
Digital Switchover (DSO) Programme

Radio DSO Block 11B Wolverhampton

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1 Wolverhampton DSO narrative

The current allocation on 11B for Wolverhampton has been implemented with two transmitters. It is proposed to extend the area north and west to encompass that part of Shropshire not already within the editorial area.

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

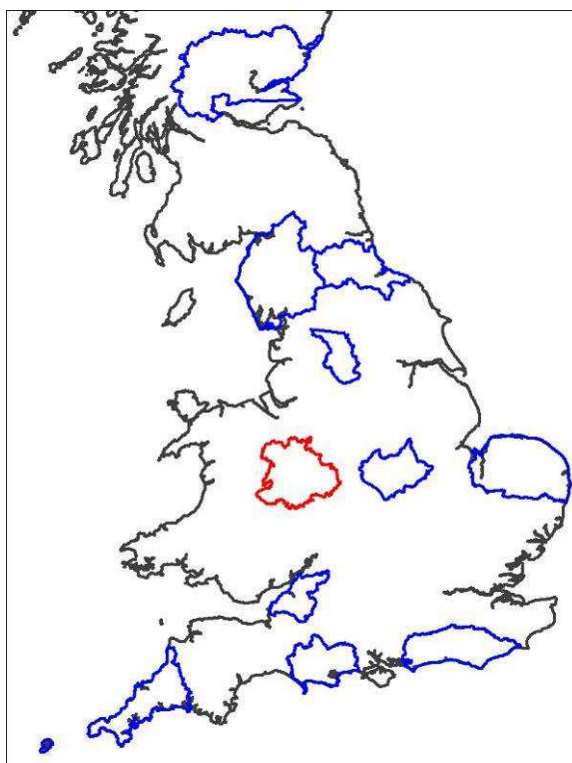


Figure 1.1: Proposed Block 11B allocations

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 |
|--------------|-------|-------------------------|-------------------------|--------------|
| Turners Hill | 1kW | 250 | 40 | Cardioids |
| The Wrekin | 0.5kW | 388 | 43 | Cardioids |

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

For case 2: Modified Network 1

There are other DAB antennas at both The Wrekin and Turners Hill but none are suitable for this service due to coverage and outgoing interference issues. It is proposed to increase the ERPs of the Wrekin to 2kW and Turners Hill to 4kW. The coverage of the Modified Network 1 is shown in figure 2.2.

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 Beacon Radio). To achieve this nine additional sites are required. The coverage of the Modified Network 2 is shown in figure 2.3. It will be noted that the site at Pye Green is outside the editorial area as this appears to be the best site to cover Cannock and Penkrige. This area may already be covered by the adjacent Stoke 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). One additional site was added to achieve this.

There are still some deficiencies remaining around Wolverhampton and the south-east corner of the editorial area. As can be seen from figure 1.2 below there is a significant overlap with the Birmingham multiplex. Current planning shows these deficiencies to be served by the Birmingham multiplex.

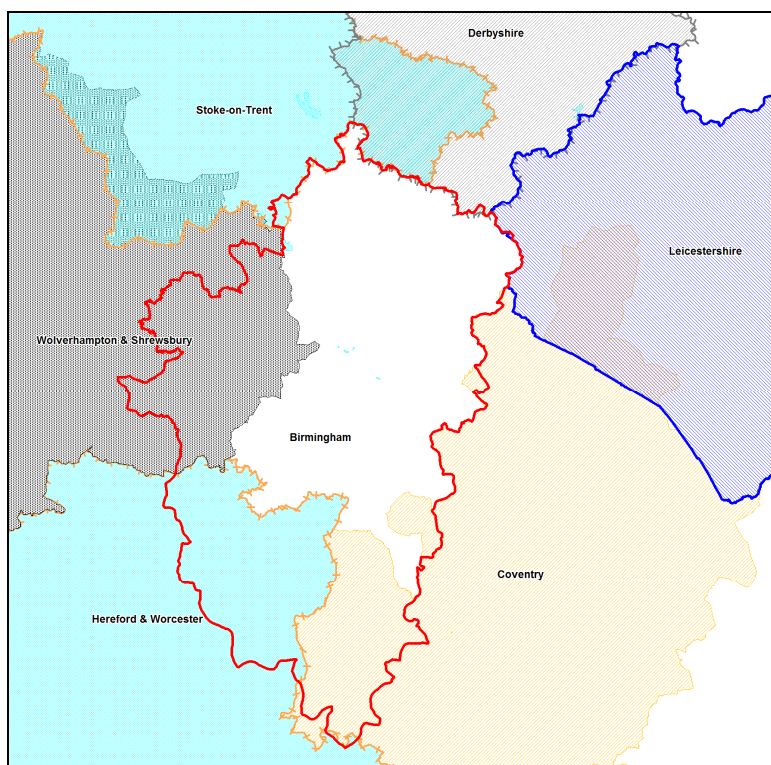


Figure 1.2: Wolverhampton – Overlap with Birmingham

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. Bristol & Bath, Bradford & Huddersfield and Cumbria are also affected. There is very slight impact on Bournemouth and Sussex.

Wolverhampton is affected by co-block interference from the Leicester, Cumbria, Bristol & Bath and Bradford & Huddersfield multiplexes.

Due to the size of the area there are likely to be timing issues across the Wolverhampton network. It is proposed to review the timing of this multiplex at later date (optimising the timing should increase the overall coverage, by how much is unknown at this stage of planning).

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 7.6% 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 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 |

