
Digital Switchover (DSO) Programme

Radio DSO Block 11B Bradford & Huddersfield

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1 Bradford & Huddersfield DSO narrative

The current allocation on 11B for Bradford & Huddersfield has been implemented with three transmitters.

The proposed block 11B allocations are shown below figure 1.1 below and include Perth & Dundee, Bristol & Bath, Cumbria, Teesside, Wolverhampton & Shropshire, Leicestershire, Norfolk, Cornwall, Bournemouth and Sussex.

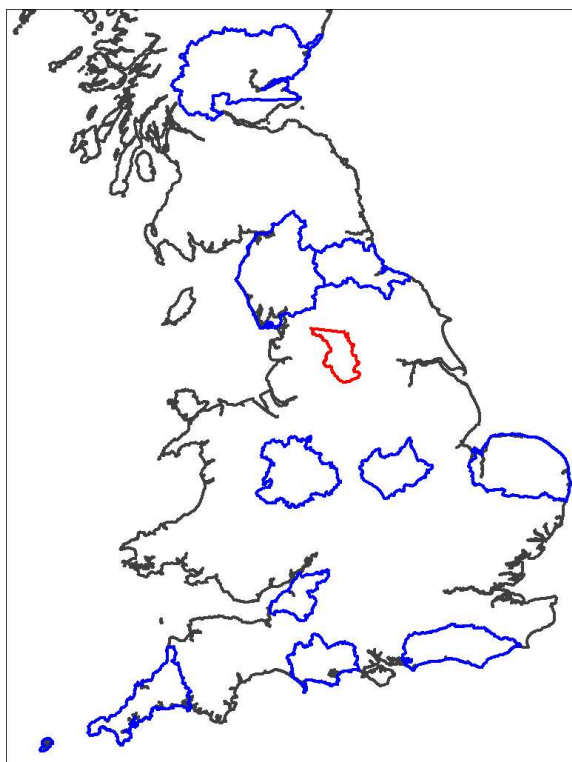


Figure 1.1: Proposed Block 11B allocations

In planning for each multiplex Ofcom have required coverage assessments:

- For each area four maps should be produced as follows:
 1. **Current Situation** - Map showing current actual coverage (or launch plans where a multiplex has not yet launched), including any transmitters which are required as part of the current licence, but which are not yet operational.
 2. **Modified Network 1** - Map showing the above, plus any improvements to existing infrastructure.
 3. **Modified Network 2** - Map of the above, plus additional smaller infill transmitters focused on areas where FM coverage is robust.
 4. **Modified Network 3** - Map of the above, plus additional transmitters to provide near universal coverage.

For case 1: Launch situation

The current allocated transmission characteristics are:

Site name	ERP	Site height m a.o.d.	Antenna height a.g.l	Antenna type
Ainley Top	1kW	257	60	Yagis
Keighley	1kW	303	45	Panels
Westgate Hill	1.61kW	220	26	Cardioids

The coverage for the launch situation is shown in figure 2.1.

For case 2: Modified Network 1

It is not possible to increase the power of the existing transmitters.

For case 3: Modified Network 2

In this it was required to cover those areas currently served robustly by local FM services (BBC Local and Independent The Pulse). To achieve this six sites are required. The coverage of the Modified Network 2 is shown in figure 2.2.

Included in these sites is a city centre filler for Bradford as there appears to be a deficiency even after the other sites proposed have been added. As such a filler is likely to give rise to ACI problems, it would be wise to carry out site measurements to ensure the filler is really needed.

It will be noted that Wharfedale is outside of the editorial area. This site is required to cover Ilkley. The site is located in the Leeds editorial area and could be proposed for that multiplex. The Bradford & Huddersfield multiples is, with Leeds, a special case where BBC are willing to accept coverage from either multiplex into either area. At the time of writing, work on the Leeds multiplex is still in progress.

For case 4: Modified Network 3

For this case it was required to 'fill' the multiplex to achieve near universal coverage (within practical planning limits). An additional one site is required to achieve this. The coverage of the Modified Network 3 is shown in figure 2.3.

