the transmission technology in use (e.g. DVB-S or DVB-S2) and the configuration (such as modulation techniques and error correction levels). Capacity can be added by reconfiguring existing multiplex transmission equipment, upgrading the transmission technology or introducing new multiplexes on new spectrum.
- 3.55 In addition to increasing network capacity, existing networks can support more services (e.g. more TV channels) by improving the efficiency of video and audio compression. We therefore propose to collect information on the number of television, radio and data services carried on each network.
- 3.56 For terrestrial networks (such as DTT and DAB) capacity can vary by location. For example, at the end of the Digital Switchover process, approximately 9% of the UK will have access to three DTT multiplexes, while the remaining 91% will have

access to six. It is therefore important that we gather capacity information and coverage information together.

3.57 We expect that this information will be readily available from network operator systems. As such we expect the administrative burden on stakeholders to be minimal.

#### Mobile voice and data

- 3.58 As with fixed data networks, measuring the capacity of mobile networks is complex and, to our knowledge, there is no unique recognised methodology for doing so. It is therefore necessary for us to establish a suitable methodology.
- 3.59 The primary factors affecting the overall capacity of the mobile access networks include:
  - the number of base stations and the number of radio sectors per base station;
  - the number of radio channels utilised on each sector;
  - the transmission technologies in use e.g. GPRS, HSPDA etc; and
  - the backhaul capacity connecting the base stations to the core network.
- 3.60 In addition to these primary factors, unlike fixed access networks, the data capacity of mobile networks is dependent on the number and location of end users. This is because users further from the base station require a greater share of the network resources to transmit data than those users close to the base station. Consequently, an accurate assessment of available capacity cannot be established without an accurate estimate of demand.
- 3.61 We welcome views on how capacity in mobile networks can be measured and whether there are metrics that could be adopted across the industry.
- 3.62 Absent more sophisticated metrics proposed by industry, for the first report we intend to take a pragmatic approach and only collect data on the deployed physical infrastructure (as listed above). We do not plan to ask operators to undertake complex modelling of the exact capacity provided by their networks, but will seek to fill any gaps by using Ofcom's own data on measured performance experienced by a sample of consumers.
- 3.63 It is more difficult to measure the supply of capacity in the core network due to the different ways that mobile operators may choose to manage their network. Therefore we welcome views on how capacity in the core network can be measured for mobile networks.
- 3.64 Absent a more precise methodology, we propose to use capacity demand as a proxy for capacity supply.
- 3.65 We expect the operators will already collect this type information for billing purposes e.g. average number of calls, call minutes and volume of data downloaded per customer per month. This will allow us to establish a time series in subsequent reports. As with fixed broadband, we welcome views on the extent to which traffic management techniques have a significant impact on the effective capacity available for mobile data networks compared to the raw network capacity.

#### Consultation questions

Question 11. How do you currently measure the capacity of the network?

Question 12. Do you agree that we should define specific metrics for different types of networks?

### Availability

- 3.66 The Act requires Ofcom to report on the amount of time for which networks and services are available, and on steps taken by providers to maintain or improve availability.
- 3.67 Of com does not hold information about the availability of, or disruptions to networks or services in the UK but we expect that operators collect extensive data in this area. Our intention is to understand the nature of these data and where possible apply common definitions to them to enable us to report in a way which is useful to Government.
- 3.68 Broadly we propose to seek information on the following:
  - A summary of each 'major' outage, having an impact in terms of total number of lost customer hours above a suitable threshold (see below).
  - A consolidated view of the 'minor' outages, in terms of the proportion of total possible customer hours of service availability that were lost due to outages. We believe there may also be value in understanding the statistical make-up of these minor outages and welcome views on what form this should take. For example, beneath this headline figure, it may be useful to gather statistics on average duration, average number of customers affected, time of day profile, planned vs. unplanned, most frequent causes, and range of services affected.
- 3.69 We welcome suggestions on a suitable threshold which could be used to distinguish between 'minor' and 'major' outages and whether these should vary between network and service types. We expect that the most useful form would be the product of the number of customers affected and the average time they lost service due to the outage. By way of example, the FCC requires operators to notify outages affecting more than 900,000 "user-minutes" of emergency services access from telephone networks<sup>7</sup>. We also expect to align this threshold with any European Commission reporting requirements arising from the new European Framework Directive.
- 3.70 We recognise that assessing impact of outages is likely to involve some level of estimation. For example, on broadcast networks this might mean making assumptions on typical audiences by day part for a given coverage area, while mobile network operators might need to assess call and data volumes. We welcome input from stakeholders on how best to achieve comparable measures. We will also ask providers to describe the most important changes they have made to improve or maintain the availability of the network or service. These could include the roll out of parallel networks to improve resilience or measures taken to help maintain equipment.

