
Digital Switchover (DSO) Programme

Radio DSO Block 11B Norfolk

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1 Norfolk DSO narrative

The current allocation on 11B for Norfolk has been implemented with five transmitters. The area has been extended westward to encompass that part of Norfolk not currently within the editorial area.

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

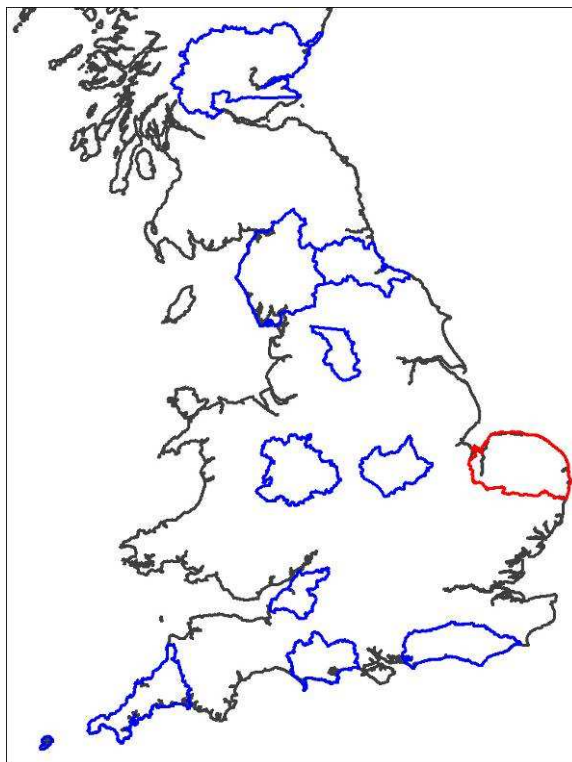


Figure 1.1: Proposed Block 11B allocations

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: Current situation

The current allocated transmission characteristics are:

Site name	ERP	Site height m a.o.d.	Antenna height m a.g.l	Antenna type
Stoke Holy Cross	1.1kW	66	107	Cardioids
Great Yarmouth	0.25kW	1	30	Dipoles
Oulton	0.25kW	10	41	Dipoles
West Runton	0.2kW	99	36	Dipoles
Thetford	0.25kW	39	52	Dipoles

The coverage for the launch situation is shown in figure 2.1. These transmitters were installed to serve the Norwich editorial area. The editorial area has now been extended to cover the whole of Norfolk with a slight reduction of the area along the southern border with Suffolk.

For case 2: Modified Network 1

No changes to the existing network are proposed.

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 Heart East Anglia). To achieve this seven additional sites are required. The coverage of the Modified Network 2 is shown in figure 2.4. It should be noted however that there is an overlap between the Norfolk and Suffolk editorial areas as can be seen in figure 1.2 below. Figure 1.2 shows the sites proposed for both Norfolk and Suffolk multiplexes. Note that Oulton is common.

It will be noted that there is a large increase in both population and road coverage with the addition of the first new site. This is due to the existing network being considered with only existing interferers whereas other calculations consider future interferers. In particular DRG London is no longer an interferer in these.