1.1 Outgoing interference and sensitivity to other co-block multiplexes

There is some impact on the Cumbria, Teesside, Wolverhampton and Leicester multiplexes from the DSO proposal contained within this document.

Bradford & Huddersfield is affected by co-block interference from Cumbria, Teesside, Wolverhampton, Norfolk and Leicester but the effects are generally small.

It will be noted in table 2.2 that road coverage appears to drop when the 4th site is added. This is due to the current three sites being considered with existing interferers only whereas from 4 sites onwards future interferers are also considered. If the current three site network result was subject to future interferers, adding the 4th site would show an improvement of 9km in road coverage

2 Coverage of the Multiplex

2.1 Coverage Maps

Coverage maps for the DAB are presented with three colours:

Blue = Mobile coverage (99% locations at 99% time)

Dark Green = Indoor coverage (80-95% locations at 99% time)

Light Green = Robust indoor coverage (>95% locations at 99% time)

Figure 2-1 Current Situation

Figure 2-2 Modified Network 2

Figure 2-3 Modified Network

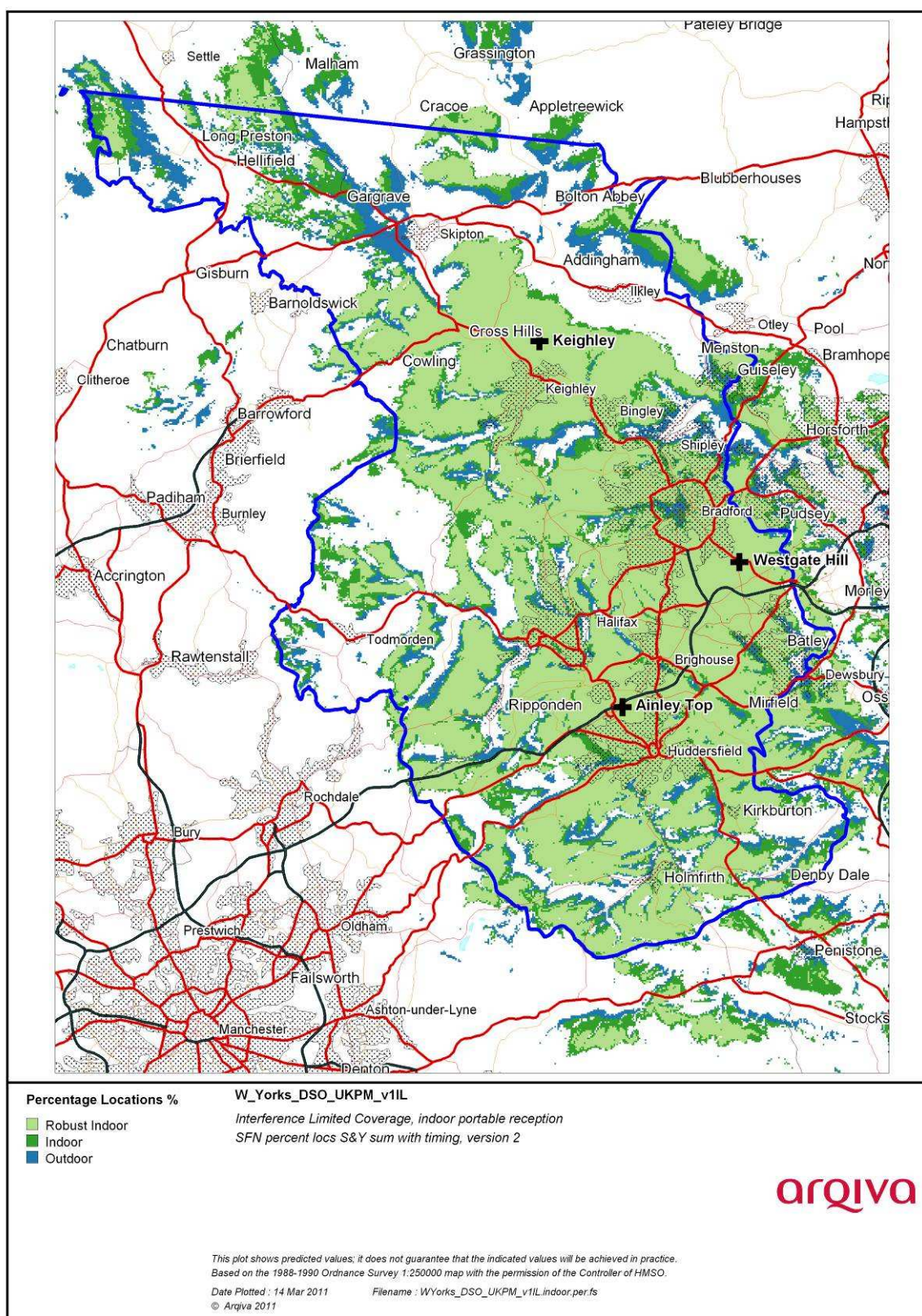


Figure 2.1 Existing Network

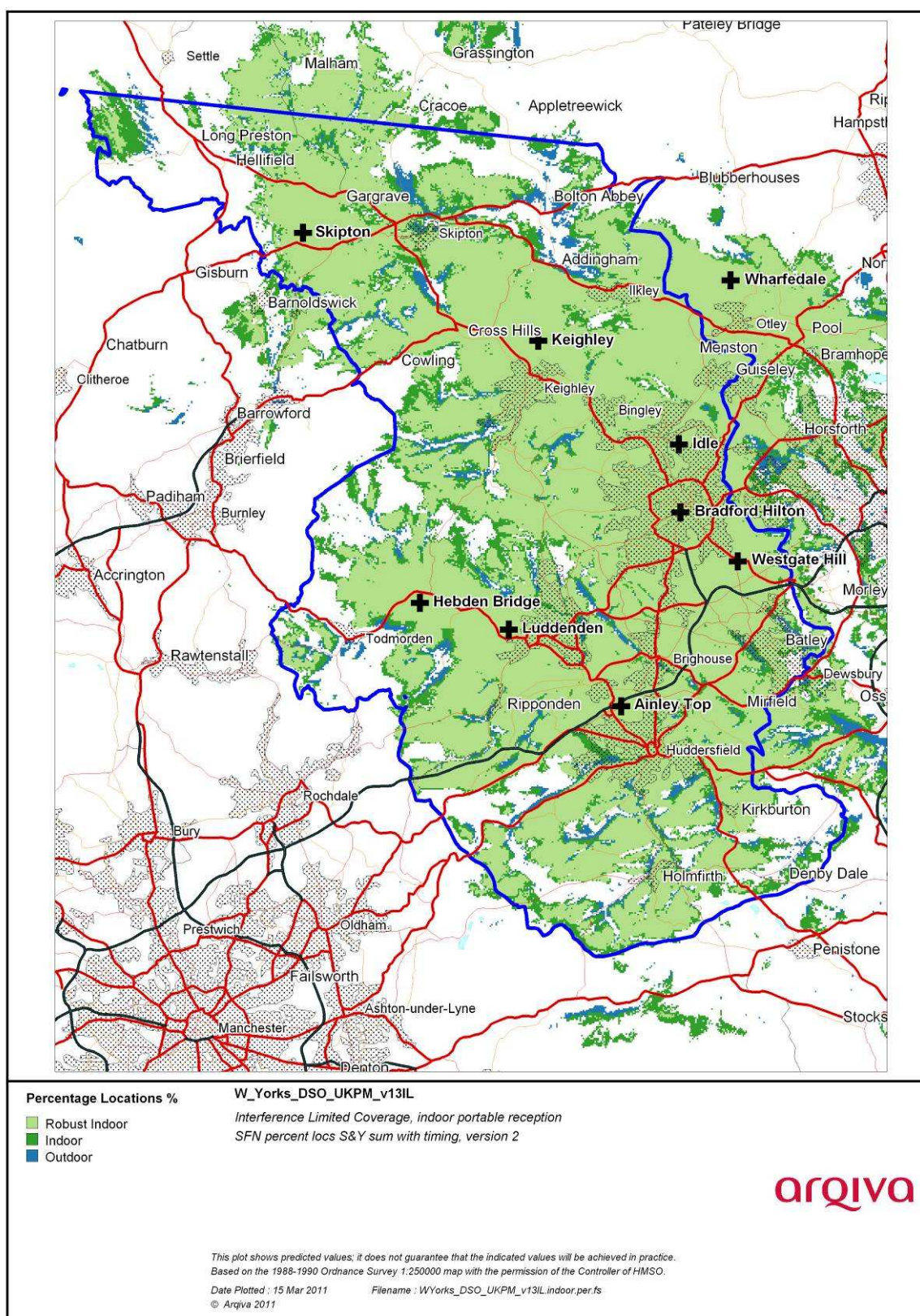


Figure 2.2 Modified Network 2

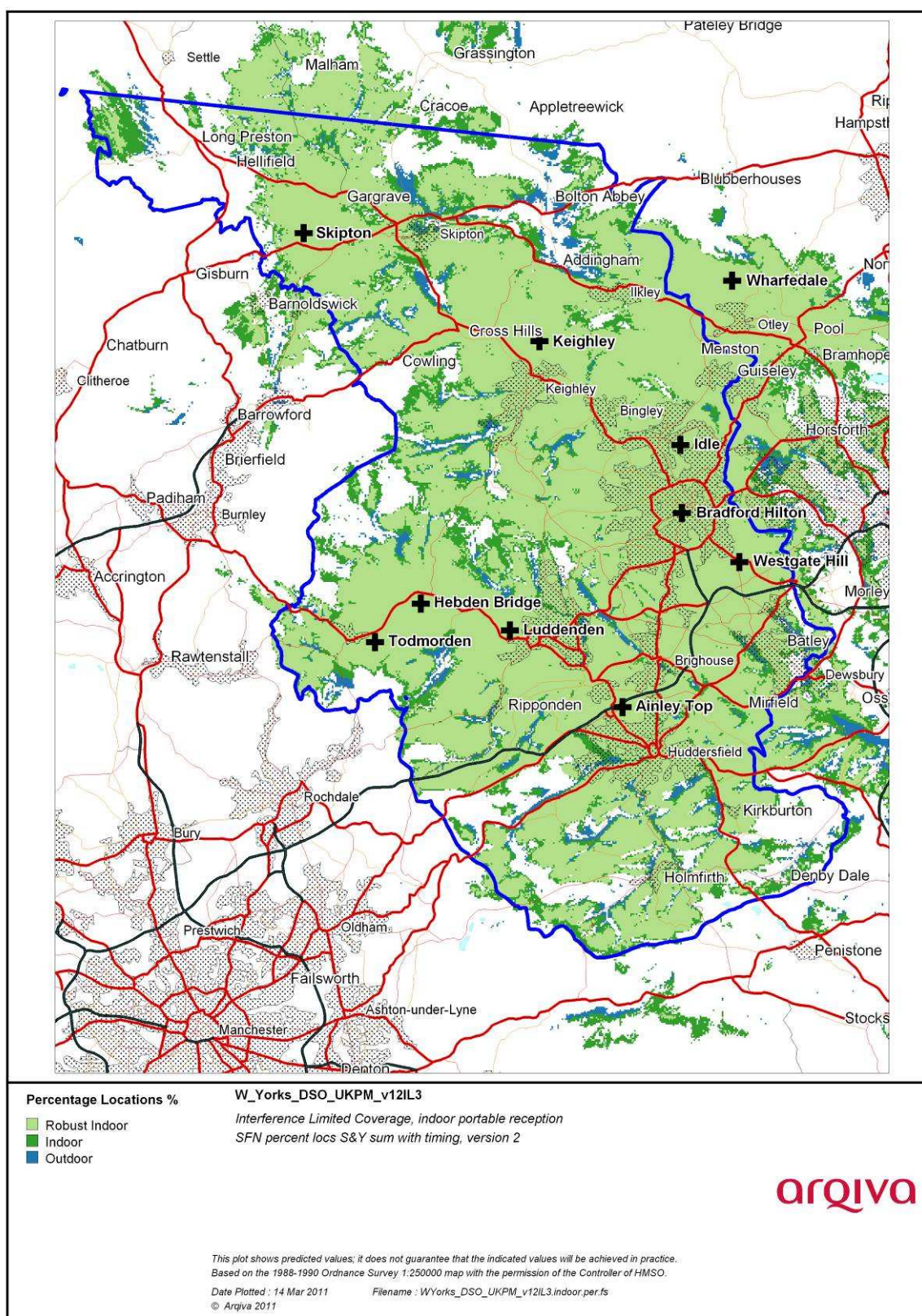


Figure 2.3 Modified Network 3

2.2 Population Coverage tables within Editorial Area

Table 2-1. Population coverage proportional indoor 1% time interference

: Total 499,145

Site scenario and incremental additional sites	Site type	Individual gross interference limited coverage within editorial area	Total number of households within editorial area	Incremental increase in number of households	Incremental percentage increase of population	Percentage of editorial area
Current (2 tx)	Shared Existing Infrastructure	-	390,838	-	-	78.3%
Ainley Top	Current	194,154 (38.9%)				