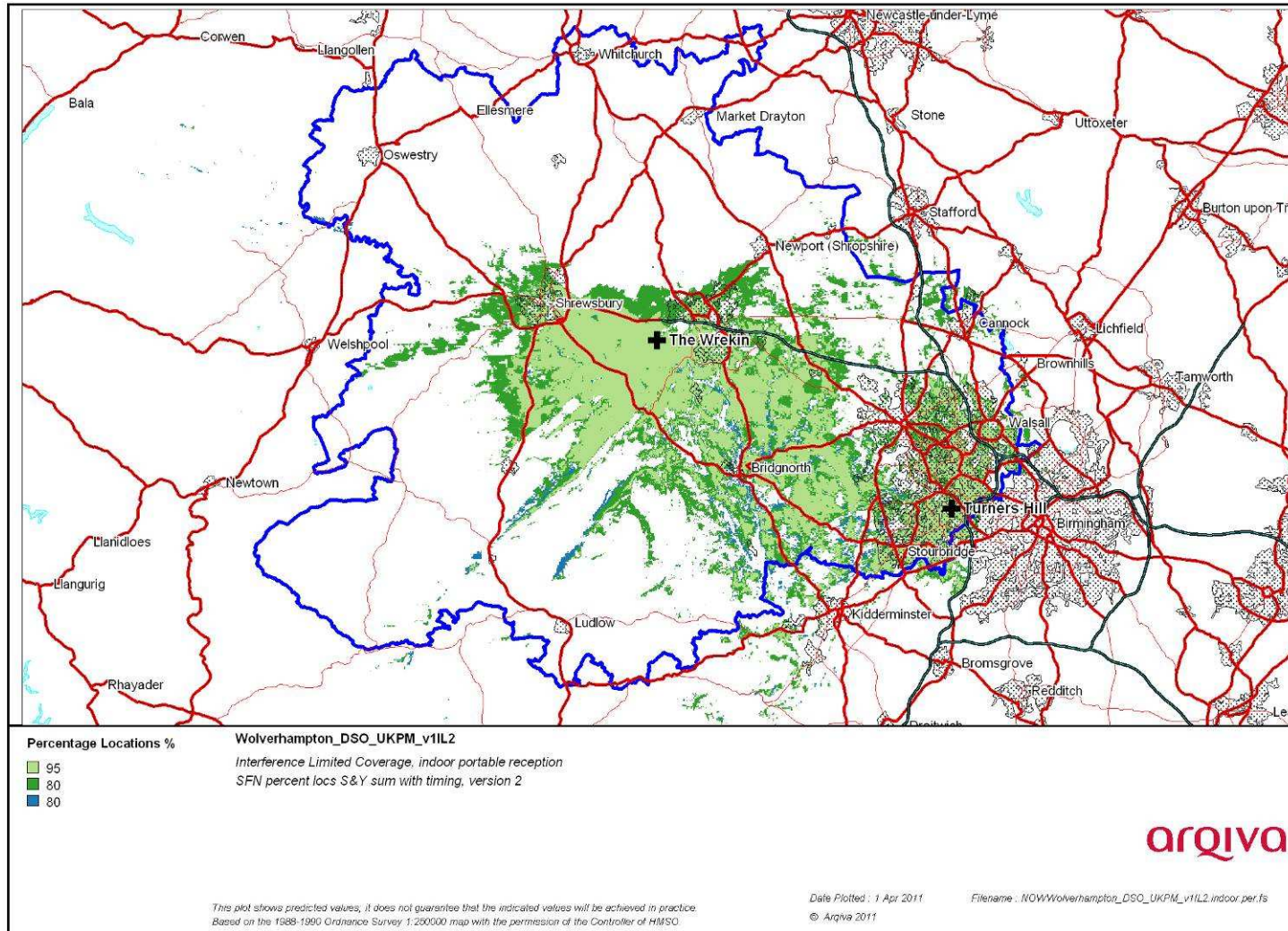


Figure 2-1. Current Situation

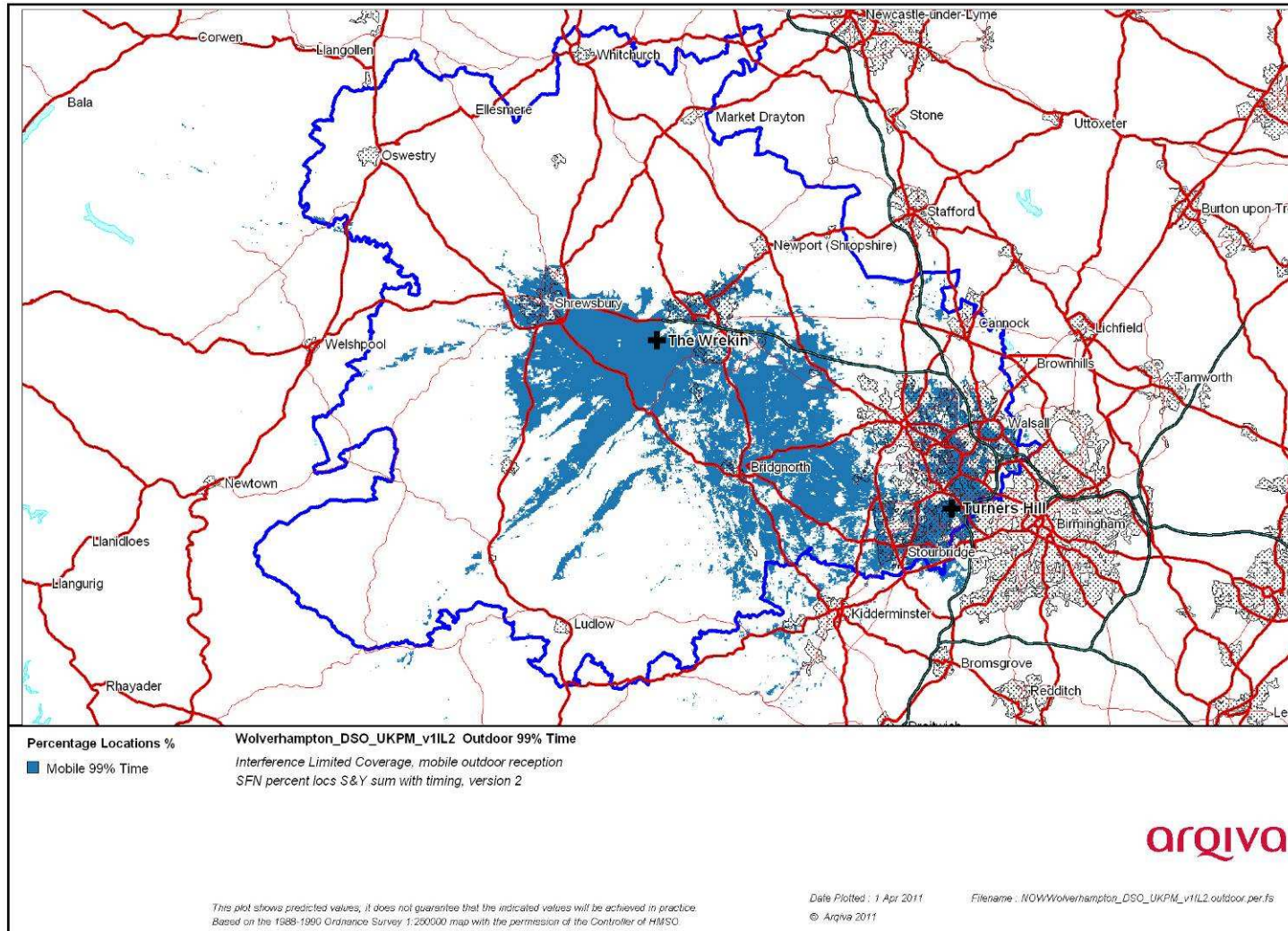


Figure 2-3 Current Situation mobile 99% time

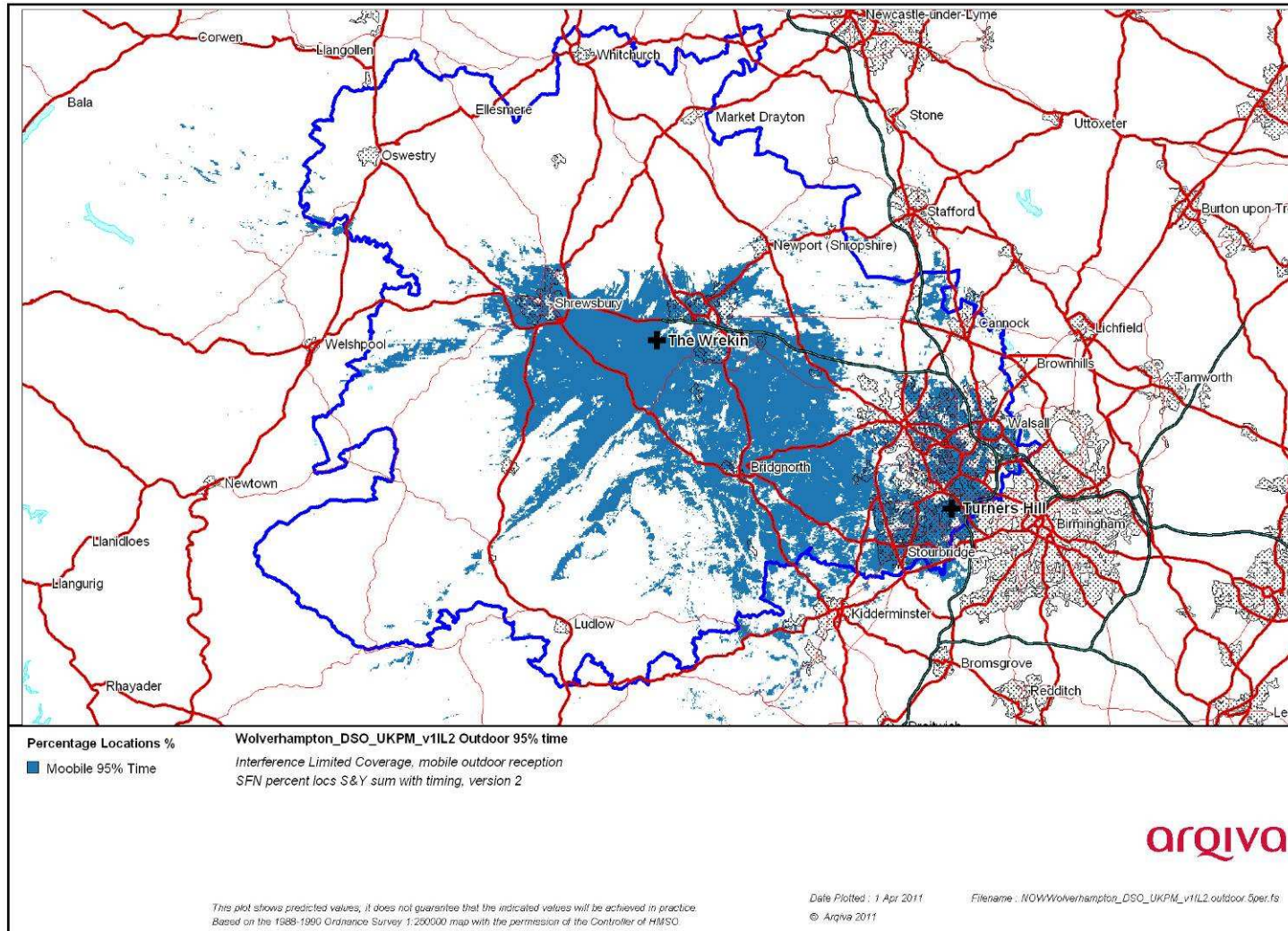


Figure 2-3 Current Situation mobile 95% time

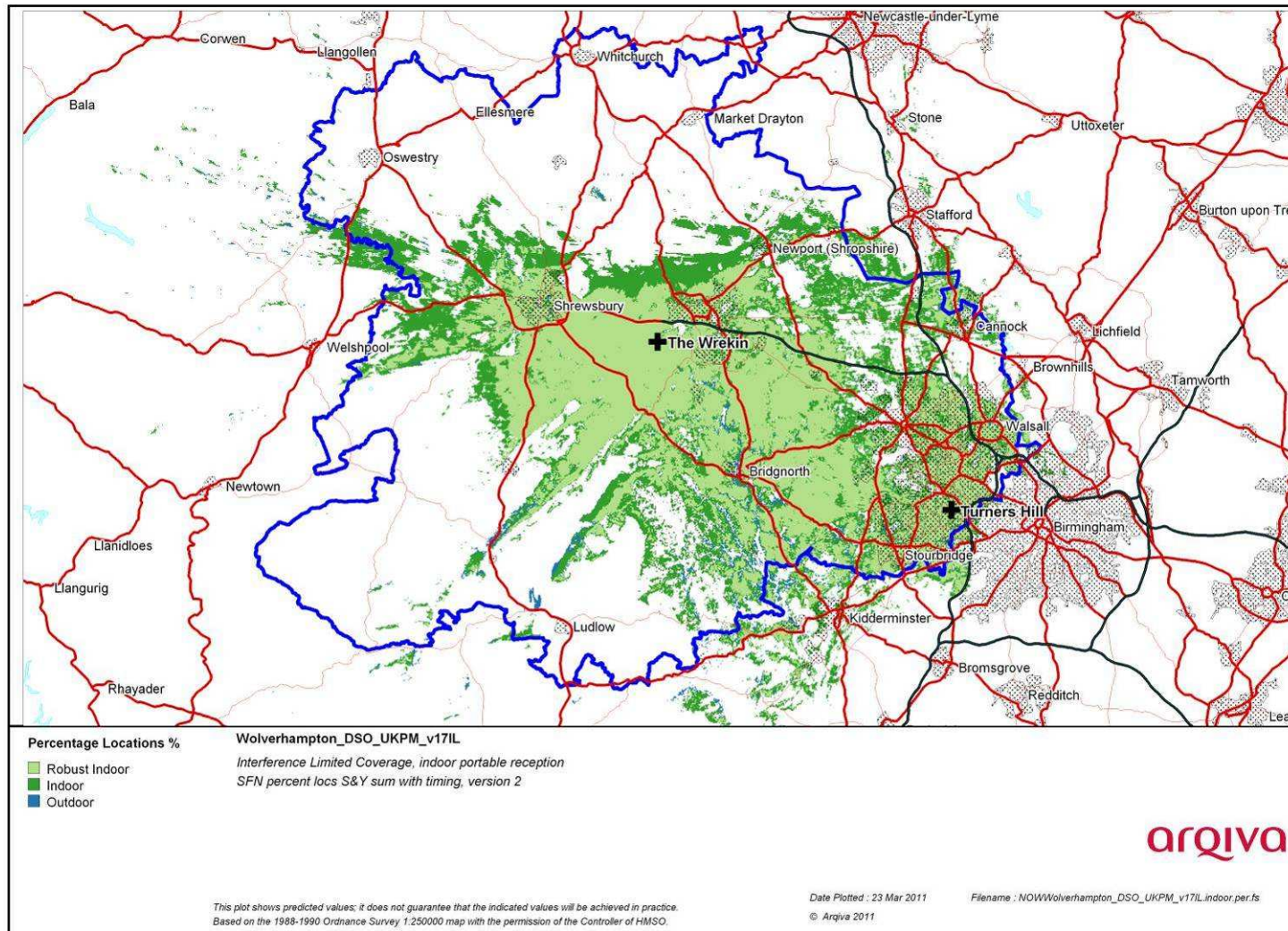


Figure 2-4 Modified Network 1

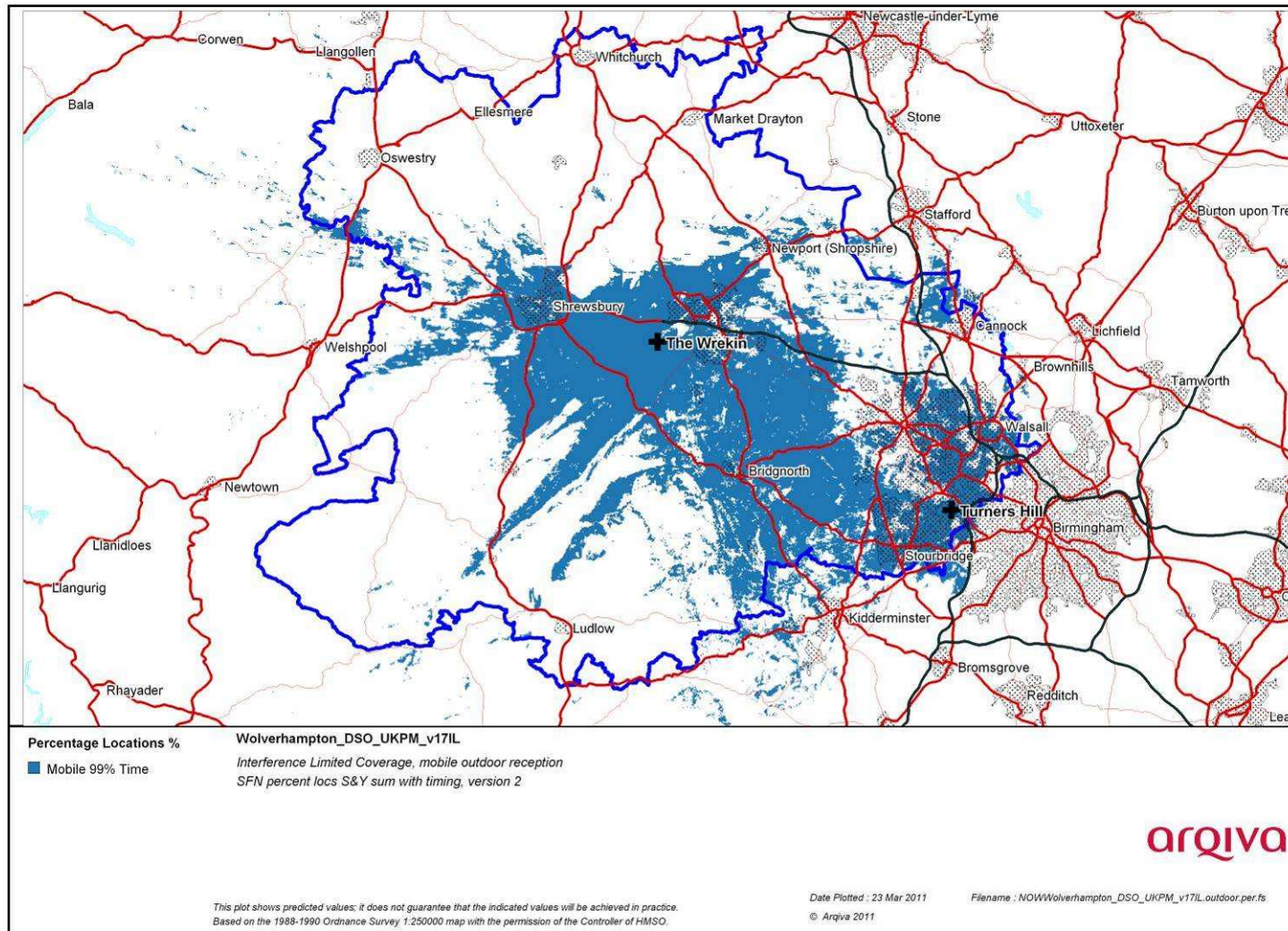


Figure 2-5 Modified Network 1 mobile 99% time

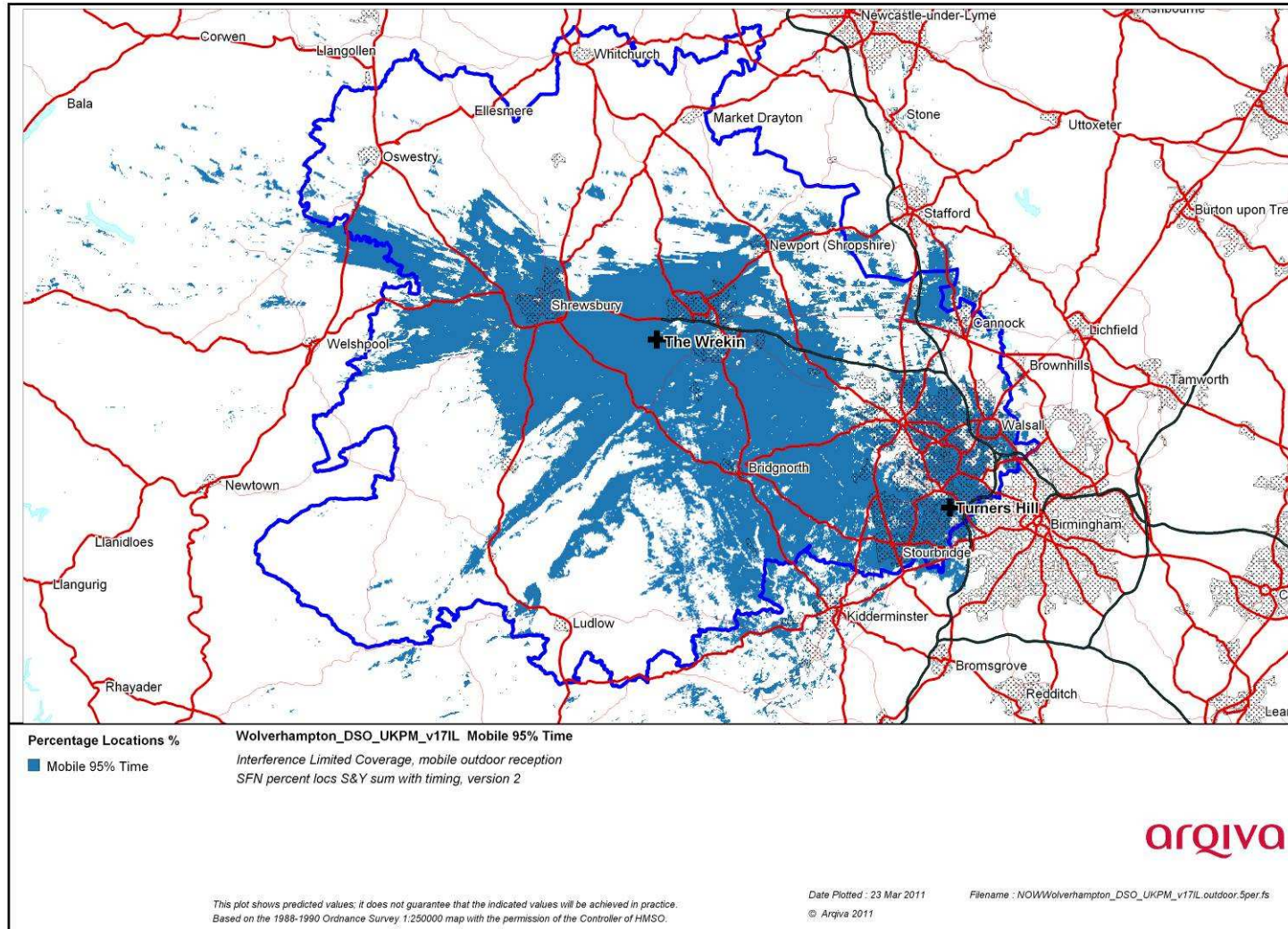


Figure 2-6 Modified Network 1 mobile 95% time

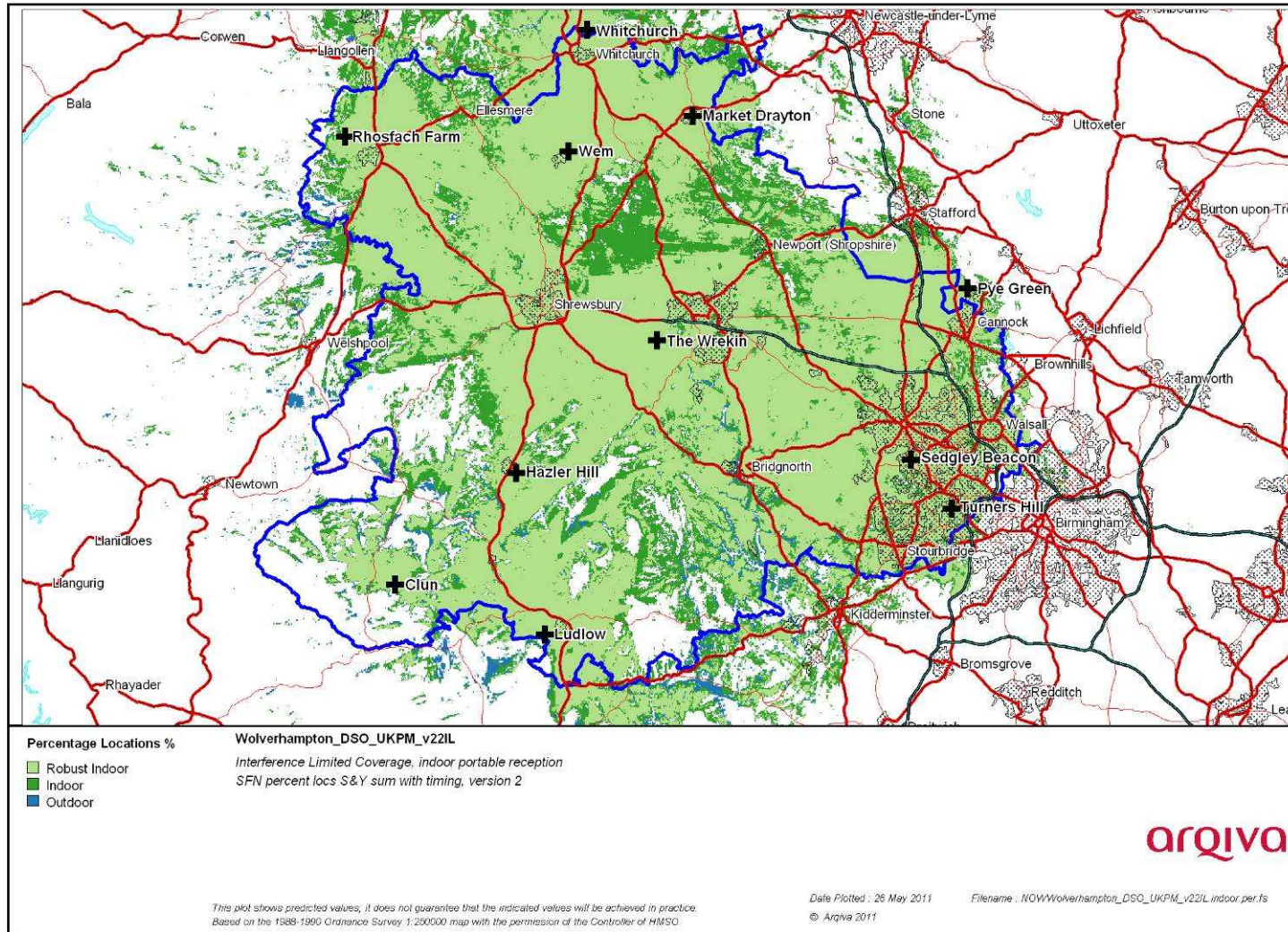


Figure 2-7 Case 3: Modified Network 2

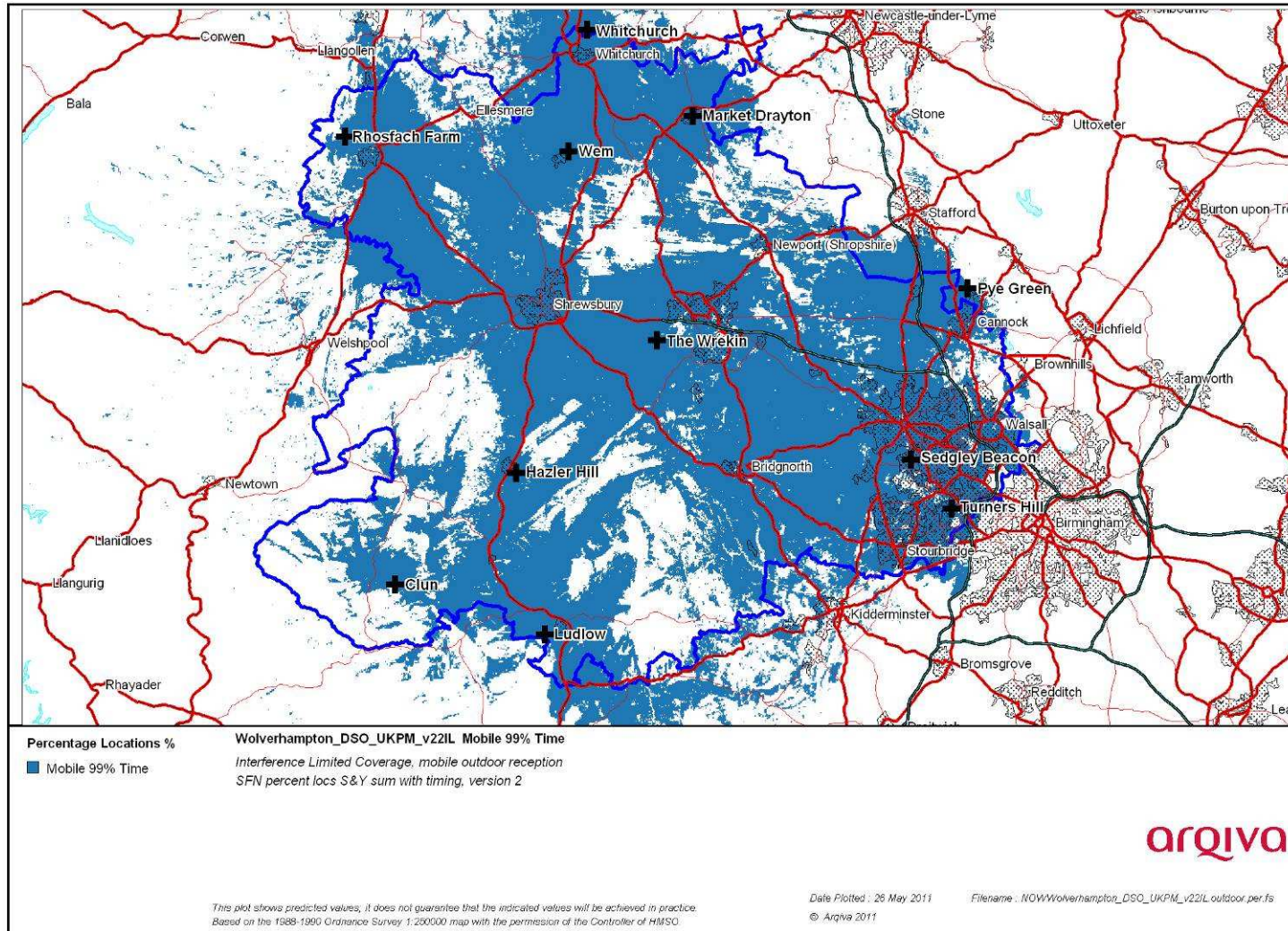


Figure 2-8 Case 3: Modified Network 2 mobile 99% time

