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**Digital Switchover (DSO) Programme**

**Radio DSO Block 11B Leicestershire**

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## 1 Leicestershire DSO narrative

The current allocation on 11B for Leicestershire has been implemented with two transmitters.

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

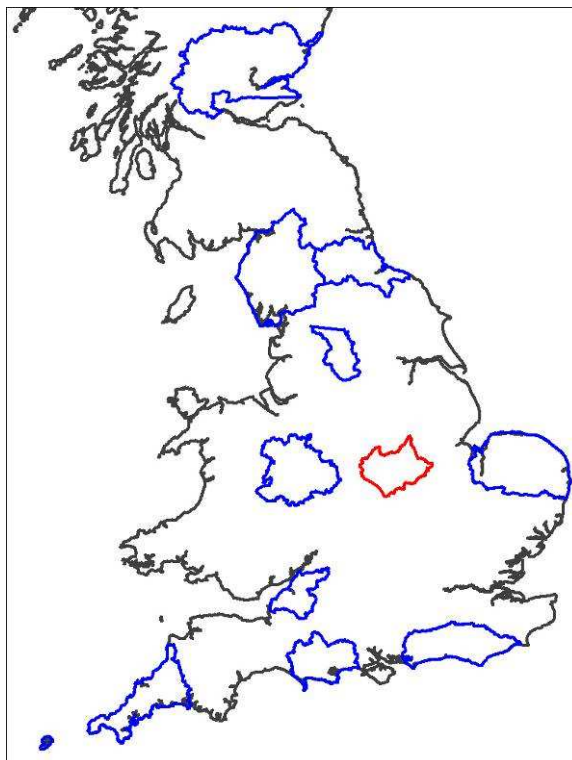


Figure 1.1: Proposed Block 11B allocations

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 a.g.l	Antenna type
Copt Oak	1.5kW	240	29.4	Yagis
Houghton-on-the-Hill	1.2kW	153	32	Dipoles

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

For case 2: Modified Network 1

It is proposed to increase the ERP at Copt Oak to 2.1kW. The coverage of the Modified Network 1 is shown in figure 2.4. It will be noted that there is a significant decrease in both population and road coverage from Case 1. This is due to Case 1 being considered with existing interferers but Case 2 being considered with future interferers as well. If case 2 were to be considered with only existing interferers, population would increase by 2.3% and road coverage by 2%.

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 Leicester Sound). To achieve this seven additional sites are required. The coverage of the Modified Network 2 is shown in figure 2.7. It will be noted that the site at Little Oxenden is outside the editorial area as this appears to be the best site to cover Market Harborough. The town is not served by the adjacent Northamptonshire multiplex.

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). The main conurbation remaining unserved is Oakham and one additional site has been proposed to cover this. The coverage of the Modified Network 3 is shown in figure 2.10

## 1.1 Outgoing interference and sensitivity to other co-block multiplexes

There is a significant impact on the Norfolk and Wolverhampton multiplexes from the DSO proposal contained within this document. There is very slight impact on Sussex.

Leicestershire is severely affected by co-block interference from the Wolverhampton and Norfolk multiplexes. There is also some interference from Cumbria, Bradford & Huddersfield, Bristol & Bath, Bournemouth and Sussex.

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 6.7% in terms of road km. Unfortunately road coverage, even at 95% time, is poor.

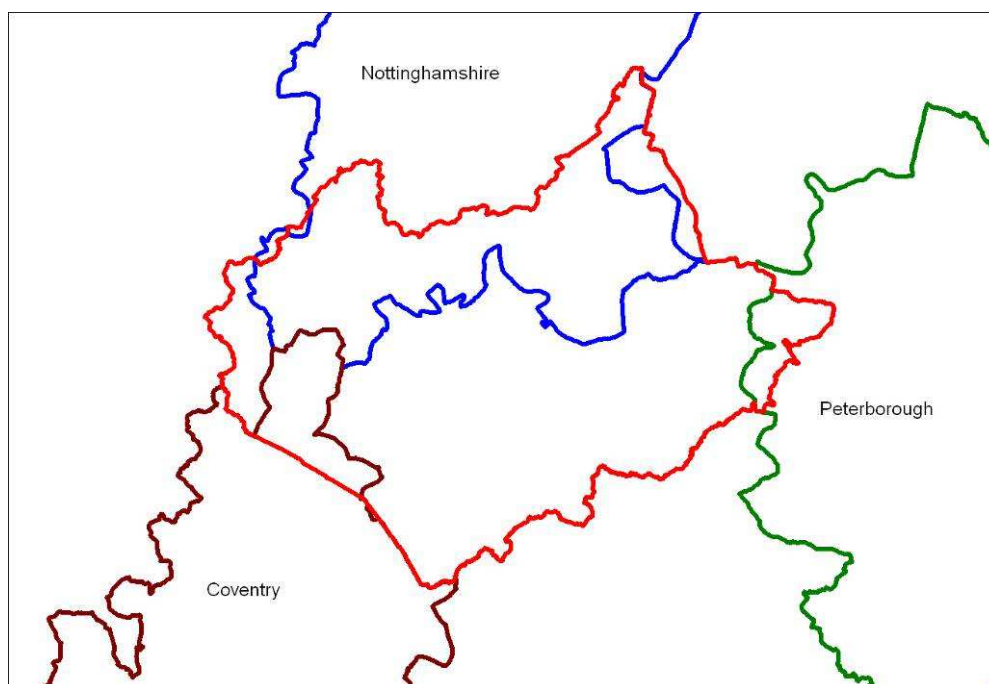


Figure 1.2: Overlap with other multiplexes

Figure 1-2 shows the overlap between Leicestershire and adjacent multiplexes. The Nottinghamshire multiplex has a significant overlap area and uses three sites also used by Leicestershire (Waltham, Bardon Hill and Shepshed Nook). Nottingham provides coverage to the north of Waltham which is absent in the Leicestershire multiplex.

The Coventry multiplex shares the Barwell site and provides better coverage of the overlap area which includes Hinckley, than Leicestershire.

The Peterborough multiplex has a transmitter at Stamford which fills the overlap area well. Peterborough coverage is not contiguous with that of Leicestershire.