<sup>&</sup>lt;sup>7</sup> <u>http://fcc.gov/pshs/services/cip/nors/nors.html</u>

- 3.71 In order to collect data which are representative of network performance, for the first report we propose to collect data covering the three months to June 2011. In subsequent reports we may wish to collect data over a longer period.
- 3.72 Our intention is to work with Government to ensure that there is minimal duplication between the requirements of the Digital Economy Act and any new legislation which affects incident and availability reporting arising from Article 13a of the European Framework Directive.

#### Consultation questions

Question 13. Do you agree with the proposed approach of gathering specific reports of outages above a certain threshold, and how do you think such thresholds should be set?

Question 14. For smaller outages, which statistical data do you think it is valuable to gather?

Question 15. Is a three-month reporting period sufficient to assess availability performance?

#### Resilience

- 3.73 The Act provides detailed guidance of the processes that should be included in the report to assess the resilience of networks. It requires us to look at:
  - the preparations made for responding to emergencies;
  - processes for restoring the network or service after an emergency;
  - the steps taken to assess the risks of different types of emergency occurring;
  - the steps taken to reduce or remove theses risks; and
  - testing of any proposed responses.
- 3.74 In its consultation on the form that the resilience aspects of DEA duties should take<sup>8</sup>, BIS drew attention to the links with the revisions to the European Framework Directive. These require Member States to change the way that providers of publicly available networks and services<sup>9</sup> plan for resilience, and to ensure that they "take appropriate measures to manage the network security and integrity". Member States must implement the required changes by May 2011 and this may require new legislation.
- 3.75 As with availability reporting, our intention is not to duplicate any data gathering and analysis required by new legislation in this area. However, given the relative timings, we must assume, at least for our first report, that no new data flowing from the implementation of the Directive will be available. We will therefore need to request data from operators in order to fulfil the infrastructure reporting requirements. As the implementation of the Directive develops, we plan to work with

<sup>&</sup>lt;sup>8</sup><u>http://webarchive.nationalarchives.gov.uk/20100216092443/http:/www.berr.gov.uk/consultations/pag</u> e52539.html

<sup>&</sup>lt;sup>9</sup>The definition of services in this context excludes broadcast TV and radio. The definition of networks does include those used in the delivery of TV and radio services.

Government to refine these requirements and may revisit these for future UK infrastructure reports.

- 3.76 There are many potential threats to the continued operation of a communications network or service. In some cases, these threats are under the direct control of the communications provider (CP) involved and once identified can be easily eliminated. More often though, the threat itself cannot be eliminated, but the network or service can often be designed or redesigned to continue operating even when the threat occurs. Complete or even partial protection against some of these threats may be considered uneconomic or impractical by the CP, so some residual risk will remain. In these cases, the CP will accept that if a particular threat does materialise, there will be a resulting network and/or service impact which will then have to be managed and restored.
- 3.77 The items stipulated for reporting in the Act therefore sit well with the steps that a CP might reasonably be expected to have undertaken in managing resilience:
  - undertake a risk assessment what threats are present and is enough being done to mitigate against them given the costs and benefits;
  - implement any recommendations for improving resilience arising from the risk assessment;
  - develop plans for dealing with and recovering from emergencies due to unforeseen or unmitigated threats; and
  - ensure the plans are functional and up to date by regular exercising
- 3.78 While these steps represent a significant amount of work to undertake and report on, they should be business as usual for most CPs. Some consideration of resilience to threats, and hence assessment of risk, is inherent in the design of any network or service. Simply deciding to house equipment indoors balances the additional cost with the benefits of increased protection from rain, theft etc. Most major communications providers also have detailed plans for dealing with a number of emergency scenarios, including threats such as fire, flooding, accidental or malicious damage, technical failure, cyberattack, failure of the national grid or other energy supplies. We therefore expect that CPs will have detailed data available that they can draw on for this section of the report.
- 3.79 Many telecommunications providers, particularly those owning significant amounts of infrastructure, already work together through the industry's EC-RRG (Electronic Communications Resilience and Response Group). This group develops and shares best practice in improving resilience and coordinating responses to emergencies that occur.
- 3.80 As part of its work, the group undertakes regular exercises of different aspects of industry and individual CP plans for dealing with emergencies. As a result, for the elements of the report dealing with emergency planning and exercising in relation to telecoms networks, we intend where possible to focus on the activities of this group rather than seek to gather new data. We plan to discuss with the group how we can report on this planning and the outcomes of these exercises.
- 3.81 We think that resilience issues are different in nature to the others that we are examining in the communications infrastructure report so we are proposing to report on them in a separate section. This will also make it easier for us to publish a