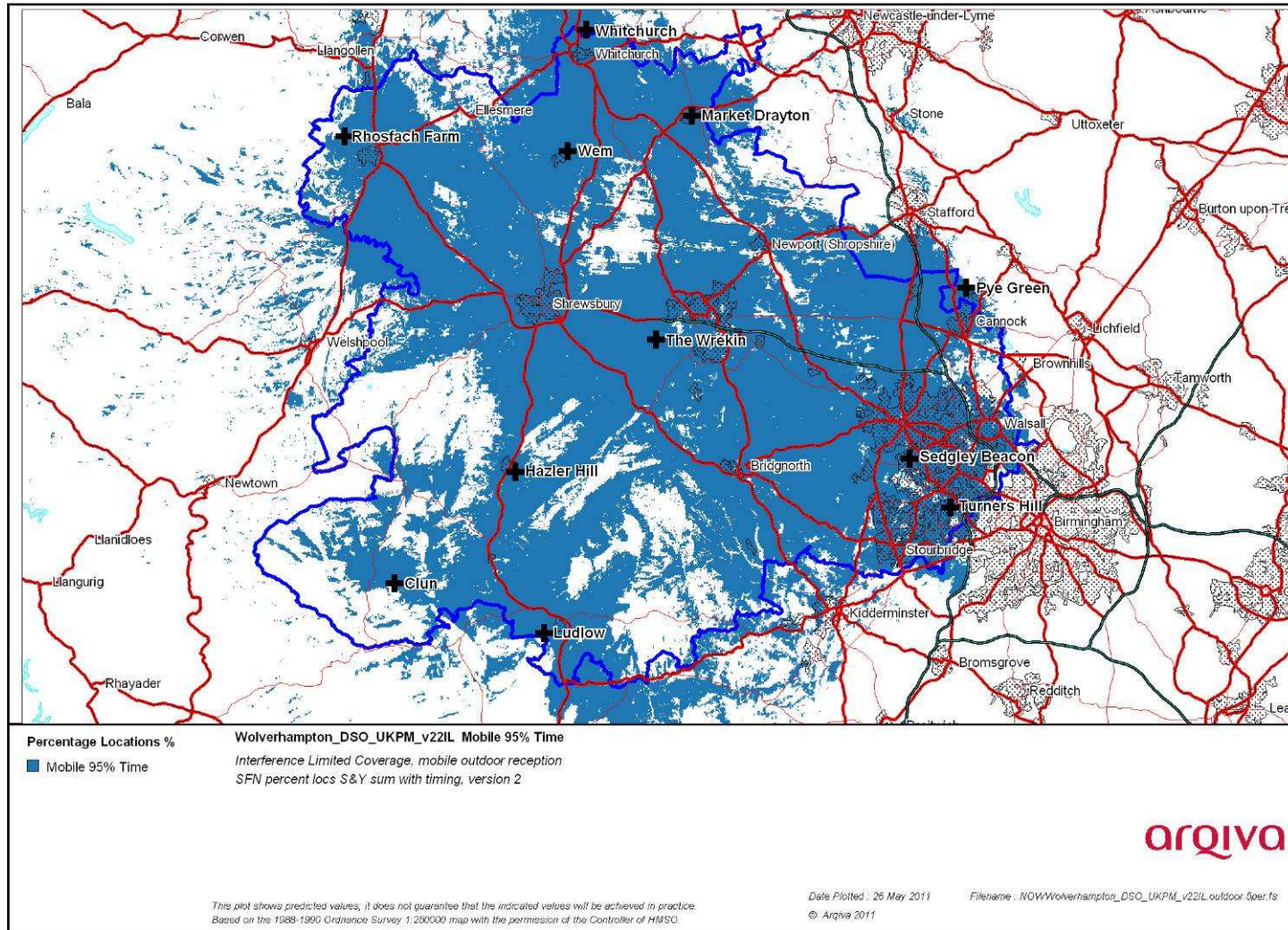


Figure 2-9 Case 3: Modified Network 2 mobile 95% time

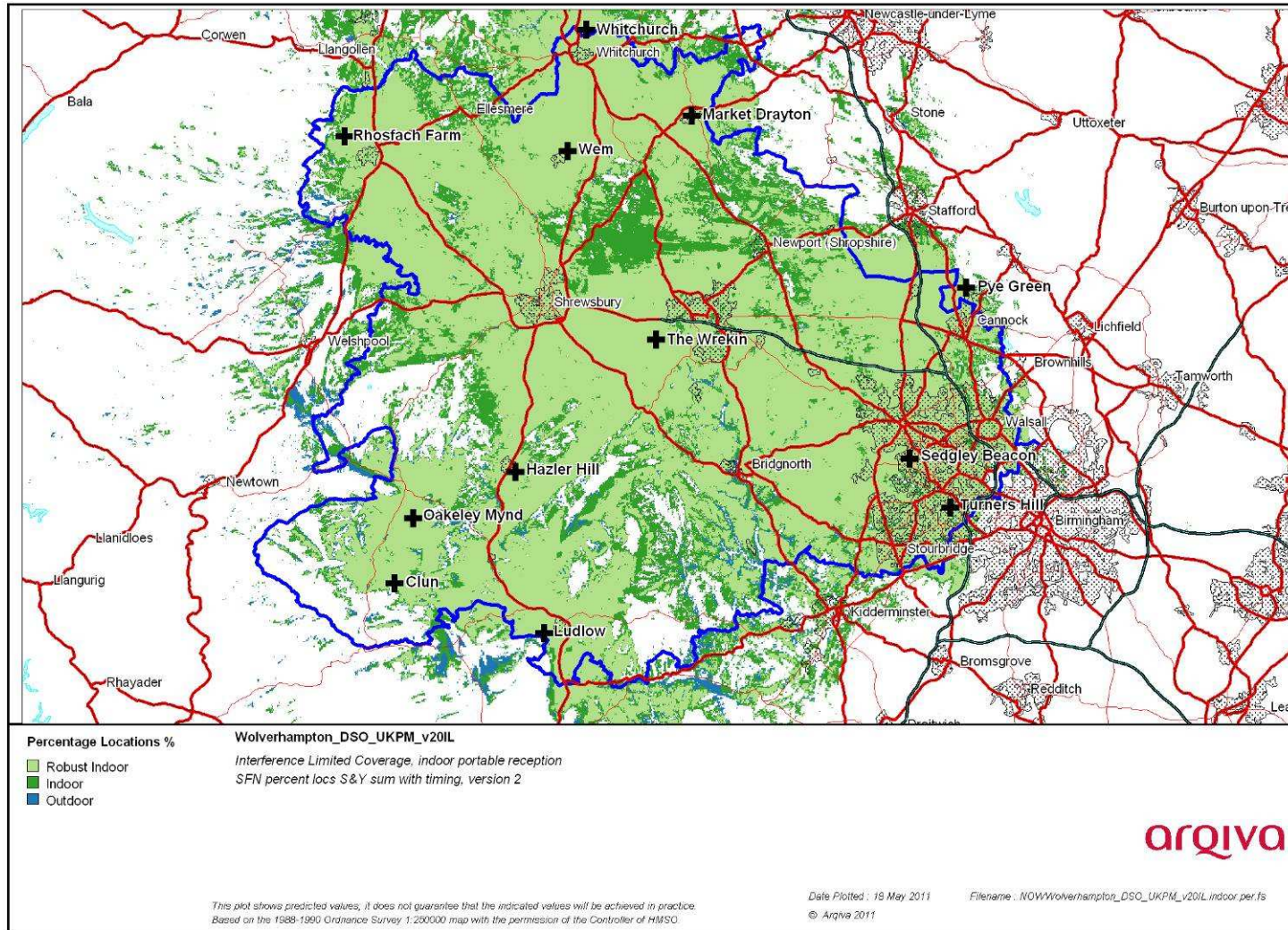


Figure 2-10 Modified Network 3

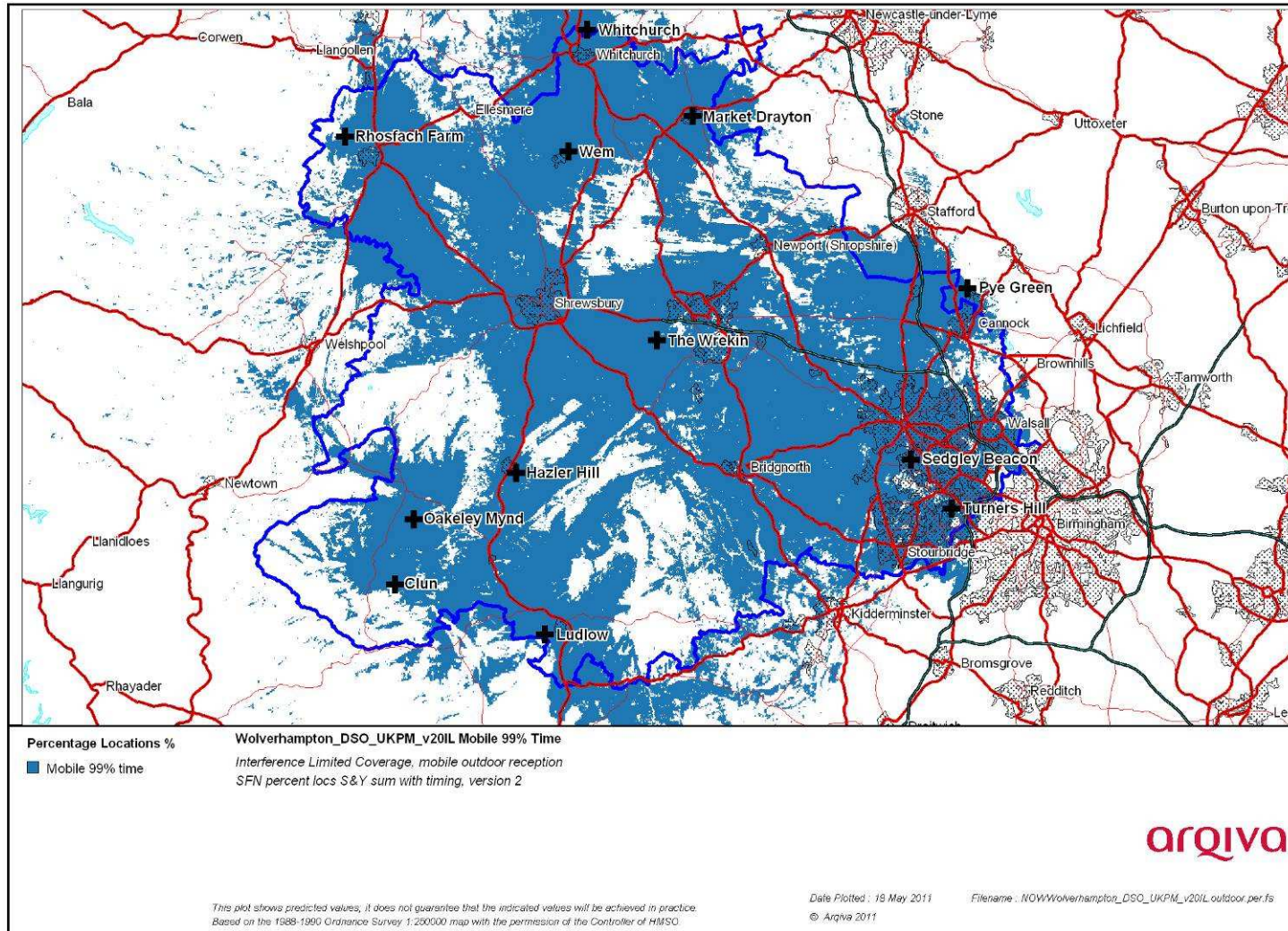


Figure 2-11 Modified Network 3 mobile 99% time

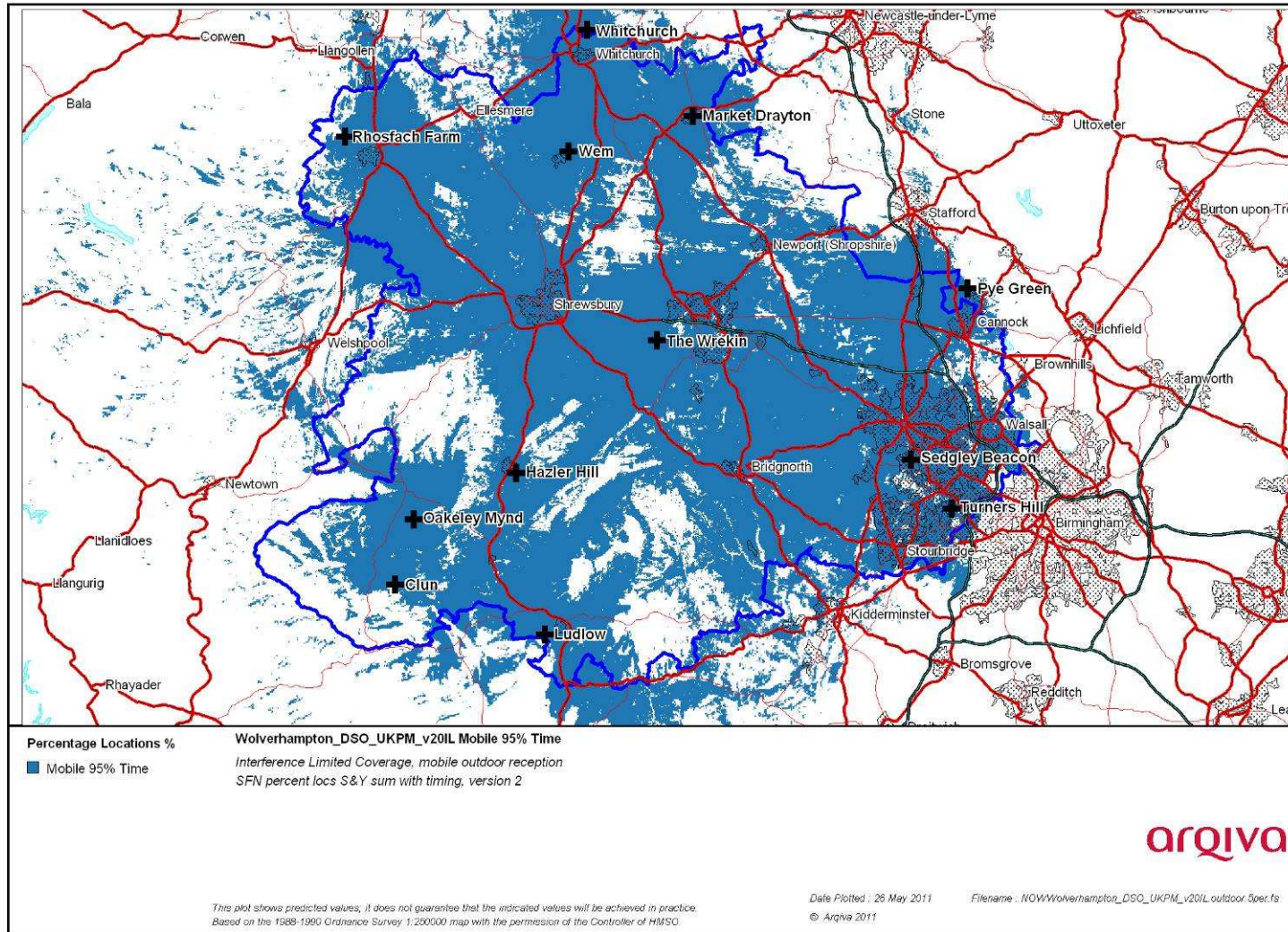


Figure 2-12 Modified Network 3 mobile 95% time

2.2 Population Coverage tables within Editorial Area

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

: Total 694,976

| 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 | - | 368,832 | - | - | 53.1% |
| Turners Hill | Upgraded Infrastructure | 305,507 (44.0%) | - | - | - | - |
