

## Ofcom fact sheet on coverage No. 2

### What will the coverage of the public service TV multiplexes be after switchover?

#### Summary

- 1.1 The coverage of the public service digital television multiplexes after digital switchover has been designed to meet the same level of coverage that the existing analogue services currently achieve: that is 98.5% of all UK households. However due to differences between digital and analogue signals and different interference patterns after switchover it will not be exactly the same 98.5% of the population. The reasons for these differences, along with ways in which different groups of households might be impacted, are described in this fact sheet.

#### What is the level of existing analogue coverage?

- 1.2 There are four fully national analogue terrestrial broadcasting networks in the UK; BBC ONE, BBC TWO, ITV 1 and Channel 4/S4C (Channel 4 and S4C share a national network). These networks have evolved over many years and deliver transmissions from 1,154 transmitter sites to provide near universal coverage of the analogue terrestrial television services of the BBC, ITV and Channel 4/S4C in the UK.
- 1.3 In order to plan for digital switchover Ofcom published in 2007 an assessment (<http://www.ofcom.org.uk/tv/ifi/tech/dttcoverage/>) of the level of coverage that these four public service analogue networks were predicted to achieve. This assessment (summarised in Table 1 below) concluded that the overall core coverage of addresses predicted to receive all four analogue services from the existing 1,154 transmission sites totalled 98.5% of UK households. Core coverage only includes addresses where all four analogue services are receivable. This will always be lower than the coverage of each individual service. Out of this total 95.6% were predicted to be fully served, that is to a high level of reliability. An additional 2.9% were covered but not to the same level of reliability, these addresses are referred to as “marginally served” in table 1. Fully served is defined as when an address is predicted to receive a service for at least 95% of the time, and at 50% of locations in the immediate vicinity. In order to see how TV coverage predictions work please see factsheet No. 1.

**Table 1: Pre-switchover analogue coverage predictions, percentage of UK addresses covered**

Network	Predicted reception quality	BBC1	BBC2	ITV1	C4/S4C	Core coverage (all services)
1154 Analogue Sites	Fully served (high reliability service)	97.9%	96.9%	96.7%	96.9%	95.6%
1154 Analogue Sites	Marginally served	1.6%	2.3%	2.3%	2.3%	2.9%
1154 Analogue Sites	Total served (Fully served plus marginally served)	99.5%	99.2%	99.0%	99.2%	98.5%

### Ofcom's public service multiplex coverage requirements

- 1.4 The Communications Act 2003 requires that the coverage of the multiplexes carrying the public service channels substantially match the coverage of the comparable analogue services. These multiplexes are known as BBC - Multiplex 1, BBC - Multiplex B and Digital 3&4 – Multiplex 2. Ofcom has accordingly included this condition in its digital replacement and multiplex licences.
- 1.5 Ofcom carried out a series of consultations about how this coverage requirement should be met, most recently in 2005 (see <http://www.ofcom.org.uk/consult/condocs/pods1/main/statement/>). These consultations have concluded that it is desirable to minimise any variations between the core coverage of the post switchover public service multiplexes listed above and the existing analogue core coverage.
- 1.6 Ofcom has therefore required that the three public service multiplexes adopt at switchover all of the 1,154 transmission sites used for delivering public service channels in analogue<sup>1</sup>. Multiplex operators are also required to use comparable frequencies and powers as used by the existing analogue services. Ofcom has further required the broadcasters to adopt a number of additional transmission sites to fill in a small number of predicted gaps in coverage which are caused by higher levels of interference due to the adoption of DTT in the UK and on the continent.
- 1.7 As a result, the predicted core coverage of the three public service multiplexes following the completion of switchover currently stands at 98.6% of UK households, thereby meeting the main coverage objective set by Ofcom in its licences.
- 1.8 By contrast, the three commercial multiplexes (SDN, NGW-C & NGW-D) are required only to continue to operate from the 80 transmitter sites used for these services pre-switchover, and to give at least equivalent coverage. The operators of these multiplexes have consequently decided to continue to operate only from these sites, but to do so using higher power. As a result, the computer model predicts that their services will cover around 90% of UK

<sup>1</sup> A small number of these may not be required for DTT use as they rectify analogue coverage problems that are not replicated in DTT

households at switchover, compared with 73% before switchover. For public service multiplex coverage, the core coverage figure is 98.6%. The table below shows a more detailed breakdown of this assessment.

**Table 2: Predicted UK Digital Terrestrial TV Coverage after switchover<sup>2</sup>**

	Public service multiplex coverage			Commercial multiplex coverage			Core coverage levels	
	1 (BBC)	2 (D3&4)	B (BBC)	A (SDN)	C (NGW)	D (NGW)	3 public service multiplexes	All 6 multiplexes
<b>DTT coverage</b>	99.1%	99.0%	99.0%	93%	93%	93%	98.6%*	90%

