Digital Switchover (DSO) Programme

Radio DSO Block 10C Surrey

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1.0	16/02/11	Draft version for review.
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Table of Contents

1 Surrey DSO Narrative

Block 10C for Surrey is a new allocation, so there are no previously planned services for this area.

The proposed Block 10C allocations including Liverpool, North Yorkshire, North Devon, Gloucester, Northampton and Surrey are shown Fig 1.1 This also gives an idea of the terrain in the Surrey multiplex editorial area in relation to the other co-block allocations.

There is a substantial editorial area overlap with the adjacent London future Block 10B allocation. This overlap is shown Figure 1.2 The Pink area represents the London (10B) Editorial Area and accounts for over half of the Surrey (10C) land area. The coverage indicated in Blue is the Modified Network 3 Outdoor 1% time interference limited coverage – which is shown, in context, in *Section* 2 and is included here to also give an idea of the overlap from Surrey (10C) into London (10B).

In addition there are four abutting allocations where overspill is likely :-

Reading & Basingstoke (12D) to north-west

South Hants (11C) to south-west

Sussex (11B) to south

Kent (11C) to south-east

FM Radio coverage is provided by BBC Surrey (from Guildford & Reigate transmitters) and The Eagle (from Reigate transmitter)

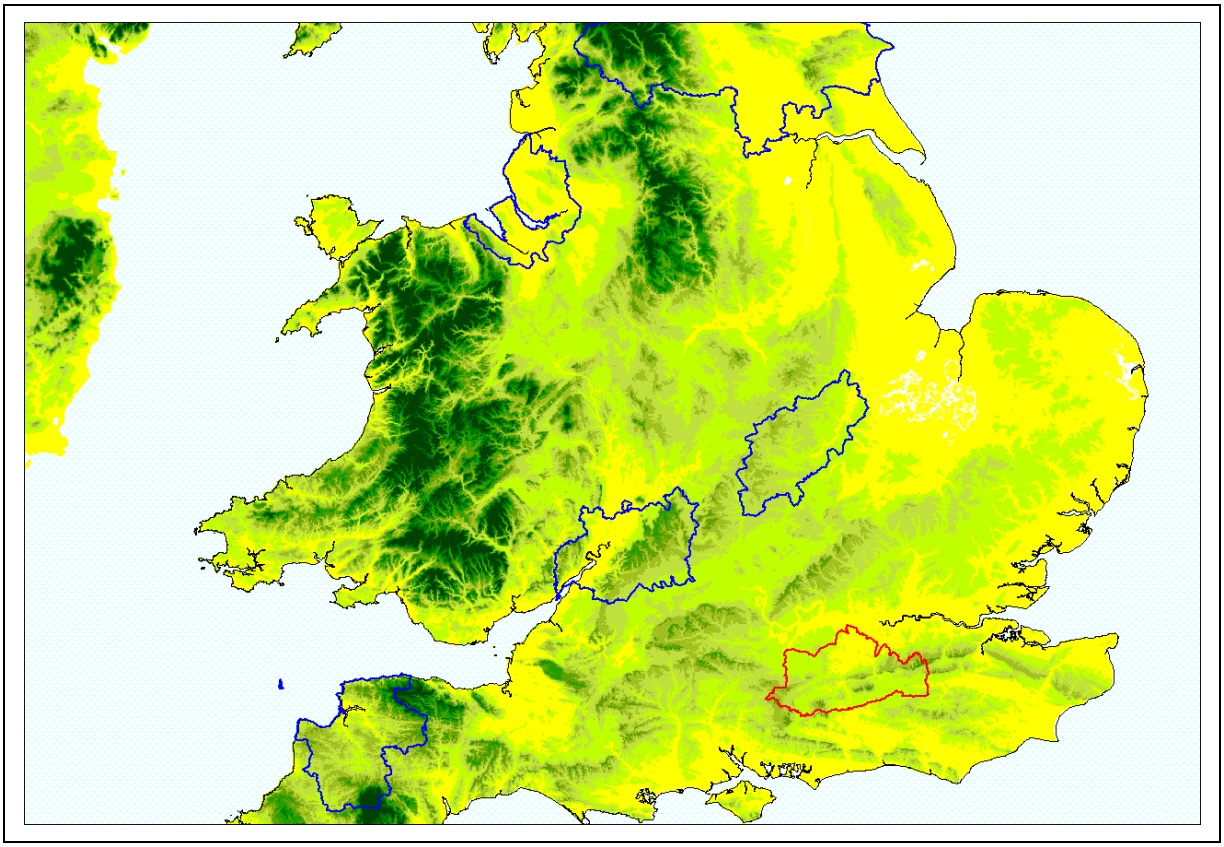


Figure 1.1: Proposed Block 10C allocations

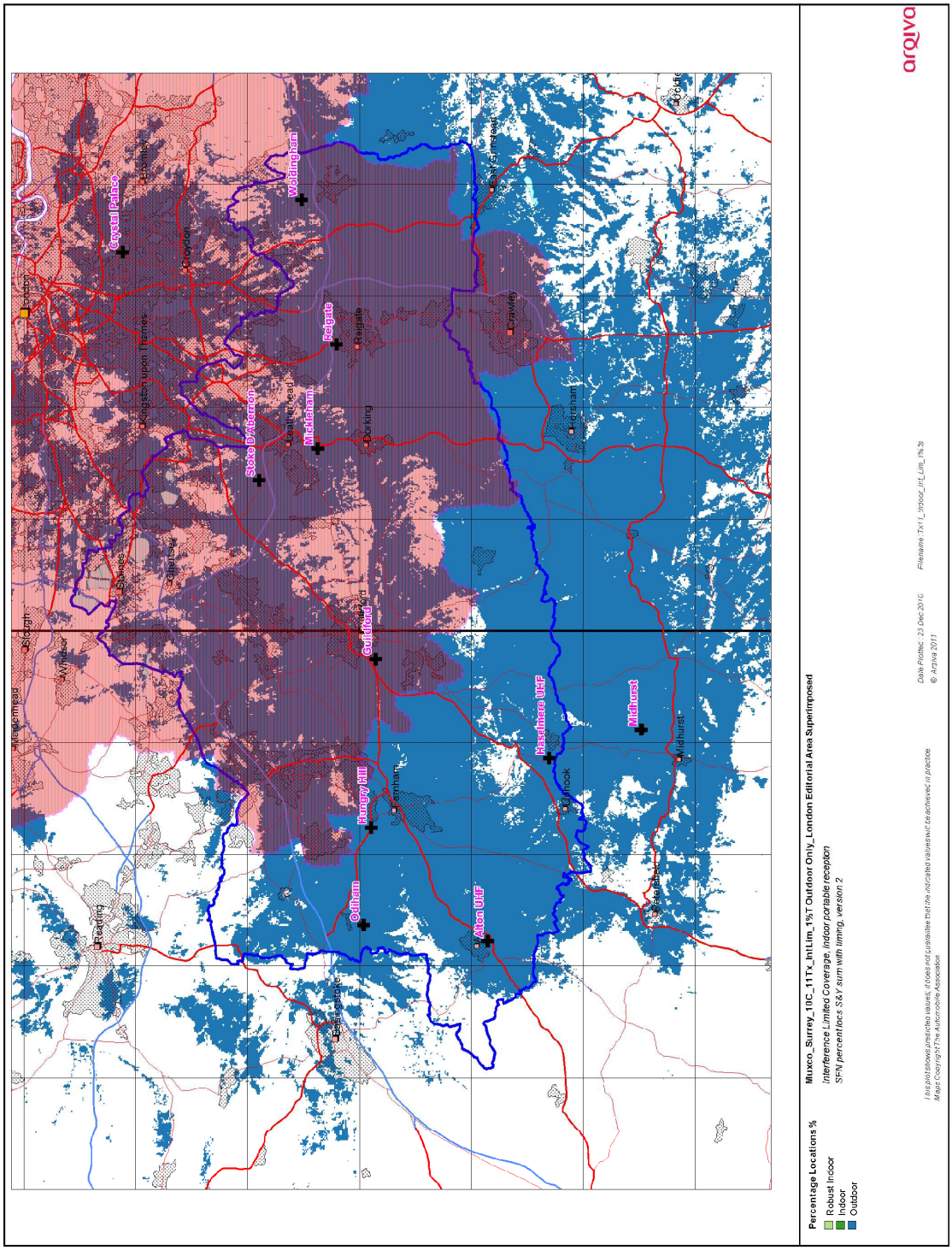


Figure 1-2. Overlap with Future London Block (10B)

(Superimposed upon Modified Network 3 Outdoor 1% Time Interference Limited Coverage)

In planning for each multiplex Ofcom have required coverage assessments:

- For each area four sets of maps should be produced as follows:

    1. **Current Situation** - Map showing current actual coverage (or launch plans where a multiplex hasn't 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.