| The Wrekin | Upgraded Infrastructure | 146,035 (21.0%) | 480,240 | 111,408 | 16.0% | 69.1% |
| Sedgley Beacon | New Site | 252,159 (36.3%) | 564,650 | 84,410 | 12.2% | 81.3% |
| Rhosfach Farm | New Site | 19,023 (2.7%) | 587,965 | 23,315 | 3.4% | 84.6% |
| Pye Green | Existing Site New antenna | 35,891 (5.2%) | 610,628 | 22,663 | 3.3% | 87.9% |
| Whitchurch | New Site | 9,046 (1.3%) | 628,136 | 17,508 | 2.5% | 90.4% |
| Ludlow | Existing Site New antenna | 7,669 (1.1%) | 636,510 | 8,374 | 1.2% | 91.6% |
| Hazler Hill | Existing Site New antenna | 11,155 (1.6%) | 643,067 | 6,557 | 0.9% | 92.5% |
| Market Drayton | New Site | 6,922 (1.0%) | 647,520 | 4,453 | 0.6% | 93.2% |
| Clun | Existing Site New antenna | 3,571 (0.5%) | 651,071 | 3,551 | 0.5% | 93.7% |
| Wem | New Site | 5,149 (0.7%) | 652,556 | 1,485 | 0.2% | 93.9% |
| Oakeley Mynd | Existing Site New antenna | 1,640 (0.2%) | 653,225 | 669 | 0.1% | 94.0% |

| | | | |
|--------|---|---|--------------------|
| 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 + Light Green= | Modified network 3 |

Table 2-2. Road coverage 99% location 99%T: Total roads 1,116 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 | 333 | - | - | 29.9% |
| Case 2 | Upgraded Infrastructure | 480 | 147 | 13.1% | 43.0% |
| Sedgley Beacon | New Site | 597 | 117 | 10.5% | 53.5% |