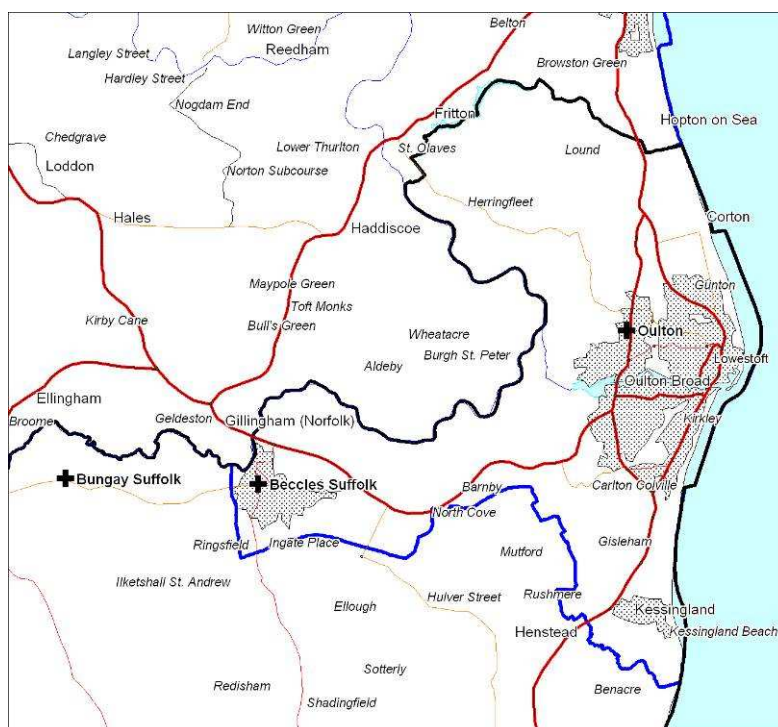


Figure 1.2: Norfolk – Overlap with Suffolk

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). Modified network 2 fulfils this requirement.

1.1 Outgoing interference and sensitivity to other co-block multiplexes

There is a significant impact on the Leicester multiplex from the DSO proposal contained within this document. Additionally, there is a slight impact on the Bradford & Huddersfield, Wolverhampton and Sussex multiplexes.

Even the current network suffers from fairly high levels of co-block interference from the Leicester multiplex. The extension of the editorial area to the west means that Leicester becomes a more significant interferer over the whole of the new area. Additionally, there is interference from Teesside, Bournemouth and Sussex and very slight interference from Bristol & Bath.

The general 'Benchmark' for indoor and outdoor co-block interference protection is for 99% time; however, as mentioned above outdoor coverage is affected more than is desirable from 1% time interference. Hence, coverage has also been assessed at 95% time for outdoor coverage only, gaining 11.8% in terms of road km.