<u>For case 1: Current situation</u>

Not applicable

<u>For case 2: Modified network 1</u>

Not applicable

<u>For case 3: Modified Network 2</u>

In this it was required to cover areas where existing local FM provision - BBC Surrey (from Guildford & Reigate) and Independent The Eagle (from Guildford) is robust. Full equivalence is difficult along the main road between Guildford and Dorking due to terrain and interference. Five transmitters are required, and even so coverage along this road is incomplete; Midhurst providing most of the SFN coverage along the midway section. Coverage is shown in Figures 2-1 (Indoor/Outdoor), 2-2 (Outdoor Only, 1% Time interference) and 2-3 (Outdoor Only, 5% Time interference)

<u>For case 4: Modified Network 3</u>

For this case it was required to 'fill' the multiplex to achieve near universal coverage (within practical planning limits). To achieve this coverage a further 6 sites will be required, bringing the total number to 11 sites. This is shown in *Figure 2-4* (Indoor/Outdoor, 1% time interference), *Figure 2-5* (Outdoor Only 1% time interference) *& Figure 2-6* (Outdoor Only 5% time interference). Contributions are made by Alton and Haslemere to the main road between Guildford and Dorking but further small 'cellular' type transmitter(s) may be required in order to fully serve this road.

1.1 Incoming interference and sensitivity to other co-block multiplexes

The general 'benchmark' for indoor and outdoor co-block interference protection is for 99% time. An additional 'outdoor' prediction has been made at 5% time interference from all the 10C multiplexes in order to determine the improvement. Even so, outdoor road coverage remains below 90% with 83.27% coverage (1% Time interference) and this improves to 93.39% (5% Time interference). Indoor Coverage is 84.46% of population within the Editorial Area.

Predictions for the 11 Transmitters, Indoor Coverage at 5% Time interference resulted in an improvement of 4.65 percentage points from 84.46% (1% Time) to 89.11% (5% time)

The principal co-block (10C) predicted interferers for various sectors of Surrey (10C) are :-

Area	Principal Co-Block Interference - most significant first (see *Figure 1-3*)
A	Andoversford (Gloucs); Daventry (Northants); Cirencester (Gloucs)
B	Daventry, Northampton, Geddington, Towcester (Northants)
C	Daventry, Northampton (Northants); Andoversford (Gloucs)
D	Daventry, Northampton (Northants); Andoversford (Gloucs)
E	Daventry, Northampton (Northants); Cirencester (Gloucs)
F	Daventry (Northants); Andoversford, Cirencester (Gloucs) Huntshaw Cross (N Devon)

The most significant interfering co-blocks are Northants (10C) & Gloucs (10C). North Devon (10C) has a very slight effect, although its interferers are mostly swamped by those of Northants (10C) and Gloucs (10C). Liverpool (10C) has almost no effect. N Yorks (10C) has no effect.

The major unserved urban areas, due primarily to co-block interference, are :-

Sandhust & Yateley (General Area A Fig 1-3) probably best served from Reading & Basingstoke (12B)

Chertsey & Weybridge (General Area B) – lies within the M25 and London (10B)

Epsom (General Area C) – lies within M25 and London (10B)

Whilst not impossible to serve these areas from new sites, it may be better to consider services from other multiplexes. No sites have been identified which will serve these areas from within the Surrey (10C) multiplex

1.2 Outgoing interference to other co-block multiplexes

There is an impact to other co-block allocations from the proposals contained in this report, primarily to the outdoor coverage to Gloucester (10C) because of the high ground associated with the Cotswolds, but also to Northants (10C), again mostly the outdoor coverage is affected.