| Rhosfach Farm | New Site | 651 | 54 | 4.8% | 58.4% |
| Pye Green | Existing Site New antenna | 710 | 59 | 5.3% | 63.6% |
| Whitchurch | New Site | 757 | 47 | 4.2% | 67.9% |
| Ludlow | Existing Site New antenna | 791 | 34 | 3.0% | 70.9% |
| Hazler Hill | Existing Site New antenna | 820 | 29 | 2.6% | 73.4% |
| Market Drayton | New Site | 857 | 37 | 3.3% | 76.8% |
| Clun | Existing Site New antenna | 876 | 19 | 1.7% | 78.5% |
| Wem | New Site | 893 | 17 | 1.5% | 80.0% |
| Oakeley Mynd | Existing Site New antenna | 908 | 15 | 1.3% | 81.3% |

| | | | |
|--------|---|---|--------------------|
| 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 + Light Green= | Modified network 3 |

Table 2-3. Road coverage 99% location 95%T: Total roads 1,116 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 | 424 | - | - | 38.0% |
| Case 2 | Upgraded Infrastructure | 513 | 89 | 8.0% | 46.0% |
| Sedgley Beacon | New Site | 526 | 13 | 10.2% | 56.1% |
| Rhosfach Farm | New Site | 682 | 156 | 5.0% | 61.1% |
| Pye Green | Existing Site New antenna | 739 | 56 | 5.1% | 66.2% |
| Whitchurch | New Site | 791 | 53 | 4.7% | 70.9% |
| Ludlow | Existing Site New antenna | 825 | 34 | 2.0% | 72.9% |
| Hazler Hill | Existing Site New antenna | 852 | 27 | 3.5% | 76.3% |
| Market Drayton | New Site | 890 | 38 | 3.4% | 79.7% |
| Clun | Existing Site New antenna | 912 | 22 | 2.0% | 81.7% |
| Wem | New Site | 927 | 16 | 0.4% | 82.1% |
| Oakeley Mynd | Existing Site New antenna | 940 | 12 | 2.1% | 84.2% |

| | | | |
|--------|---|---|--------------------|
| 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 + Light Green= | Modified network 3 |

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 | 368,832 (53.1%) | 333 (29.9%) | 424 (38.0%) |
| 2 | 482,240 (69.1%) | 480 (43.0%) | 513 (46.0%) |
| 3 | 652,556 (93.9%) | 893 (80.0%) | 976 (82.1%) |
| 4 | 653,225 (94.0%) | 908 (81.3%) | 940 (84.2%) |

| | | | |
|--------|---|---|--------------------|
| 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 + Light Green= | Modified network 3 |