redacted version of the report in the event that our assessment of resilience raises issues of commercial confidentiality or national security.

- 3.82 A significant failure of any of the networks and services identified in Table 1 of this consultation would cause concern, due to their wide spread use and importance. We therefore propose reporting on risk assessment and emergency planning for them all.
- 3.83 We are aware that this proposed breadth of coverage would impose a burden on a range of organisations. However, we note the increasing importance being attached to resilience issues both in the UK and beyond. As previously noted the revisions to the European Framework Directive are in part likely to require similar data reporting to that proposed here and potentially cover a much wider range of organisations.
- 3.84 Where we are unable to collect information from EC-RRG and other sources, we will require data directly from CPs. We expect this to include as much of the following as they have available for each network and service falling within the scope discussed above:
  - summary of risk assessment, covering:
    - o range of threats considered and their likelihood
    - o existing threat mitigations in place
    - o the residual level and frequency of impact
    - o assessment of the network/service customers' requirements
    - a cost/benefit analysis for improving any areas of weakness/concern, taking into account the CPs risk appetite
    - o recommendations for any required mitigating measures
  - an implementation plan for any outstanding recommendations in the risk assessment;
  - an update on any previous implementation plans or other resilience improvement actions;
  - compliance with any relevant standards, such as the ISO 270xx family and NICC ND1643;
  - summary of any emergency management and recovery plans not covered by centrally collected data (e.g. EC-RRG); and
  - summary of completed and planned emergency planning exercises not covered by centrally collected data, including any emerging recommendations and implementation plans
- 3.85 The EC-RRG was established as a group for providers of telephony services, therefore broadcast network and service providers are not generally represented in the group. We will therefore need to approach relevant companies individually. For broadcasting and broadcasting transmission networks, we intend to seek the same

set of data as for fixed providers. We are not proposing the collection of any resilience data from individual broadcasters.

#### Reporting on additional networks and services of national importance

- 3.86 For the resilience section in particular, we feel there may be value in reporting beyond the large, UK-wide and high volume networks and services listed in Table 1. There are a small number of additional communications services which have significant national importance, for example in a financial or social sense, which are not captured in this list. They tend to have limited numbers of large customers. Such customers usually have the resources to understand and purchase the exact level of resilience they require. However, given the UK impact if they were to fail, they form an important part of an overall resilience picture for government. Examples include financial transaction services and the networks that support them (e.g. SWIFT, BT Radianz, CREST, FPS/FPMS, BACS) and Airwave, the emergency services communications network.
- 3.87 For some of these networks and services, for example Airwave, Government is the customer and it may well be that sufficient information on resilience matters is already collected and so can be omitted from the report. In other cases, the potential importance may mean that other organisations and Government agencies may already collect data which we can reuse. We will explore these issues with Government in advance of issuing any data requests to individual CPs.

#### Consultation questions

Question 16. Do you agree with our approach to reporting resilience and emergency planning and the list of data we would ideally collect from CPs?

Question 17. Do you already provide information to other organisations and government agencies around resilience issues? If so, what are they?

Question 18. Do you agree that there are additional networks and services which are of sufficient importance to include in the report? If so, what are they?