## 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 2: Modified Network 1
Figure 2-5	Case 2: Modified Network 1 mobile 99% time
Figure 2-6	Case 2: Modified Network 1 mobile 95% time
Figure 2-7	Case 3: Modified Network 2
Figure 2-8	Case 3: Modified Network 2 mobile 99% time
Figure 2-9	Case 3: Modified Network 2 mobile 95% time
Figure 2-10	Case 4: Modified Network 3
Figure 2-11	Case 4: Modified Network 3 mobile 99% time
Figure 2-12	Case 4: Modified Network 3 mobile 95% time

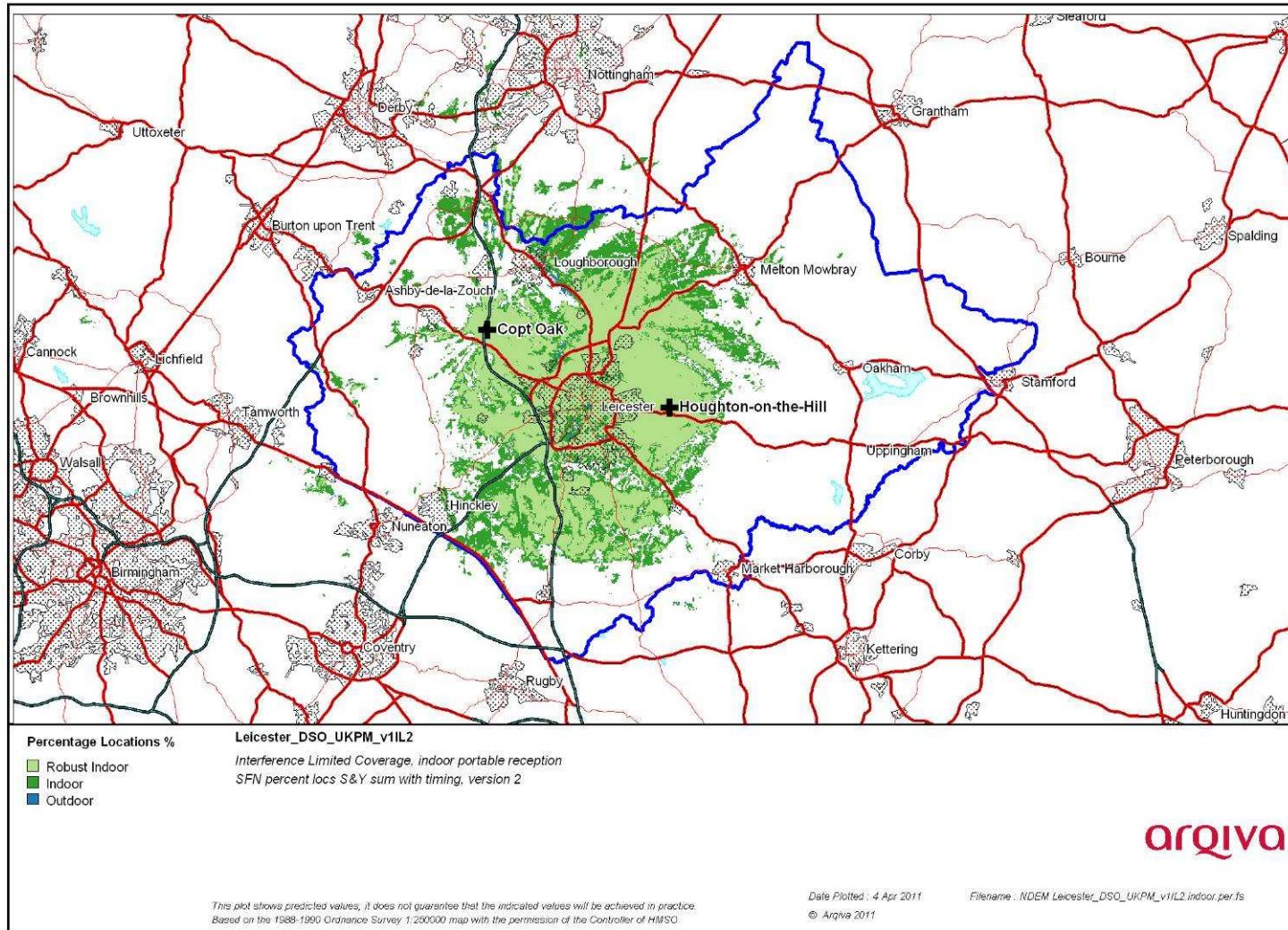


Figure 2-1. Current Situation



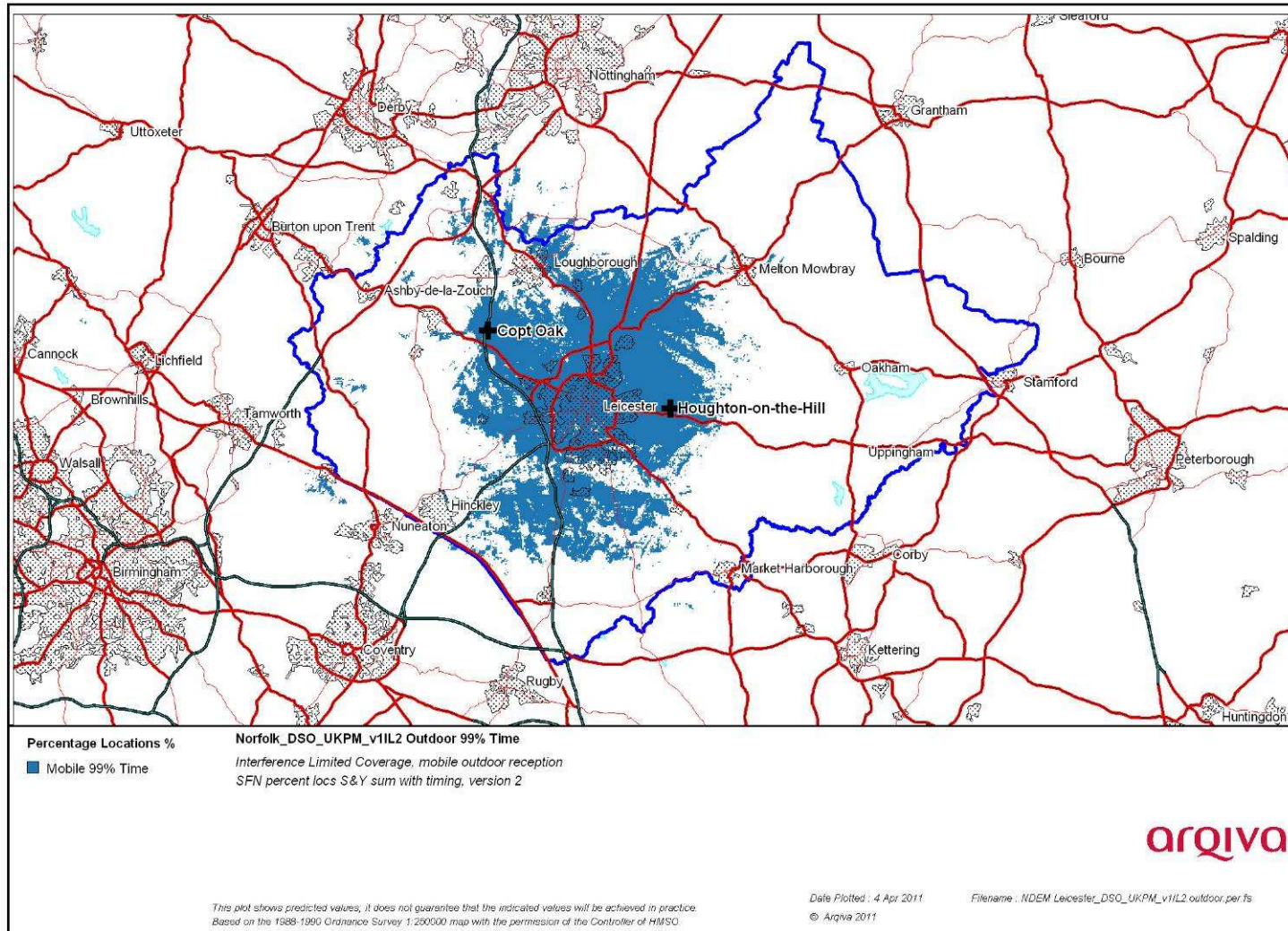