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 Case 1: Current Situation

Figure 2-2 Case 1: Current Situation mobile 99% time

Figure 2-3 Case 1: Current Situation mobile 95% time

Figure 2-4 Case 3: Modified Network 2

Figure 2-5 Case 3: Modified Network 2 mobile 99% time

Figure 2-6 Case 3: Modified Network 2 mobile 95% time

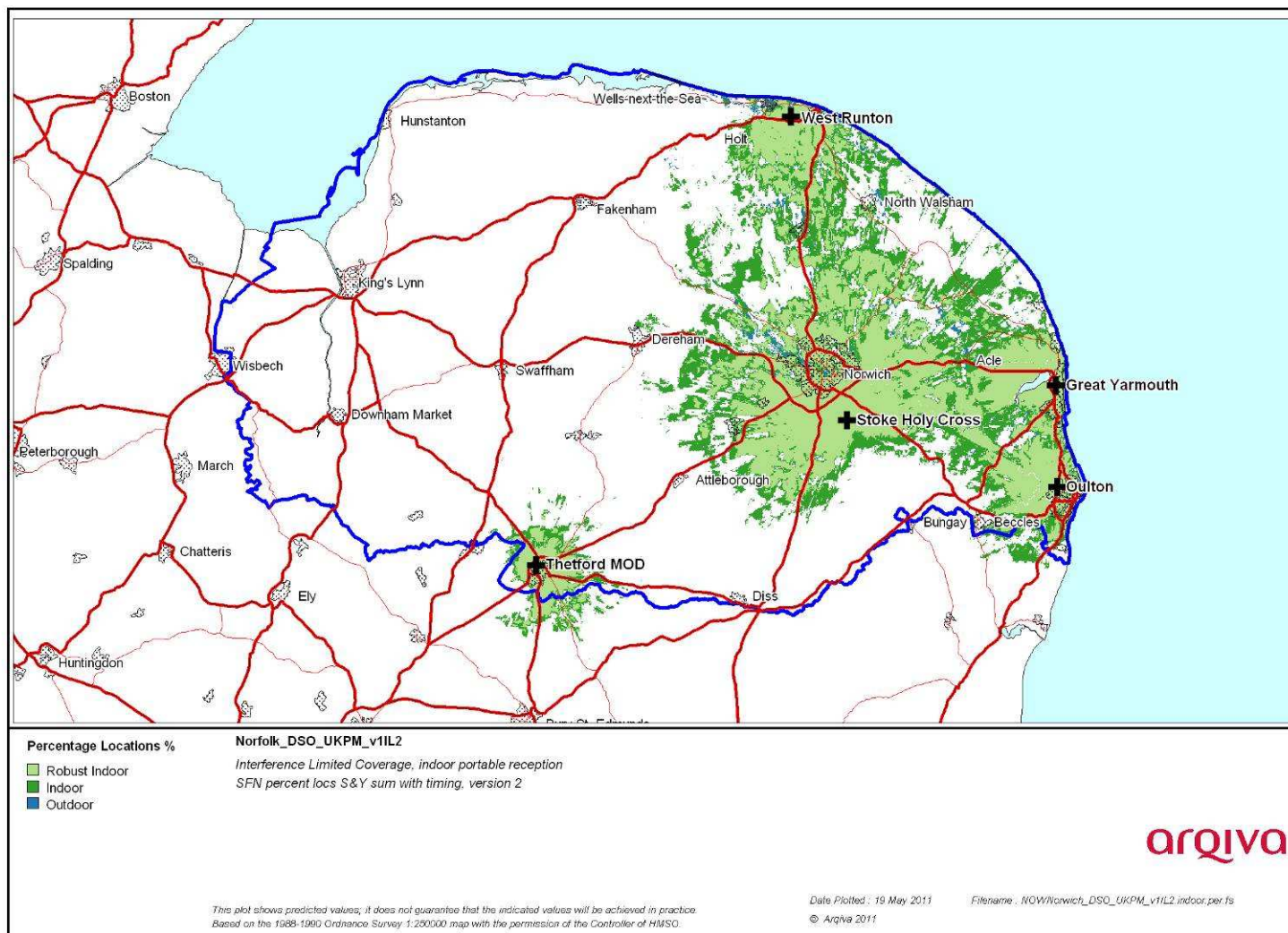


Figure 2-1. Current Situation

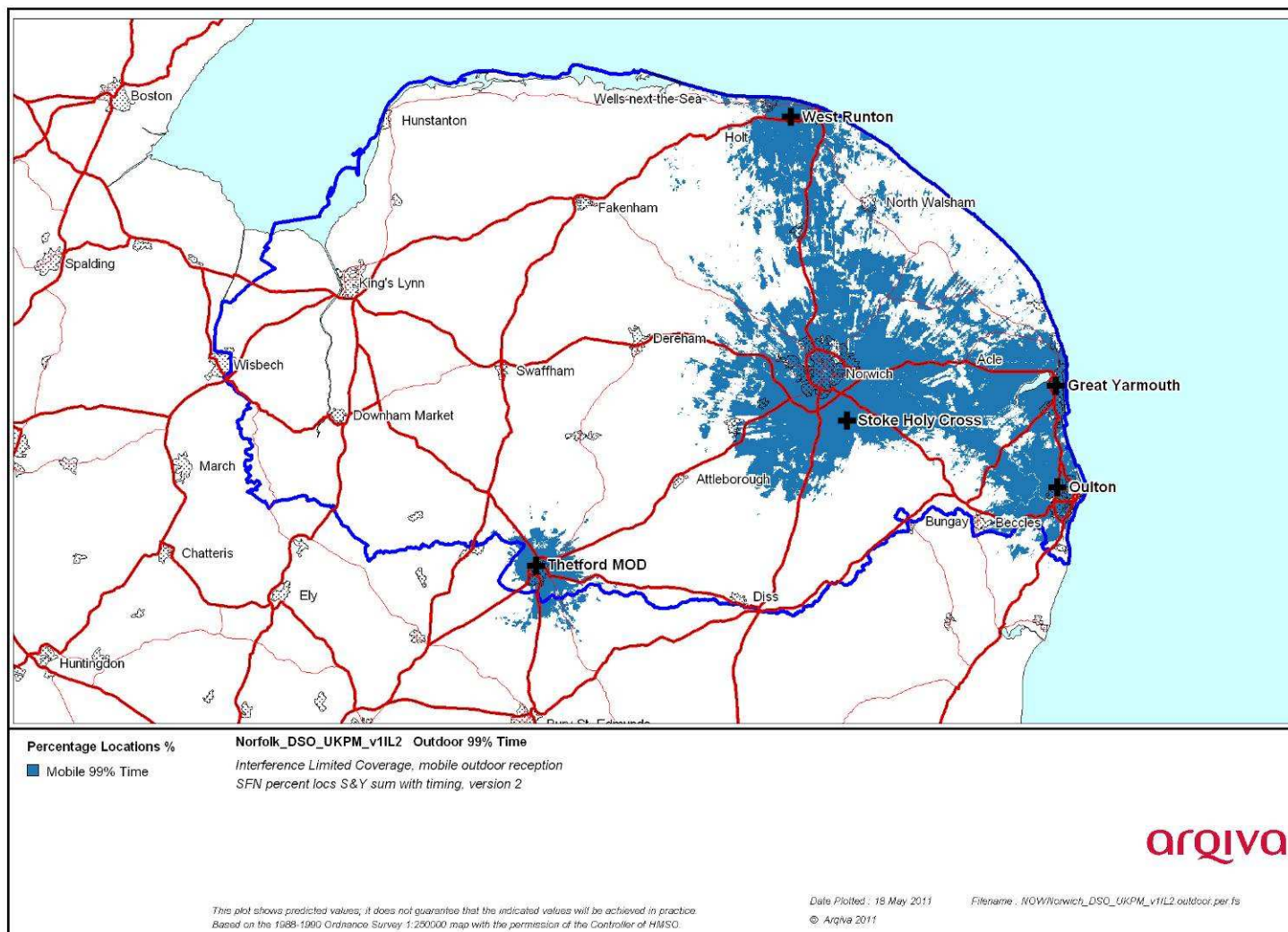


Figure 2-2 Current Situation mobile 99% time

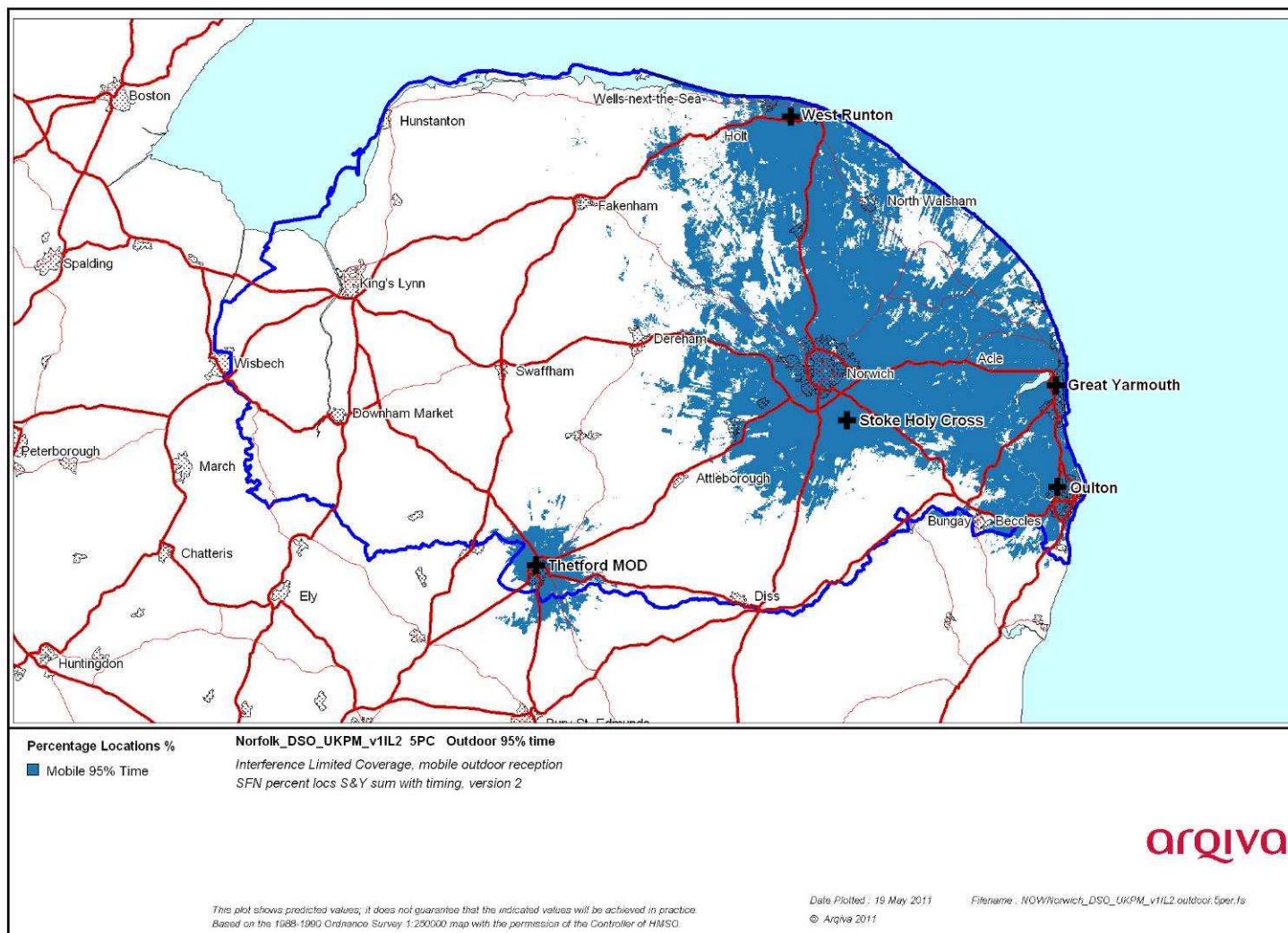


Figure 2-3 Current Situation mobile 95% time