#### International comparisons

- 3.88 The Act also requires Ofcom to compare the standard of networks and services in the UK against those in a range of other countries, having particular regard to coverage and capacity.
- 3.89 We propose to fulfil this requirement by seeking data on coverage, capacity, takeup and pricing for all of the access networks listed in Table 1 above. However, we plan to focus in particular on comparing next-generation and high-speed internet access in the UK with those in other countries. We would describe the more important and innovative deployments, and where possible would seek to assess the number of homes passed by fixed and mobile networks capable of delivering next generation broadband services.
- 3.90 To make these comparisons, we propose to use publicly available data on international communications and do not intend to ask operators to provide further data. Critical authoritative sources will include the OECD Communications Outlook, the ITU World Telecommunication/ICT Indicators Database, and Ofcom's International Communications Market Report, which between them contain a wealth

of comparative information. As these reports are published at different times, not all of their data will be fully up to date at the time we compile the UK infrastructure report.

- The OECD Communications Outlook<sup>10</sup> is published on a biennial basis and focuses on telecommunications markets. It includes a range of useful data including the number of operators in each country, advertised broadband speeds and the share of different types of network technologies.
- The ITU publishes a wide range of data, including the World Telecommunication/ICT indicators database<sup>11</sup>. Data are also available in other ITU reports, such as Measuring the Information Society. The data provided include population coverage of different types of communications services and the types of broadband service available in each country.
- Ofcom's International Communications Market Report<sup>12</sup>, published every two years, sets out the coverage, take-up and use of communications services among twelve comparator countries from around the world. The report focuses on services rather than infrastructure matters but contains many useful metrics such as growth in broadband penetration. The next report is due for publication in autumn 2010.

#### Consultation question

Question 19. Are there other sources of international data which we should consider? Are we focusing on the right networks and metrics? In particular, have we got the right metric for commenting on next-generation access deployments?

<sup>&</sup>lt;sup>10</sup> Most recently published in 2009 <u>www.oecd.org/sti/telecom/outlook</u>

<sup>&</sup>lt;sup>11</sup> http://www.itu.int/ITU-D/ict/publications/world/world.html

<sup>&</sup>lt;sup>12</sup> The most recent full report was published in 2008. http://stakeholders.ofcom.org.uk/binaries/research/cmr/icmr08.pdf

## Section 4

## Next steps

- 4.1 Following the responses to this consultation we intend to publish a statement in December 2010 setting out the specific information that we plan to request from communications providers. Our intention is to work with industry to ensure that it is realistic for operators to provide the data we ask for.
- 4.2 We plan to issue our first formal information requests in early 2011 for data which can be reported in advance of the reference date. We expect to issue requests in later in Spring for data relating to the availability of the network and services.
- 4.3 We plan to send our report to the Secretary of State by August 2011, and to publish a public version of the report on our website shortly afterwards. (See Table 3 for more information on the proposed timeline for the first report).

Annex 1

## Responding to this consultation

### How to respond

- A1.1 Ofcom invites written views and comments on the issues raised in this document, to be made **by 5pm on 30 September 2010**
- A1.2 Ofcom strongly prefers to receive responses using the online web form at http://stakeholders.ofcom.org.uk/consultations/infrastructurereport, as this helps us to process the responses quickly and efficiently. We would also be grateful if you could assist us by completing a response cover sheet (see Annex 3), to indicate whether or not there are confidentiality issues. This response coversheet is incorporated into the online web form questionnaire.
- A1.3 For larger consultation responses particularly those with supporting charts, tables or other data please email <u>infrastructurereporting@ofcom.org.uk</u> attaching your response in Microsoft Word format, together with a consultation response coversheet.
- A1.4 Responses may alternatively be posted or faxed to the address below, marked with the title of the consultation.

Jill Faure 6th Floor Strategy and Market Developments Riverside House 2A Southwark Bridge Road London SE1 9HA

Fax: 020 7981 3333

- A1.5 Note that we do not need a hard copy in addition to an electronic version. Ofcom will acknowledge receipt of responses if they are submitted using the online web form but not otherwise.
- A1.6 It would be helpful if your response could include direct answers to the questions asked in this document, which are listed together at Annex 4. It would also help if you can explain why you hold your views and how Ofcom's proposals would impact on you.

## **Further information**

A1.7 If you want to discuss the issues and questions raised in this consultation, or need advice on the appropriate form of response, please contact Jill Faure on 020 7783 4878.