Figure 2-3 Current Situation mobile 99% time

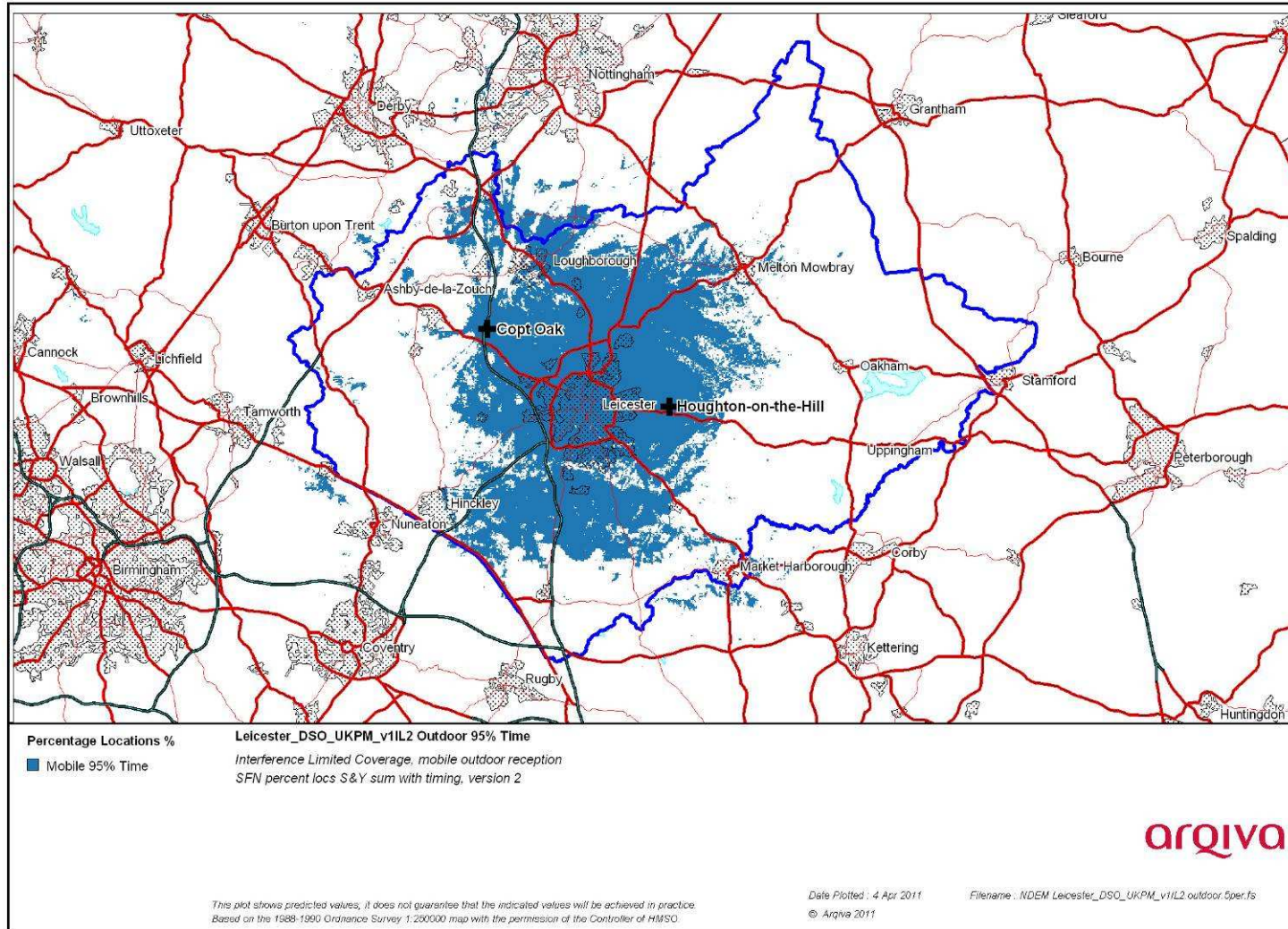


Figure 2-3 Current Situation mobile 95% time



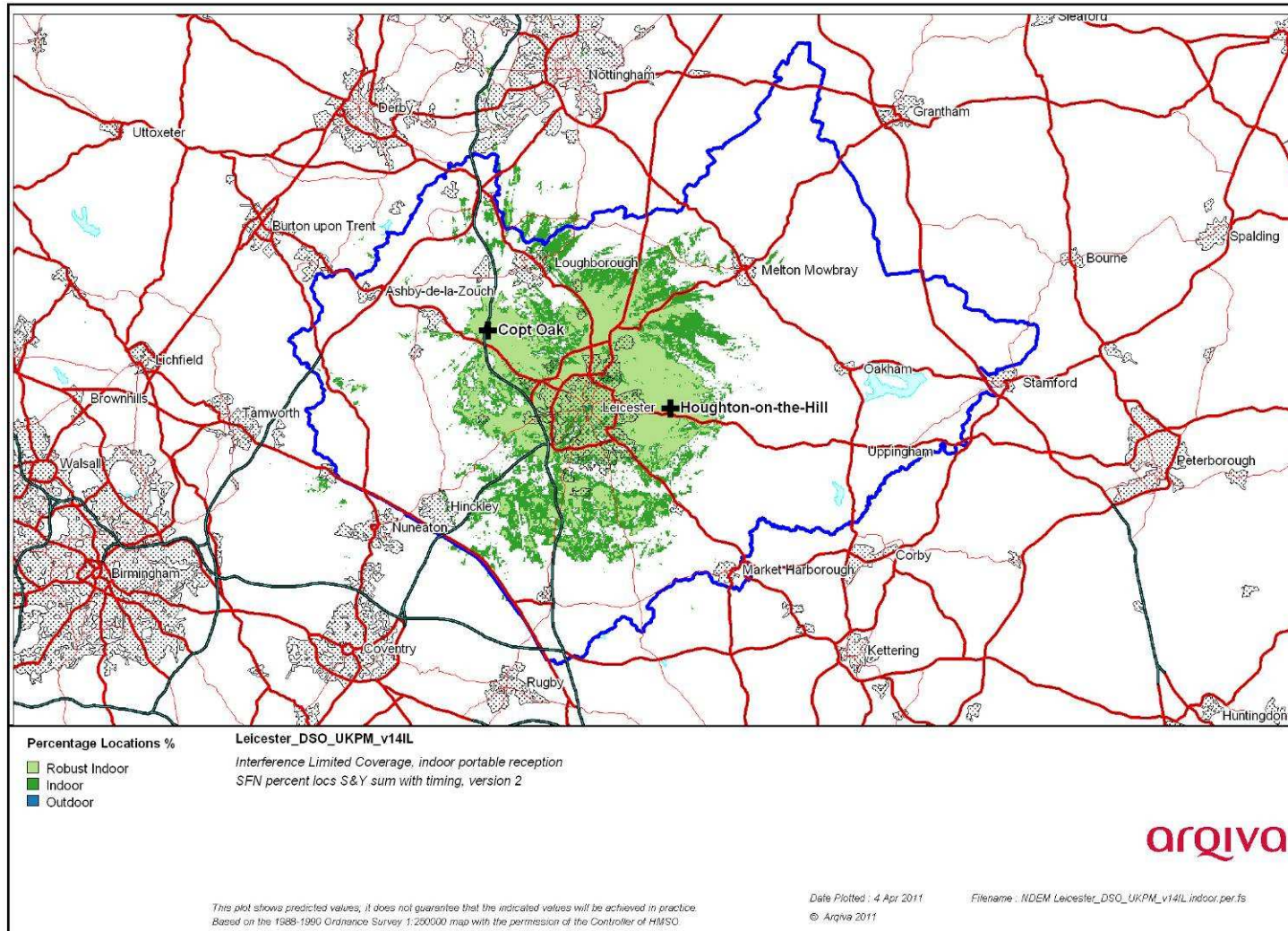


Figure 2-4 Modified Network 1

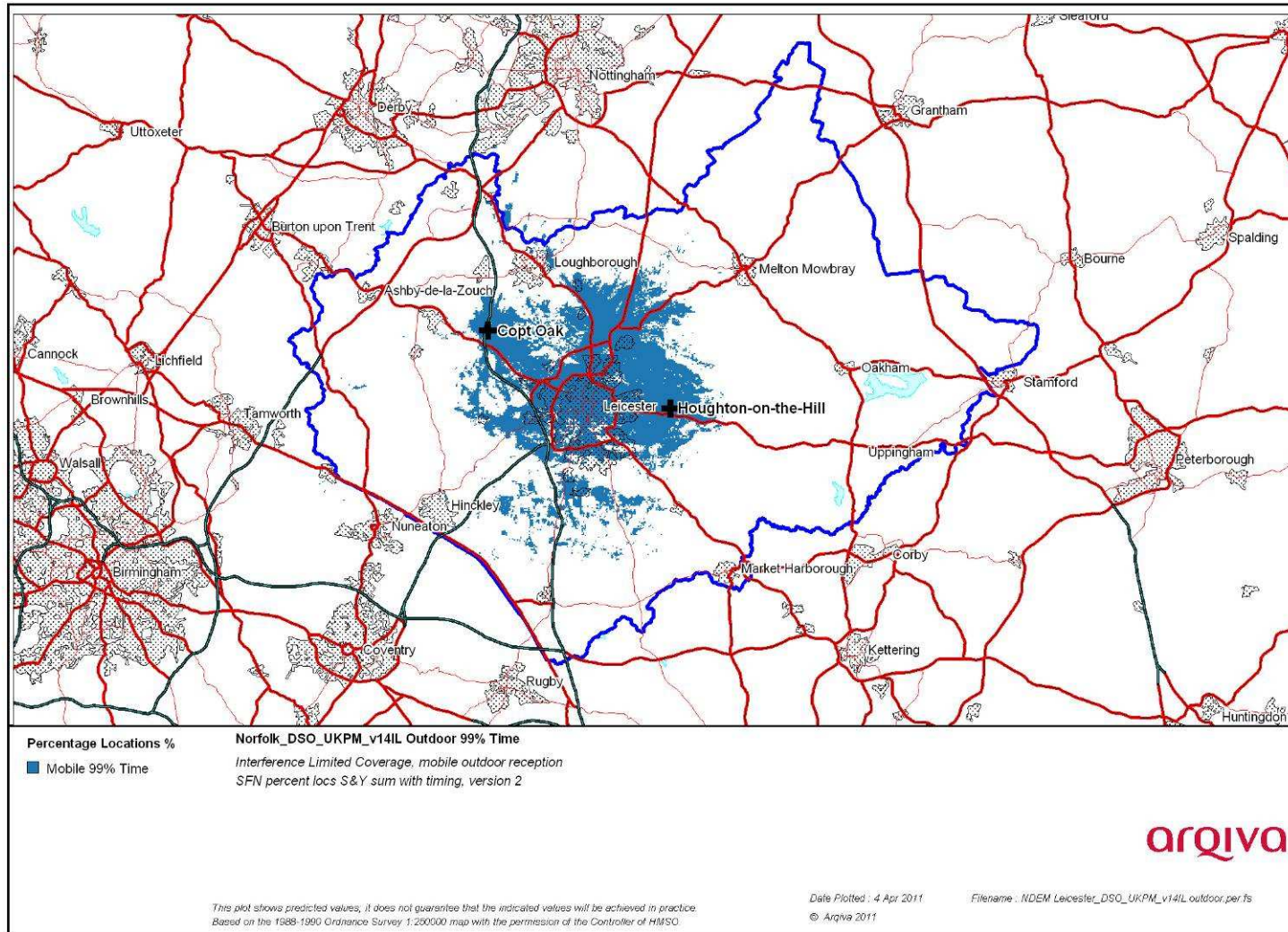


Figure 2-5 Modified Network 1 mobile 99% time



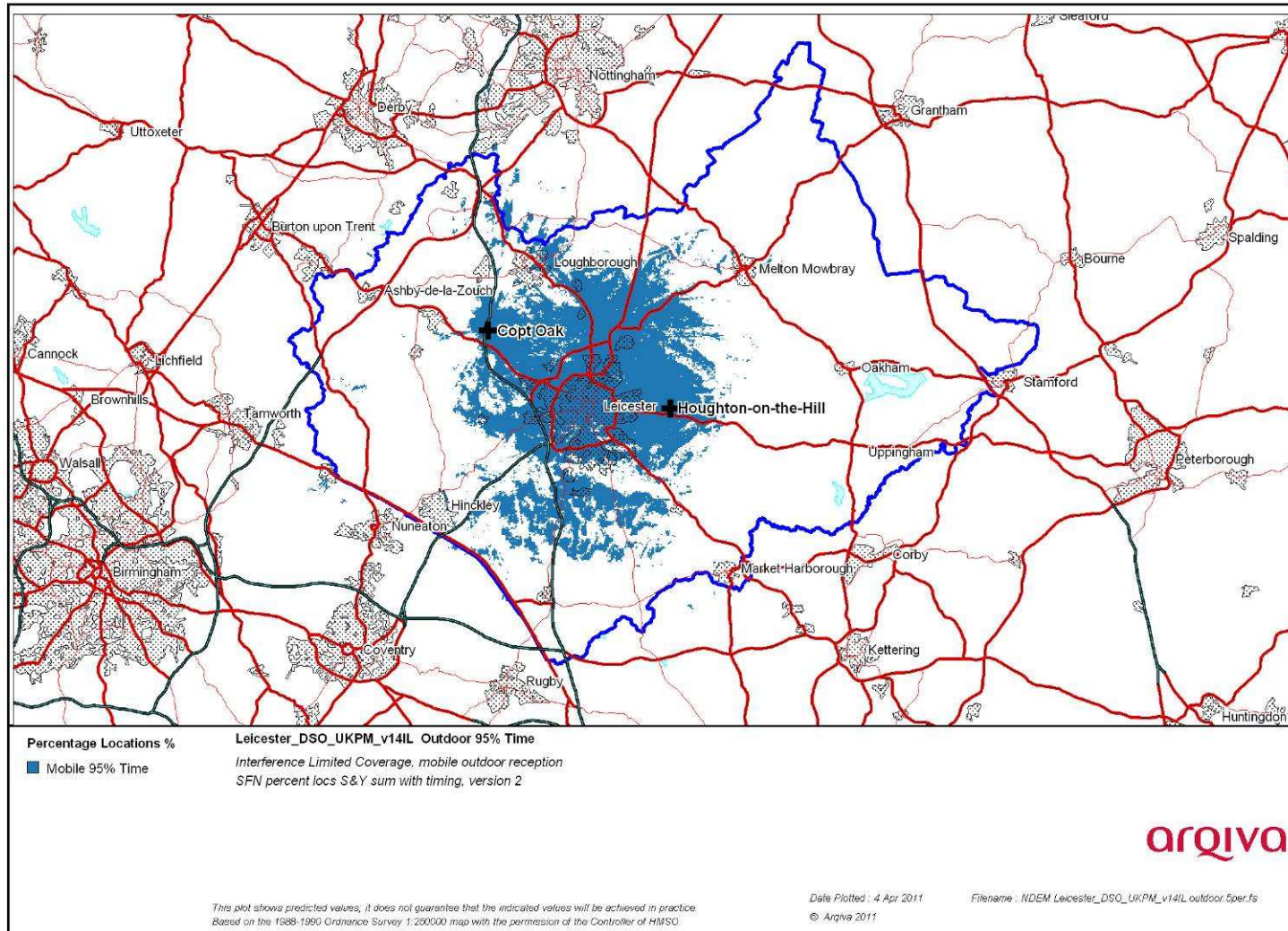


Figure 2-6 Modified Network 1 mobile 95% time

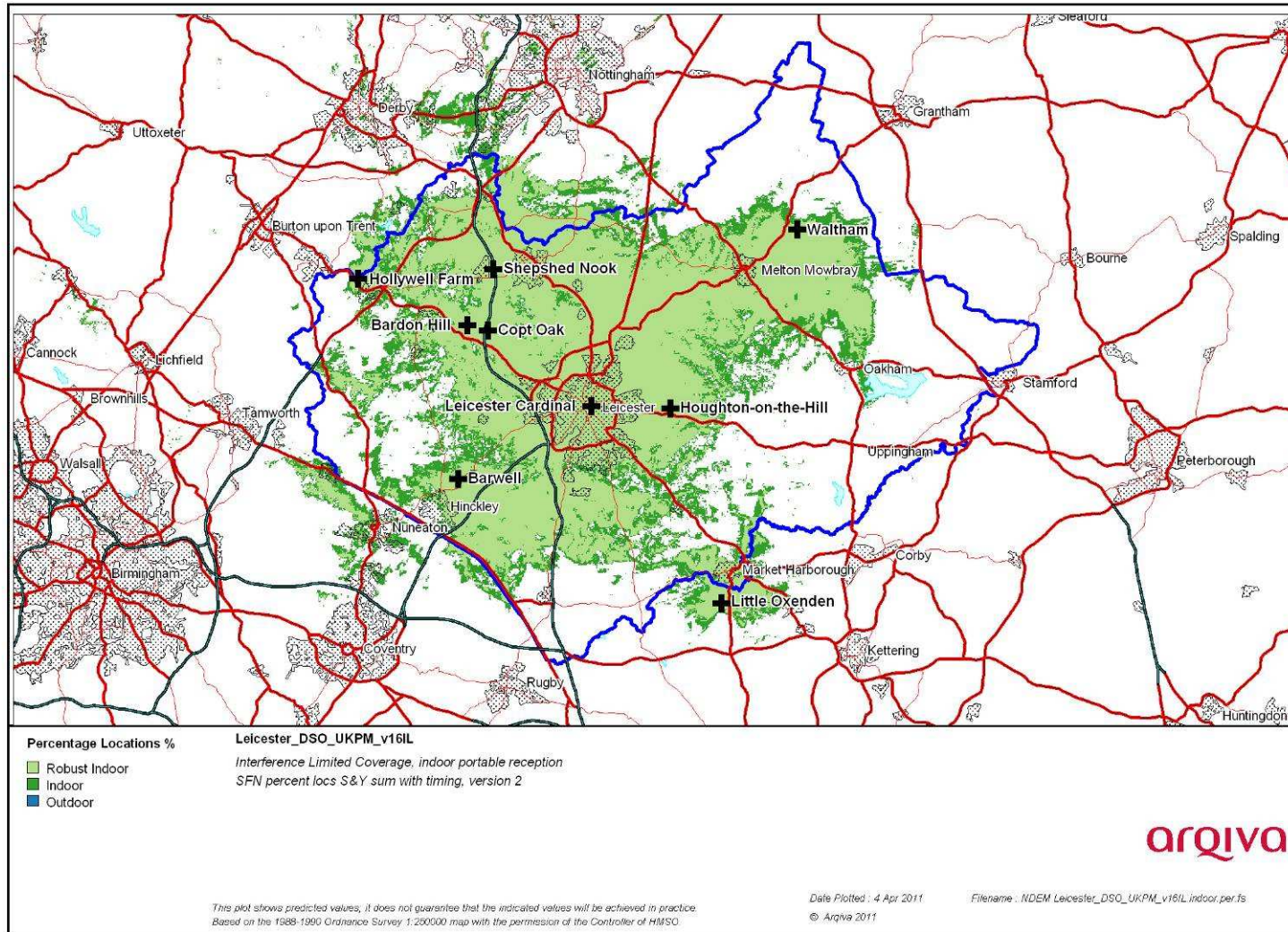


Figure 2-7 Modified Network 2



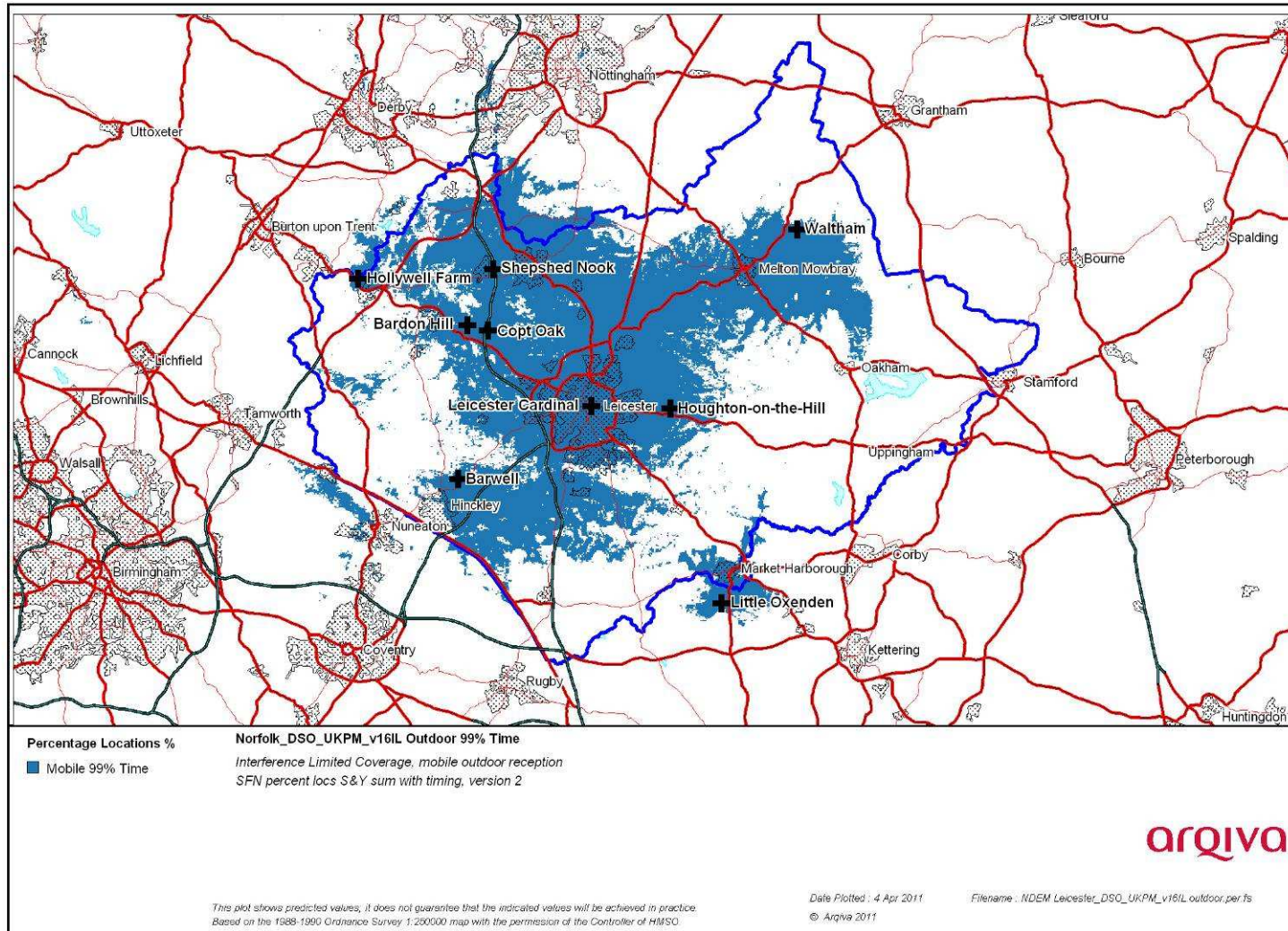


Figure 2-8 Modified Network 2 mobile 99% time

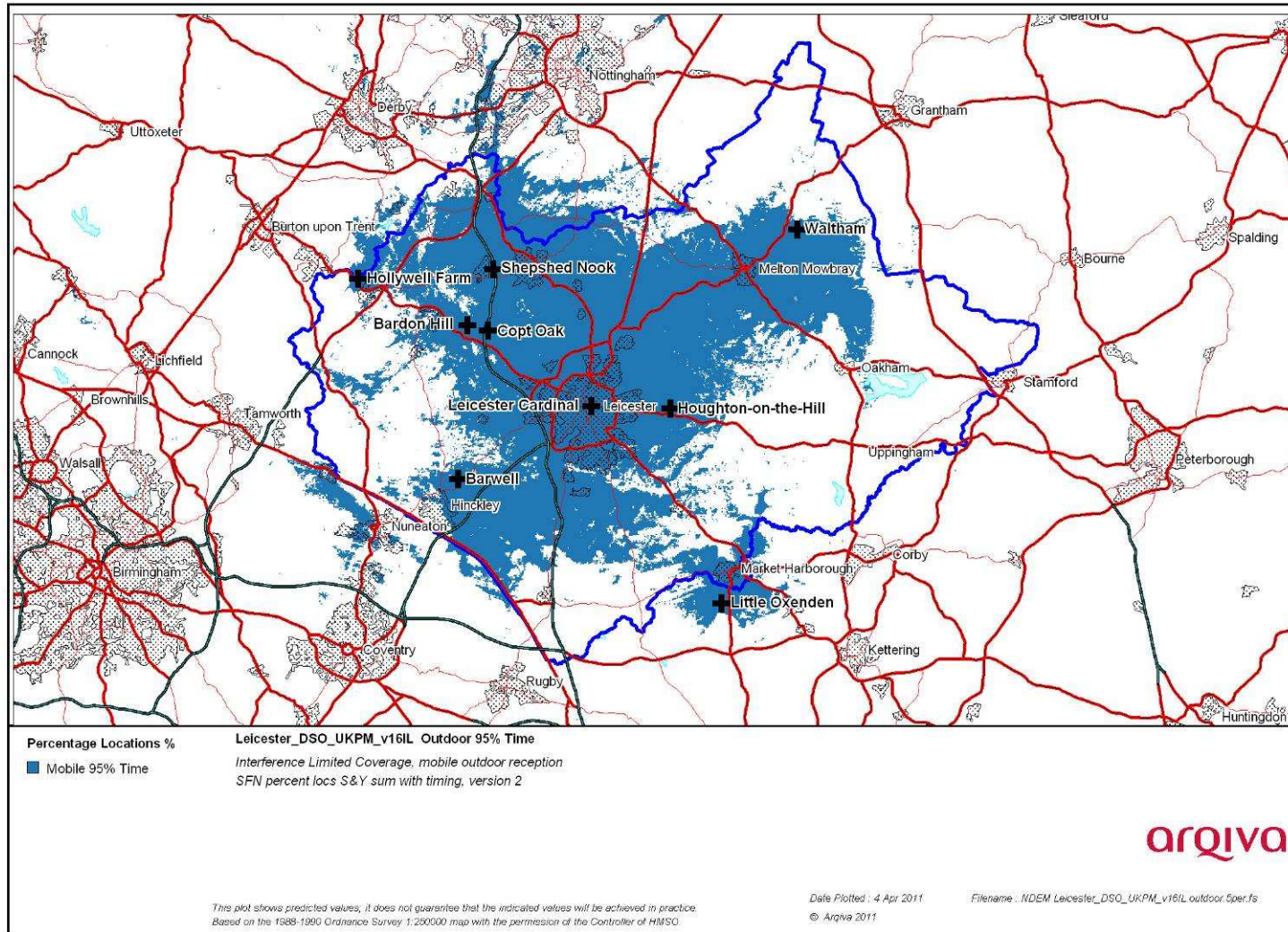