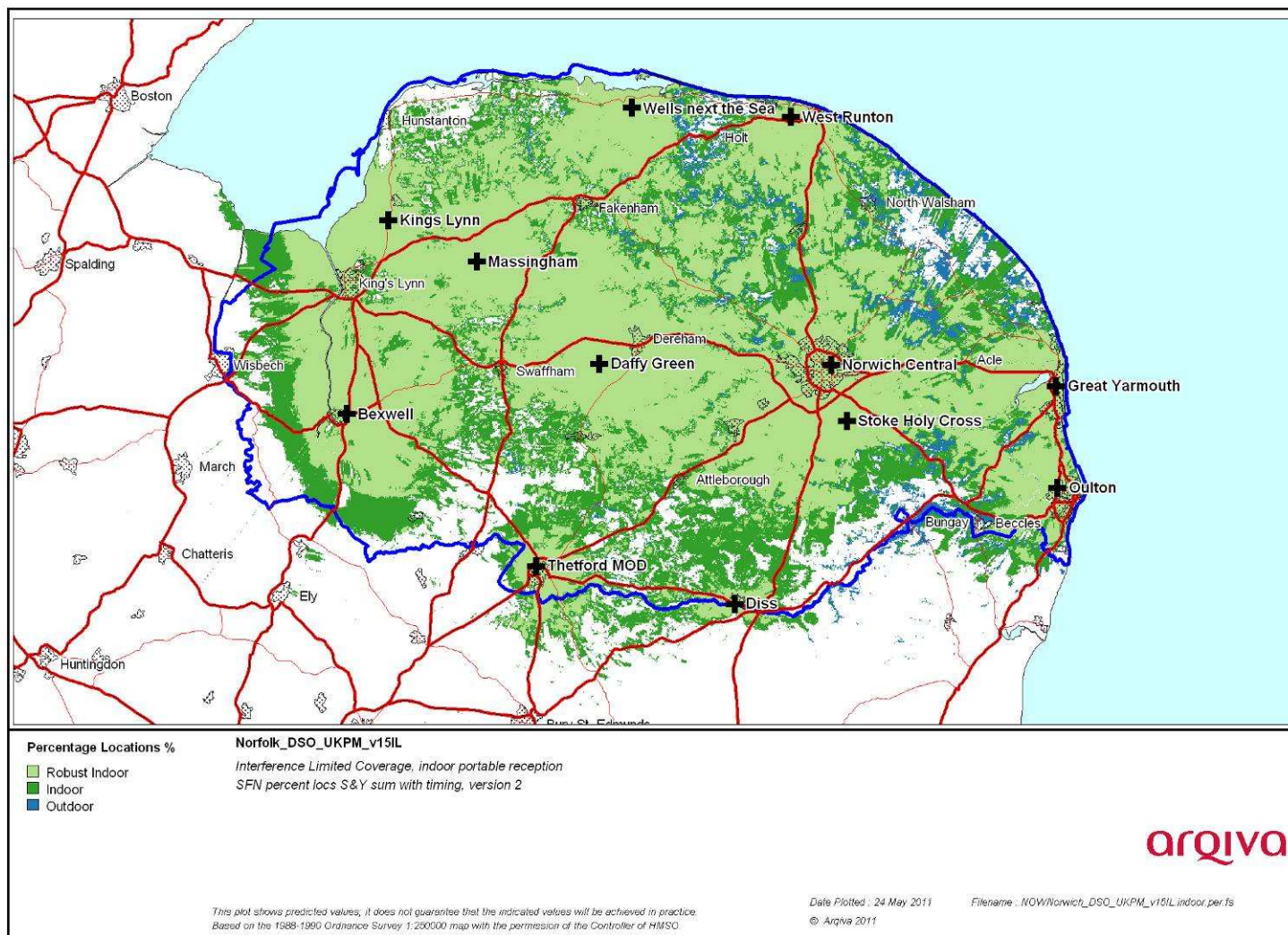


Figure 2-4 Modified Network 3

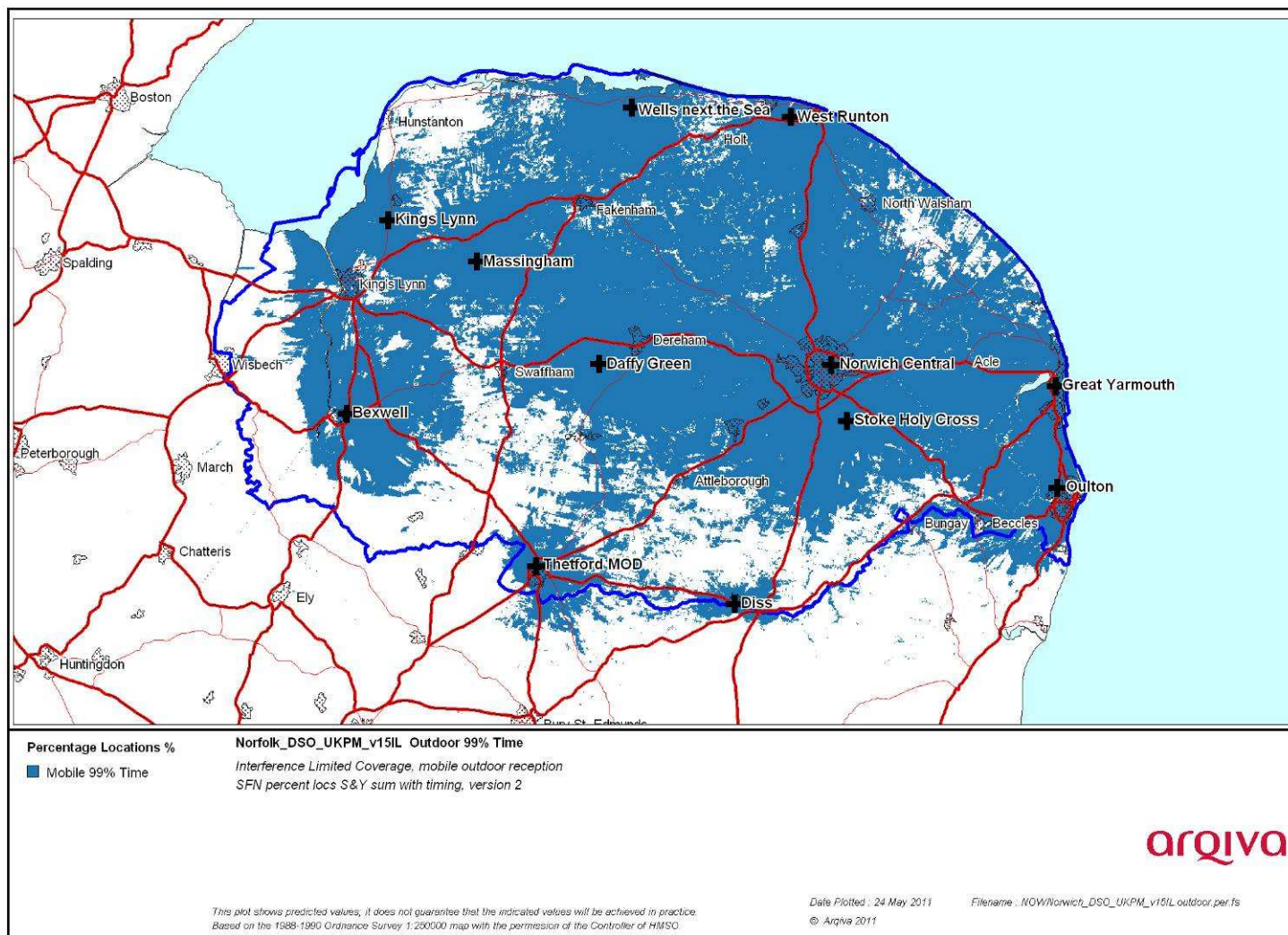


Figure 2-5 Modified Network 3 mobile 99% time

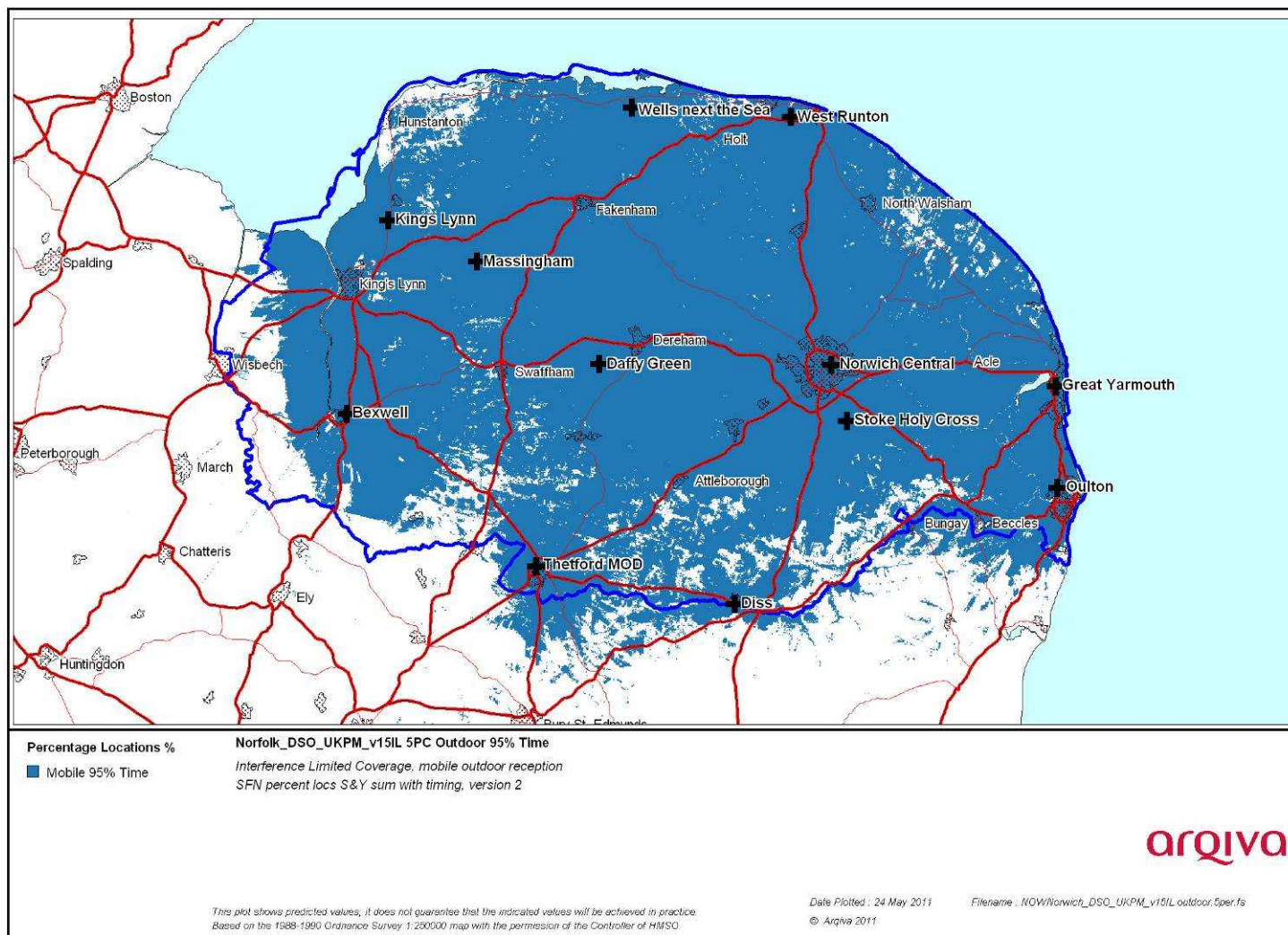


Figure 2-6 Modified Network 3 mobile 95% time

2.2 Population Coverage tables within Editorial Area

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

: Total 437,820

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 (5 tx)	Shared Existing Infrastructure	-	219,224	-	-	50.1%
Stoke Holy Cross	Current	133,364 (30.5%)				