## Confidentiality

A1.8 We believe it is important for everyone interested in an issue to see the views expressed by consultation respondents. We will therefore usually publish all responses on our website, <u>www.ofcom.org.uk</u>, ideally on receipt. If you think your

response should be kept confidential, can you please specify what part or whether all of your response should be kept confidential, and specify why. Please also place such parts in a separate annex.

- A1.9 If someone asks us to keep part or all of a response confidential, we will treat this request seriously and will try to respect this. But sometimes we will need to publish all responses, including those that are marked as confidential, in order to meet legal obligations.
- A1.10 Please also note that copyright and all other intellectual property in responses will be assumed to be licensed to Ofcom to use. Ofcom's approach on intellectual property rights is explained further on its website at <u>http://www.ofcom.org.uk/about/accoun/disclaimer/</u>

## **Next steps**

- A1.11 Following the end of the consultation period, Ofcom intends to publish a statement in December 2010.
- A1.12 Please note that you can register to receive free mail Updates alerting you to the publications of relevant Ofcom documents. For more details please see: <u>http://www.ofcom.org.uk/static/subscribe/select\_list.htm</u>

## **Ofcom's consultation processes**

- A1.13 Ofcom seeks to ensure that responding to a consultation is easy as possible. For more information please see our consultation principles in Annex 2.
- A1.14 If you have any comments or suggestions on how Ofcom conducts its consultations, please call our consultation helpdesk on 020 7981 3003 or e-mail us at <u>consult@ofcom.org.uk</u>. We would particularly welcome thoughts on how Ofcom could more effectively seek the views of those groups or individuals, such as small businesses or particular types of residential consumers, who are less likely to give their opinions through a formal consultation.
- A1.15 If you would like to discuss these issues or Ofcom's consultation processes more generally you can alternatively contact Vicki Nash, Director Scotland, who is Ofcom's consultation champion:

Vicki Nash Ofcom Sutherland House 149 St. Vincent Street Glasgow G2 5NW

Tel: 0141 229 7401 Fax: 0141 229 7433

Email vicki.nash@ofcom.org.uk

### Annex 2

## Ofcom's consultation principles

A2.16 Ofcom has published the following seven principles that it will follow for each public written consultation:

## **Before the consultation**

A2.17 Where possible, we will hold informal talks with people and organisations before announcing a big consultation to find out whether we are thinking in the right direction. If we do not have enough time to do this, we will hold an open meeting to explain our proposals shortly after announcing the consultation.

## **During the consultation**

- A2.18 We will be clear about who we are consulting, why, on what questions and for how long.
- A2.19 We will make the consultation document as short and simple as possible with a summary of no more than two pages. We will try to make it as easy as possible to give us a written response. If the consultation is complicated, we may provide a shortened Plain English Guide for smaller organisations or individuals who would otherwise not be able to spare the time to share their views.
- A2.20 We will consult for up to 10 weeks depending on the potential impact of our proposals.
- A2.21 A person within Ofcom will be in charge of making sure we follow our own guidelines and reach out to the largest number of people and organisations interested in the outcome of our decisions. Ofcom's 'Consultation Champion' will also be the main person to contact with views on the way we run our consultations.
- A2.22 If we are not able to follow one of these principles, we will explain why.

## After the consultation

A2.23 We think it is important for everyone interested in an issue to see the views of others during a consultation. We would usually publish all the responses we have received on our website. In our statement, we will give reasons for our decisions and will give an account of how the views of those concerned helped shape those decisions.

## Annex 3

## Consultation response cover sheet

- A3.24 In the interests of transparency and good regulatory practice, we will publish all consultation responses in full on our website, <u>www.ofcom.org.uk</u>.
- A3.25 We have produced a coversheet for responses (see below) and would be very grateful if you could send one with your response (this is incorporated into the online web form if you respond in this way). This will speed up our processing of responses, and help to maintain confidentiality where appropriate.
- A3.26 The quality of consultation can be enhanced by publishing responses before the consultation period closes. In particular, this can help those individuals and organisations with limited resources or familiarity with the issues to respond in a more informed way. Therefore Ofcom would encourage respondents to complete their coversheet in a way that allows Ofcom to publish their responses upon receipt, rather than waiting until the consultation period has ended.
- A3.27 We strongly prefer to receive responses via the online web form which incorporates the coversheet. If you are responding via email, post or fax you can download an electronic copy of this coversheet in Word or RTF format from the 'Consultations' section of our website at <u>www.ofcom.org.uk/consult/</u>.
- A3.28 Please put any parts of your response you consider should be kept confidential in a separate annex to your response and include your reasons why this part of your response should not be published. This can include information such as your personal background and experience. If you want your name, address, other contact details, or job title to remain confidential, please provide them in your cover sheet only, so that we don't have to edit your response.