Figure 2-9 Modified Network 2 mobile 95% time



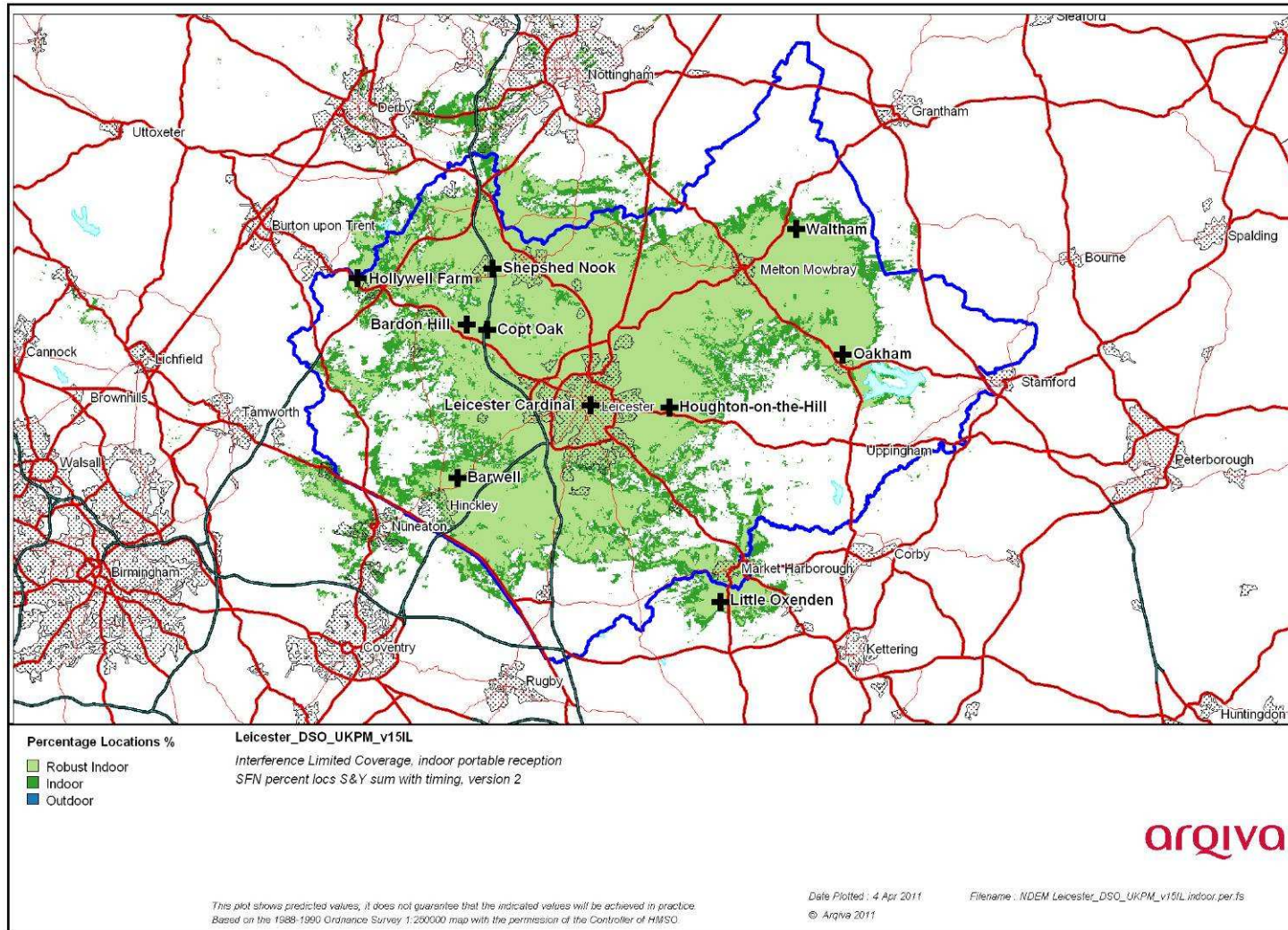


Figure 2-10 Modified Network 3

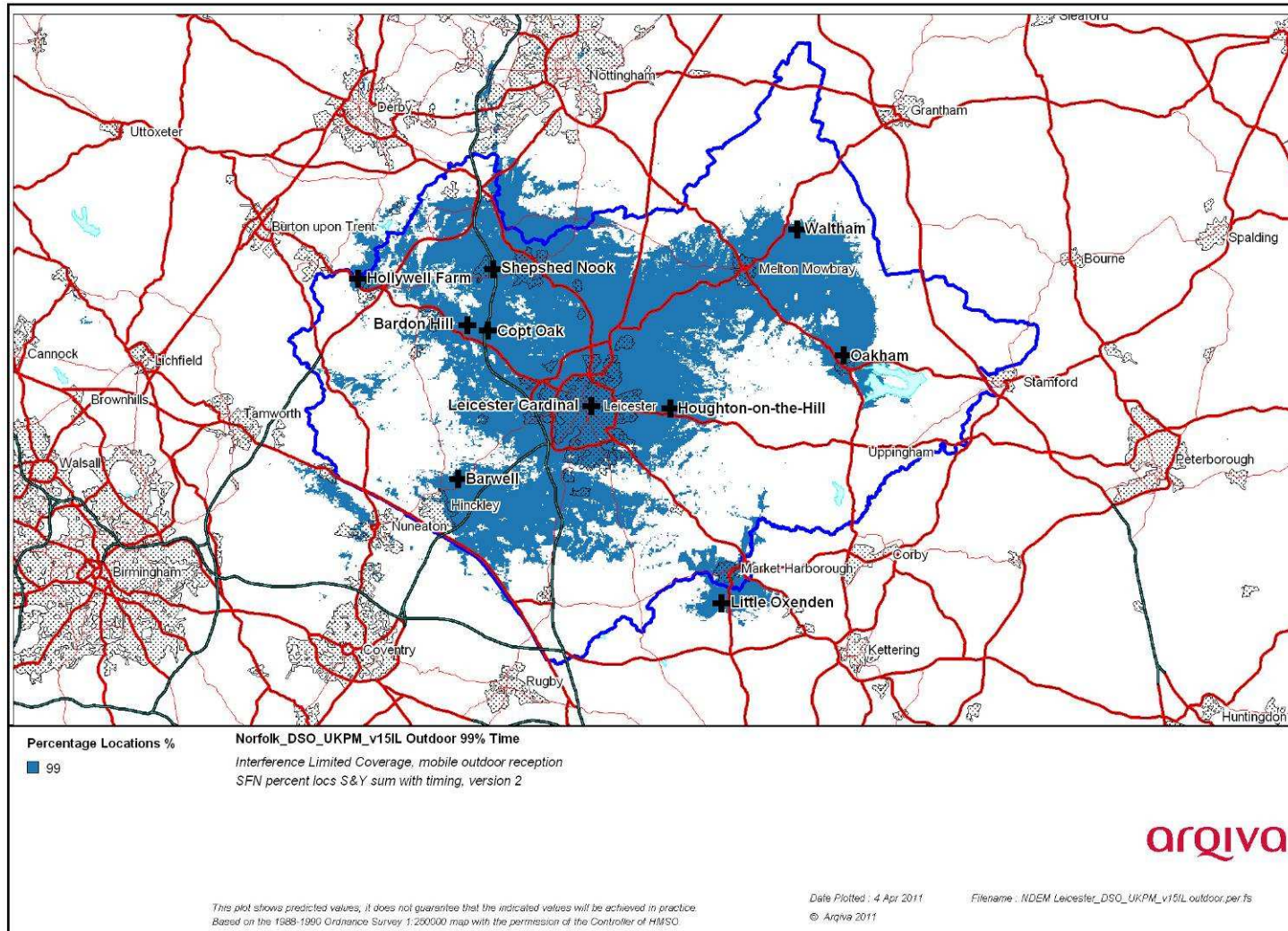


Figure 2-11 Modified Network 3 mobile 99% time



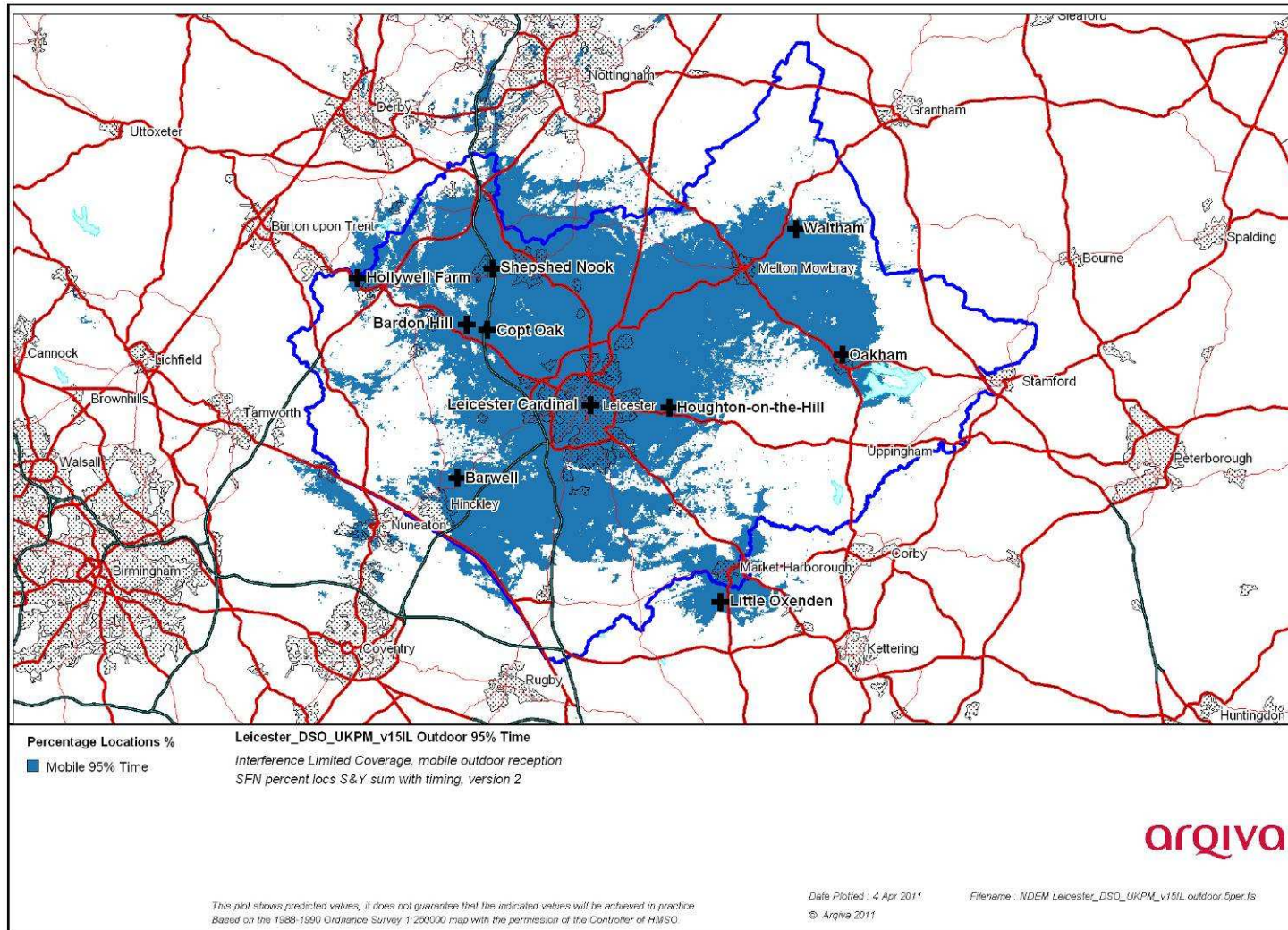


Figure 2-12 Modified Network 3 mobile 95% time

## 2.2 Population Coverage tables within Editorial Area

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

: Total 419,049

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	-	245,575	-	-	58.6%
Houghton-on-the-Hill	Current	103,478 (24.7%)	-	-	-	-
Copt Oak	Current	144,186 (34.4%)	223,604	9,775	2.3%	53.4%