Oulton	Current	34,211 (7.8%)				
Great Yarmouth	Current	29,774 (6.6%)				
West Runton	Current	9,060 (2.0%)				
Thetford	Current	10,510 (2.3%)				
Massingham	Shared Existing Infrastructure	16,701 (3.8%)	259,420	40,196	9.2%	59.3%
Daffy Green	New Site	27,820 (6.4%)	301,048	41,628	9.5%	68.8%
Kings Lynn	Existing Site New antenna	15,990 (3.7%)	322,555	21,507	4.9%	73.7%
Bexwell	New Site	12,598 (2.9%)	340,828	18,273	4.2%	77.9%
Diss	New Site	5,634 (1.3%)	349,275	8,446	1.9%	79.8%
Norwich Central	Existing Site New antenna	68,285 (15.6%)	356,133	6,859	1.6%	81.34%
Wells next the Sea	Existing Site New antenna	4,120 (0.9%)	365,152	9,019	2.1%	83.4%

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

Table 2-2. Road coverage 99% location 99%T: Total roads 971 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 (5 tx)	Shared Existing Infrastructure	314	-	-	32.3%
Massingham	Shared Existing Infrastructure	461.1	147.1	15.15	47.49
Daffy Green	New Site	552.7	91.6	9.43	56.92
Kings Lynn	Existing Site New antenna	595.5	42.8	4.41	61.33
Bexwell	New Site	669.5	74.0	7.62	68.95
Diss	New Site	694.5	25.1	2.58	71.53
Norwich Central	Existing Site New antenna	701.7	7.2	0.74	72.27