## Cover sheet for response to an Ofcom consultation

BASIC DETAILS			
Consultation title:			
To (Ofcom contact):			
Name of respondent:			
Representing (self or organisation/s):			
Address (if not received by email):			
CONFIDENTIALITY			
Please tick below what part of your response you consider is confidential, giving your reasons why			
Nothing Name/contact details/job title			
Whole response Organisation			
Part of the response If there is no separate annex, which parts?			
If you want part of your response, your name or your organisation not to be published, can Ofcom still publish a reference to the contents of your response (including, for any confidential parts, a general summary that does not disclose the specific information or enable you to be identified)?			
DECLARATION			
I confirm that the correspondence supplied with this cover sheet is a formal consultation response that Ofcom can publish. However, in supplying this response, I understand that Ofcom may need to publish all responses, including those which are marked as confidential, in order to meet legal obligations. If I have sent my response by email, Ofcom can disregard any standard e-mail text about not disclosing email contents and attachments.			
Ofcom seeks to publish responses on receipt. If your response is non-confidential (in whole or in part), and you would prefer us to publish your response only once the consultation has ended, please tick here.			
Name Signed (if hard copy)			

### Annex 4

## **Consultation questions**

#### **Overall Approach**

Question 1. Have we got the scope right? Is the set of networks, services and operators we propose to report on appropriate and is our approach to data gathering and analysis correct?

Question 2. Do you agree with our approach to classifying different types of networks and services? Are there better ways to define them?

Question 3. Do you agree with our proposal to prioritise 2G mobile coverage and broadband speeds for the first report?

Question 4. Do you agree with our proposed reference date for the report as a date in June 2011 and are we allowing enough time for the provision of data?

Question 5. How can we improve the comparability of data between different operators?

#### **Use of Electromagnetic Spectrum**

Question 6. Do you agree with our approach for reporting on the use of electromagnetic spectrum?

#### Coverage

Question 7. Do you agree with our approach to measuring coverage?

Question 8. How do you think we should establish an appropriate level of granularity and the right technical assumptions to make the data useful?

#### Infrastructure Sharing

Question 9. Do you agree our proposed approach will enable us to report adequately on arrangements for infrastructure sharing? Are there reasons why network operators would be unable to provide us with the data we have proposed to collect?

#### Wholesale Network Access

Question 10. Do you agree our proposed approach will enable us to report adequately on the provision of wholesale network access? Are there reasons why network operators would be unable to provide us with the data we have proposed to collect?

#### Capacity

Question 11. How do you currently measure the capacity of the network?

Question 12. Do you agree that we should define specific metrics for different types of networks?

#### Availability

Question 13. Do you agree with the proposed approach of gathering specific reports of outages above a certain threshold, and how do you think such thresholds should be set?

Question 14. For smaller outages, which statistical data do you think it is valuable to gather?

Question 15. Is a three-month reporting period sufficient to assess availability performance?

#### Resilience

Question 16. Do you agree with our approach to reporting resilience and emergency planning and the list of data we would ideally collect from CPs?

Question 17. Do you already provide information to other organisations and government agencies around resilience issues? If so, what are they?

Question 18. Do you agree that there are additional networks and services which are of sufficient importance to include in the report? If so, what are they?

#### **International Comparisons**

Question 19. Are there other sources of international data which we should consider? Are we focusing on the right networks and metrics? In particular, have we got the right metric for commenting on next-generation access deployments?

## Annex 5

# **Digital Economy Act**

## Infrastructure Reporting Duty

#### A5.29 OFCOM reports on infrastructure, internet domain names etc

(1) In Chapter 1 of Part 2 of the Communications Act 2003 (electronic communications networks and services), after section 134 insert—

"Reports on infrastructure etc

#### 134A OFCOM reports on infrastructure etc

(1) OFCOM must prepare reports in accordance with subsections (2) and (3) and each report must deal with—

(a) the electronic communications networks matters listed in section 134B(1), and

(b) the electronic communications services matters listed in section 134B(2).