Bardon Hill	New Site	44,448 (10.6%)	47,284	11.3%	5.3%	64.6%
Shepshed Nook	New Site	31,808 (7.6%)	22,979	5.5%	6.0%	70.1%
Waltham	Existing Site New antenna	21,636 (5.2%)	20,813	5.0%	5.3%	75.1%
Barwell	Shared Existing Infrastructure	14,738 (3.5%)	13,368	3.2%	3.3%	78.3%
Little Oxenden	New Site	10,201 (2.4%)	12,099	2.9%	3.0%	81.2%
Leicester Cardinal	New Site	174,373 (41.6%)	9,248	2.2%	2.6%	83.4%
Hollywell Farm	New Site	3,640 (0.9%)	5,030	1.2%	1.2%	84.6%
Oakham	New Site	6,492 (1.6%)	5,906	1.4%	1.4%	86.0%

Case 1	-	Yellow =	Current coverage
Case 2	-	Yellow + Purple	Modified Network 1
Case 3	-	Yellow + Purple + Orange=	Modified Network 2
Case 4	-	Yellow + Purple + Orange + Green=	Modified network 3

Table 2-2. Road coverage 99% location 99%T: Total roads 670 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 (2 tx)	Shared Existing Infrastructure	216	-	-	32.3%
Case 2	Current	158	-59	-8.8%	23.5%
Bardon Hill	New Site	214	57	8.5%	32.0%
Waltham	Existing Site New antenna	255	41	6.1%	38.1%
Shepshed Nook	New Site	296	40	6.0%	44.1%
Leicester Cardinal	New Site	312	17	2.5%	46.6%
Little Oxenden	New Site	323	11	1.6%	48.2%
Barwell	Shared Existing Infrastructure	343	20	3.0%	51.3%