Wells next the Sea	Existing Site New antenna	741.3	39.6	4.07	76.35

Table 2-3. Road coverage 99% location 95%T: Total roads 971 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 (5 tx)	Shared Existing Infrastructure	325	-	-	33.4%
Massingham	Shared Existing Infrastructure	560.5	235.9	24.29	57.73
Daffy Green	New Site	656.8	96.2	9.91	67.64
Kings Lynn	Existing Site New antenna	714.9	58.2	5.99	73.63
Bexwell	New Site	788.3	73.4	7.56	81.19
Diss	New Site	819.1	30.7	3.17	84.36
Norwich Central	Existing Site New antenna	823.0	4.0	0.41	84.77
Wells next the Sea	Existing Site New antenna	856.2	33.1	3.41	88.18

Table 2-4. Summary of Coverage within Editorial Area for each case

Case	Indoor Households & (percentage coverage) <i>proportional 99% Time Interference Protection</i>	Mobile Coverage km & percentage coverage <i>99% Locations & 99% Time Interference Protection</i>	Mobile Coverage km & percentage coverage <i>99% Locations & 95% Time Interference Protection</i>
1	219,224 (50.1%)	314 (32.3%)	325 (33.4%)
2	n/a	n/a	
3	365,152 (83.4%)	741 (76.4%)	856 (88.2%)
4	n/a	n/a	

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