(2) The first report must—

(a) relate to the position on a day specified in the report which falls within the period of 12 months beginning with the day on which this section comes into force, and

(b) be sent to the Secretary of State by OFCOM not more than 2 months after the specified day.

(3) A further report must—

- (a) be prepared for each relevant period, and
- (b) be sent to the Secretary of State by OFCOM as soon as practicable after the end of the relevant period.
- (4) "Relevant period" means-
- (a) the period of 3 years beginning with the day specified in the first report, and
- (b) each subsequent period of 3 years beginning with the end of the previous period.

(5) Where there is a significant change in connection with a matter listed in section 134B(1) or (2) and OFCOM consider that the change should be brought to the attention of the Secretary of State, OFCOM must—

(a) prepare a report on the change, and

(b) send it to the Secretary of State as soon as practicable.

(6) For the purposes of subsection (5), a change is significant if OFCOM consider that it has, or is likely to have, a significant adverse impact on—

(a) persons carrying on business in the United Kingdom or a part of the United Kingdom, or

(b) the general public in the United Kingdom or a part of the United Kingdom.

(7) OFCOM must publish every report under this section-

(a) as soon as practicable after they send it to the Secretary of State, and

(b) in such manner as they consider appropriate for bringing it to the attention of persons who, in their opinion, are likely to have an interest in it.

(8) OFCOM may exclude information from a report when it is published under subsection (7) if they consider that it is information that they could refuse to disclose in response to a request under the Freedom of Information Act 2000.

134B Networks and services matters

(1) For the purposes of section 134A, the electronic communications networks matters are-

(a) the different types of electronic communications network provided in the United Kingdom ("UK networks"),

(b) the geographic coverage of the different UK networks,

(c) the proportion of the population covered by the different UK networks,

(d) the extent to which UK networks share infrastructure,

(e) the capacity of the different UK networks,

(f) the extent to which the providers of the different UK networks allow other communications providers to use their networks to provide services,

(g) the amount of time for which the different UK networks are and are not available, including the steps that have been or are to be taken to maintain or improve the level of availability,

(h) the preparations made by providers of UK networks for responding to an emergency, including preparations for restoring normal operation of UK networks disrupted by the emergency, and

(i) the standard of the different UK networks in comparison with electronic communications networks provided in a range of other countries, having regard, in particular, to their coverage and capacity.

(2) For the purposes of section 134A, the electronic communications services matters are-

(a) the use of the electromagnetic spectrum for wireless telegraphy in the United Kingdom,

(b) the different types of electronic communications service provided in the United Kingdom ("UK services"),

(c) the geographic coverage of the different UK services,

(d) the proportion of the population covered by the different UK services,

(e) the amount of time for which the different UK services are and are not available, including the steps that have been or are to be taken to maintain or improve the level of availability,

(f) the preparations made by providers of UK services for responding to an emergency, including preparations for restoring normal operation of UK services disrupted by the emergency, and

(g) the standard of the different UK services in comparison with electronic communications services provided in a range of other countries.

(3) The preparations referred to in subsections (1)(h) and (2)(f) include-

(a) the steps taken to assess the risks of different types of emergency occurring,

(b) the steps taken to reduce or remove those risks, and

(c) the testing of proposed responses to different types of emergency.

(4) In a report under section 134A, OFCOM are required to include only information about, and analysis of, such networks, services and providers as they consider appropriate.

(5) In this section "emergency" means an event or situation that seriously disrupts a UK network or UK service.