Oakham	New Site	353	9	1.4%	52.6%
Hollywell Farm	New Site	364	11	1.7%	54.3%

Table 2-3. Road coverage 99% location 95%T: Total roads 670 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 (2 tx)	Shared Existing Infrastructure	272	-	-	40.6%
Case 2	Current	202	-70	-10.4%	30.2%
Bardon Hill	New Site	275	73	10.9%	41.1%
Waltham	Existing Site New antenna	301	26	3.8%	44.9%
Shepshed Nook	New Site	350	49	7.4%	52.3%
Leicester Cardinal	New Site	365	15	2.2%	54.4%
Little Oxenden	New Site	379	15	2.2%	56.6%
Barwell	Shared Existing Infrastructure	389	10	1.4%	58.0%
Oakham	New Site	400	11	1.7%	59.7%
Hollywell Farm	New Site	412	12	1.9%	61.6%

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 &amp; 99% Time Interference Protection</i>	Mobile Coverage km & percentage coverage <i>99% Locations &amp; 95% Time Interference Protection</i>
1	245,575 (58.6%)	216 (32.3%)	272 (40.6%)
2	255,272 (60.9%)	158 (23.5%)	202 (30.2%)
3	354,425 (84.6%)	353 (52.6%)	400 (59.7%)
4	360,331 (86.0%)	364 (54.3%)	412 (61.6%)

Case 1	-	Yellow =	Current coverage
Case 2	-	Yellow + Purple	Modified Network 1
Case 3	-	Yellow + Purple + Orange=	Modified Network 2
Case 4	-	Yellow + Purple + Orange + Green=	Modified network 3