Keighley	Current	78,708 (15.8%)				
Westgate Hill	Current	190,784 (38.2%)				
Idle	Shared Existing Infrastructure	106,547 (21.4%)	411,739	20,901	4.2%	82.5%
Wharfedale	Existing site new antenna	39,495 (7.9%)	426,189	14,450	2.9%	85.4%
Luddenden	Existing site new antenna	36,601 (7.3%)	438,548	12,359	2.5%	87.9%
Skipton	Existing site new antenna	8,127 (1.6%)	446,901	8,353	1.7%	89.5%
Todmorden	Existing site new antenna	7,413 (1.5%)	454,268	7,367	1.5%	91.0%
Hebden Bridge	Existing site new antenna	7,931 (1.6%)	456,864	2,596	0.5%	91.5%
Bradford Hilton	New Site	62,286 (12.5%)	457,756	892	0.2%	91.7%

Case 1	-	Yellow =	Current or planned coverage
Case 2	-	Not Applicable	Modified Network 1
Case 3	-	Yellow +Orange=	Modified Network 2
Case 4	-	Yellow + Orange + Green=	Modified network 3

Table 2-2. Road coverage 99% location 99%T: Total roads 620 km

Site scenario and incremental additional sites	Site Type	Total road length In km	Increase in road length in km	Incremental percentage of road length	Percentage of roads within editorial area
Current (3 tx)	Shared Existing Infrastructure	432	-	-	69.6%
Idle	Shared Existing Infrastructure	410	-21	-3.5%	66.2%
Wharfedale	Existing site new antenna	432	22	3.5%	69.7%
Luddenden	Existing site new antenna	460	28	4.5%	74.2%
Skipton	Existing site new antenna	498	38	6.1%	80.3%
Todmorden	Existing site new antenna	520	23	3.6%	83.9%
Hebden Bridge	Existing site new antenna	522	2	0.2%	84.1%
Bradford Hilton	New Site	522	0	0.0%	84.2%

Case 1	-	Yellow =	Current or planned coverage
Case 2	-	Not Applicable	Modified Network 1
Case 3	-	Yellow +Orange=	Modified Network 2
Case 4	-	Yellow + Orange + Green=	Modified network 3

Table 2-3. Summary of Coverage within Editorial Area for each case
99% time Interference

Case	Indoor Households & (percentage coverage)	Mobile Coverage km & percentage coverage) 99% locations
1	390,838 (78.3%)	432 (69.6%)
2	n/a	n/a
3	451,541 (90.5%)	507 (81.7%)
4	457,756 (91.7%)	522 (84.2%)