## Annex 6

# Summary of proposed data requirements

Act requirement	Network/Service	Proposed approach for first report
Use of spectrum		Analysis of Ofcom licence data. No further
		information required from industry.
Geographic and	Fixed networks	Report at a postcode level of premises passed. In
Population coverage		the case of USO operators we will request data on
		the number of premises deemed too expensive to
		pass.
	Mobile networks	Computer modelled coverage supplemented with
		Ofcom research where possible. Granularity to be
		agreed with operators.
	Broadcast (terrestrial	Use JPP coverage models. No further information
	DII)	required from industry.
	Broadcast (terrestrial	Computer modelled coverage from provider.
	DAB)	Granularity to be agreed with operators.
	Broadcast (satellite)	Estimates of number of premises unable to install a
		satellite antenna easily due to planning or line of
	Fixed breedband	Signt issues.
		Posicode level data on nomes passed and the
		Assume to be evoluble where fixed network is
	PSTN VOICE	Assume to be available where fixed hetwork is
	Mohilo voico	Assume to be available where mobile network is
		available
Extent of infrastructure	Fixed networks	Number and location of sites where there is sharing
sharing		(or co-location) of duct poles and/or other
Sharing		wayleaves and the proportion of the network that
		uses shared infrastructure.
	Mobile networks	Number and location of shared mobile masts sites
		and the proportion of the network that uses shared
		(or co-located) infrastructure.
Capacity	Fixed broadband	Volume of data downloaded by end users in a given
		period.
	Fixed voice	Number of active voice lines, average calls per
		customer, average call duration and maximum
		number of simultaneous calls experienced in that
		period.
	Digital broadcast	Number of TV, radio and data services carried on
		each network and data rates
	Mobile voice and	Traffic volumes, e.g. the average number of calls,
	data	call minutes and volume of data downloaded per
		customer per month.
Extent of providers	Network providers	Parts of network where wholesale access is offered
using other networks		and number of service providers which use this.
		Number and proportion of end users served by
		properties of wholesale treffic corried over each
		proportion of wholesale trainc carried over each
Availability	All networks and	Amount of time for which each network is available
Availability	Services	the number and duration of planned and upplanned
		outages the scale of impact of these disruptions
		and the number of user minutes the customer would
		have typically experienced during the disruption
		Examples of measures taken to maintain or improve
		availability of the network or service.

Resilience	All networks and services	Summary of existing risk assessments, an implementation plan for any outstanding recommendations in the risk assessment, update on any previous implementation plans, summary of any emergency management and recovery plans not covered by centrally collected data and summary of completed and planned emergency planning exercises not covered by centrally collected data.
International comparison		Ofcom will fulfil this requirement by seeking data from publicly available data on international communications. No further data will be required from industry.

## Annex 7

# Networks and services under scope

## **Selection criteria**

- A7.30 We propose that the network and service providers to be included within the scope of the infrastructure report should be defined as follows:
  - o Providers with Universal Service Obligations
  - Providers of fixed voice, broadband and mobile services with more than 1% market share<sup>13</sup>
  - o The two operators of digital television and radio multiplexes
  - Satellite providers at 28°E
  - o Providers of satellite broadband to the UK
- A7.31 Under this set of criteria, the following networks and services will be within the scope of the report. We may wish to contact some other providers of communications services specific to particular sectors for further information about preparations for resilience.

<sup>&</sup>lt;sup>13</sup> Based on data from Q4 2009, there were six providers with more than 1% market share in each of the fixed voice, broadband and mobile markets. These are listed in the table below.

Provider	Networks/ Services in Scope	Coverage	Infrastructure Sharing	Wholesale Network Access	Capacity	Availability	Resilience
Arqiva	TV and DAB services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Astra	Satellite network and data and broadcast services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
BBC	TV and DAB services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
BT	Fixed Network Business Connectivity Fixed Voice services Broadband Services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	~
Cable and Wireless	Fixed Voice Services Business Connectivity				$\checkmark$	$\checkmark$	$\checkmark$
Eutelsat	Satellite network and data and broadcast services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Everything Everywhere	Broadband Services Mobile Voice and Data Services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
КСОМ	Fixed Network	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
02	Broadband Services Mobile Network Mobile Voice and Data Services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Post Office	Fixed Voice Services				$\checkmark$	$\checkmark$	$\checkmark$
SDN	TV and DAB services		$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Sky	Fixed Voice Services Broadband Services Satellite Network TV Services	$\checkmark$	$\checkmark$	$\checkmark$	~	$\checkmark$	~
Talk Talk	Fixed Voice Services Broadband Services				$\checkmark$	$\checkmark$	$\checkmark$
Tesco	Mobile Voice and Data Services				$\checkmark$	$\checkmark$	$\checkmark$
Three	Mobile Network Mobile Voice and Data Services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$
Virgin Media	Fixed Network Fixed Voice Services Broadband Services Mobile Voice and Data Services Business Connectivity	$\checkmark$	$\checkmark$	$\checkmark$	~	~	~
Vodafone	Mobile Network Mobile Voice and Data Services	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$	$\checkmark$