\* Compared with 98.5% for pre-switchover predicted core analogue coverage

### Impact on analogue viewers

- 1.9 Since 98.6% of UK households are predicted to be covered by the three public service multiplexes following switchover, it follows that around 1.4% of the UK population (approximately 350,000 households) will be outside the core coverage area of the public service channels after switchover. This level of un-served homes is very similar to the numbers affected in the analogue world.
- 1.10 It is possible that a small number of households who are within the pre-switchover predicted analogue core coverage area, will be outside the predicted digital core coverage area at switchover. This is because of variations in the characteristics of the digital signals and the changing pattern of interference caused by the adoption of DTT across Europe. Others, who are currently outside the predicted analogue coverage area, may move into the predicted area of digital coverage.
- 1.11 The households most affected by these changes can be broken down into four categories:-
- Those moving into predicted coverage at switchover.
  - Those moving out of predicted coverage at switchover.
  - Those who remain outside of the predicted DTT coverage area at switchover but will be able to receive a poor quality/less reliable DTT service.
  - Those who are not covered by any services (analogue or digital).
- 1.12 As noted in the accompanying fact-sheet on coverage predictions, predicting terrestrial coverage is a complicated process. It relies on statistical analysis of a wide range of factors and has an overall margin of error of around 0.1% (equating to around 25,000 households). **This means that there are dangers of using these models to predict coverage in small**

<sup>2</sup> As of February 2008 and assuming technical parameters as were in place at this time

**geographical areas. Hence, the following discussion should be viewed as representing Ofcom's best estimate of the scale of the issue.**

*Those moving into predicted coverage at switchover*

- 1.13 Ofcom estimates that approximately 250,000 households who are currently outside the predicted analogue coverage area will move into the predicted DTT coverage area as a result of switchover. These people are mostly located on the coast of south and east of England where new transmitters are being deployed, because of higher levels of incoming interference from neighbouring countries. These households may need to update their antennas to receive DTT services, especially if they are served by new transmitters. The Digital UK post-code checker will indicate where this is likely to be required.
- 1.14 Conversely, a slightly smaller number of households will move out of predicted coverage as a result of switchover. However, this does not mean that all of these households will be unable to receive DTT services at switchover. We discuss below how this affects different types of household.
- 1.15 The vast majority of these households are already in areas which suffer from occasional interference for their analogue services (noted in Table 1 as "marginally served") but at a level within the range considered acceptable under the analogue planning criteria. This occasional interference may happen only in particular weather conditions. These households might suffer high levels of interference for up to 5% of the year, so they are covered at least 95% of the time. The threshold for DTT coverage is normally set higher at 99% of the time because digital signals are more likely to fail completely in the face of such interference whilst the quality of the analogue pictures, although severely degraded by interference, can often still be watched.
- 1.16 If the analogue coverage criteria were applied to post switchover digital coverage, Ofcom estimates that a significant majority of those households would then be considered covered. This means that many of these households will continue to be able to receive DTT television signals most of the time. They will, however, experience higher levels of interference than "fully served" households.
- 1.17 This leaves a small number of households that are in locations predicted to be the worst affected, either because they will experience interference for more than 5% of the time, or because they will experience constant levels of interference meaning that DTT reception may be impossible.

*Those moving out of predicted coverage at switchover*

- 1.18 Ofcom has looked in more detail at which areas of the country are affected in this way. This work identified two localities where the planning model predicted that several thousand households could lose their services. The first of these is in part of the Ardrossan area of Ayrshire and in this case the transmission characteristics of the planned transmitter have been changed to address the gap in coverage. The second is in part of the Skelmersdale area in Lancashire. In this case the building of a new transmitter to serve this area with the public service multiplexes is under consideration and an investigation is underway to identify a suitable site and frequencies for transmissions.

- 1.19 There are other smaller areas currently considered covered for analogue TV that are predicted to have poor or no coverage after switchover. Detailed network planning work is continuing with a view to minimising the number of viewers so affected.
- 1.20 Ofcom will continue to monitor the situation as switchover proceeds to maximise the number of households that can receive the public service channels by DTT. In the small number of households where this is impossible, people will be advised to consider alternatives such as satellite, cable, and broadband TV and to check their reception conditions with a local qualified aerial installer prior to purchasing DTT reception equipment.

*Those who remain outside of the predicted DTT coverage area at switchover but will be able to receive a poor quality/less reliable DTT service*

- 1.21 The planning models are predicting that around 1.4% of UK households (around 350,000 households) will not be fully covered by the three public service multiplexes at switchover. The majority of these households (predicted to be around 275,000 or 1.1% of UK households) will still be able to get a signal most of the time (between 95% and 99% of the time) but will experience so called time varying interference for the rest of the time. This figure includes the 220,000 households moving out of predicted coverage discussed above.
- 1.22 Ofcom is working to better understand the consumer experience from this type of occasional interference. Preliminary indications are that at 99% time coverage, households may experience disrupted viewing for up to around 10 evenings per year. Households predicted to be in the range 95 to 99% time coverage (1.1% of households, mentioned above) might experience disruption to viewing for between around 10 and 50 evenings per year.

*Those who are not covered by any services (analogue or digital)*

- 1.23 Only 0.3% of UK households (around 75,000 households) are unlikely to receive any usable DTT signal at all. These households are overwhelmingly not covered by the existing analogue terrestrial services and in general already acquire their television services via digital satellite or using a self-help transmitter<sup>3</sup>.

### **What should viewers affected do?**

- 1.24 Viewers can get advice about their specific TV coverage at switchover from Digital UK, either via a telephone help line or web site - 0845 650 50 50 or [www.digitaluk.co.uk](http://www.digitaluk.co.uk) . Ofcom will work with Digital UK and others to ensure that good advice is available to those that may be affected by limited TV coverage after switchover on the conversion options open to them.

### **Ofcom March 2008**

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<sup>3</sup> Self-help relays are sometimes installed by communities to allow them to receive television in areas where analogue reception is very poor, or unavailable. Ofcom consulted on how self help relays should be licensed with respect to digital switchover and this document can be found on the Ofcom website: <http://www.ofcom.org.uk/consult/condocs/selfhelp/>