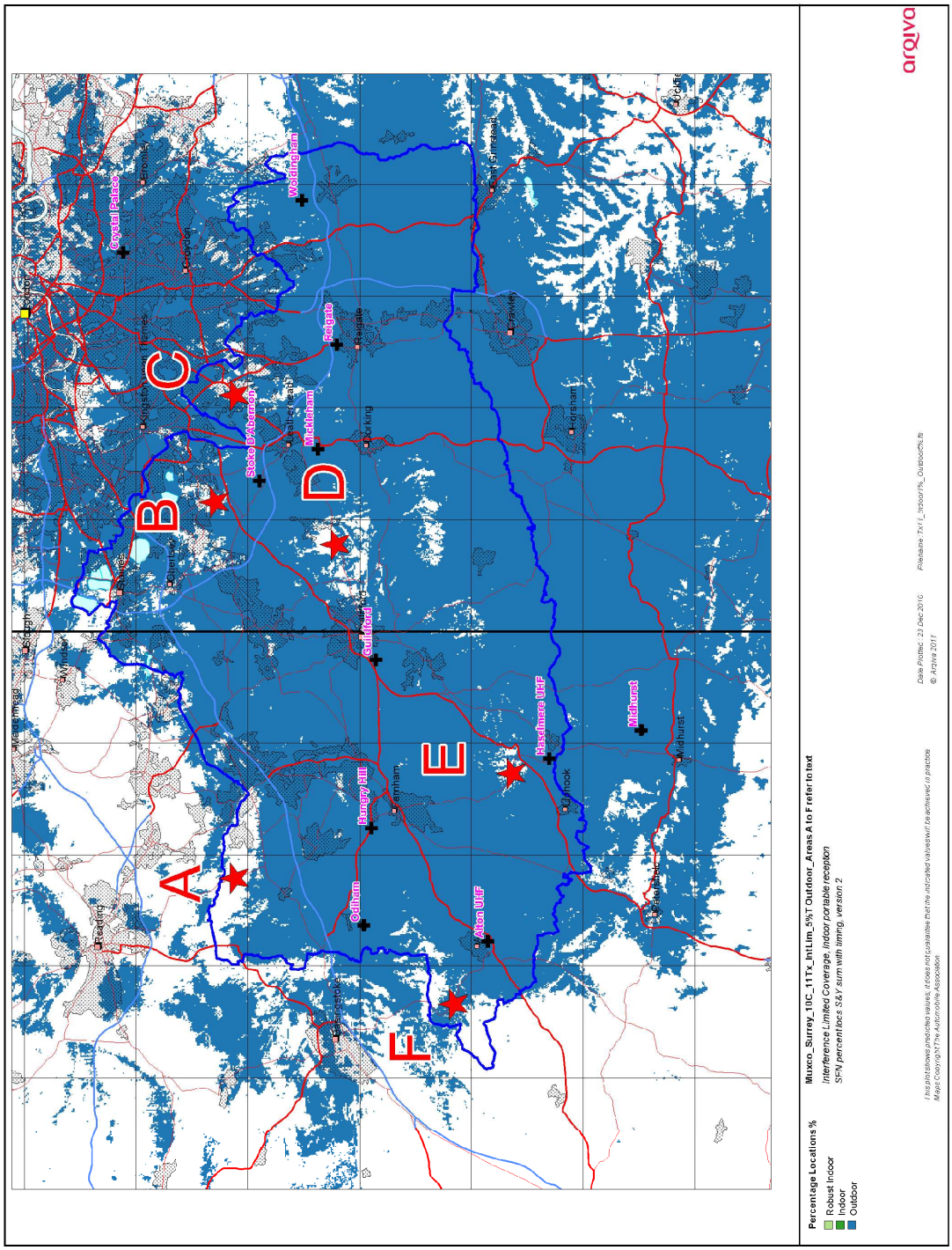


Figure 1-3. Incoming Co-Block Interference Areas – see Section 1.1

(Superimposed upon Modified Network 3 Outdoor 5% Time Interference Limited Coverage)

2 Coverage of the Multiplex

2.1 Coverage Maps

Coverage maps for the DAB are generally presented with three colours unless otherwise stated:

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 Modified Network 2

Figure 2-2 Modified Network 2 – Outdoor Only 1% Time Interference

Figure 2-3 Modified Network 2 – Outdoor Only 5% Time Interference -

Figure 2-4 Modified Network 3

Figure 2-5 Modified Network 3 -- Outdoor Only 1% Time Interference

Figure 2-6 Modified Network 3 – Outdoor Only 5%Time Interference

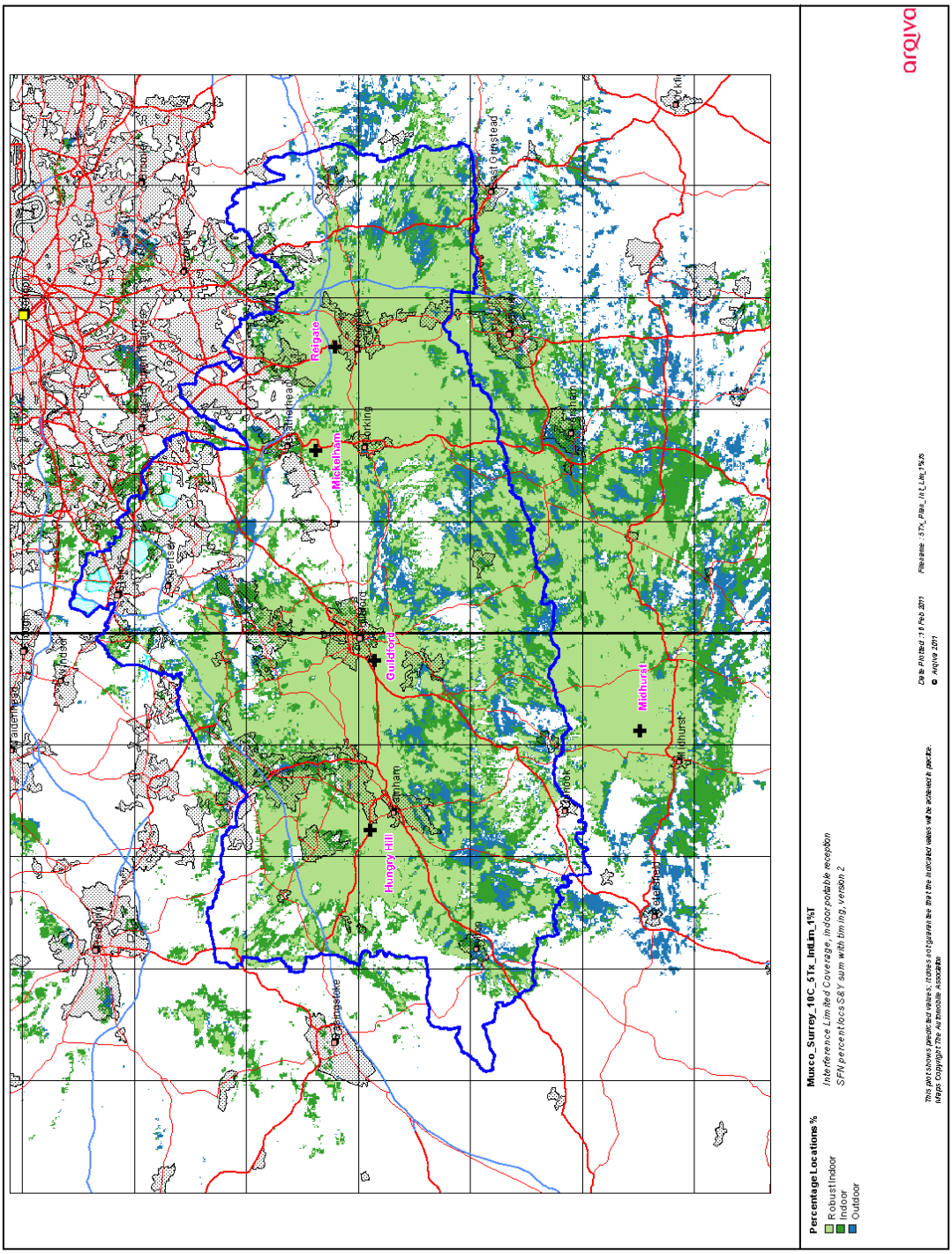


Figure 2-1. Modified Network 2

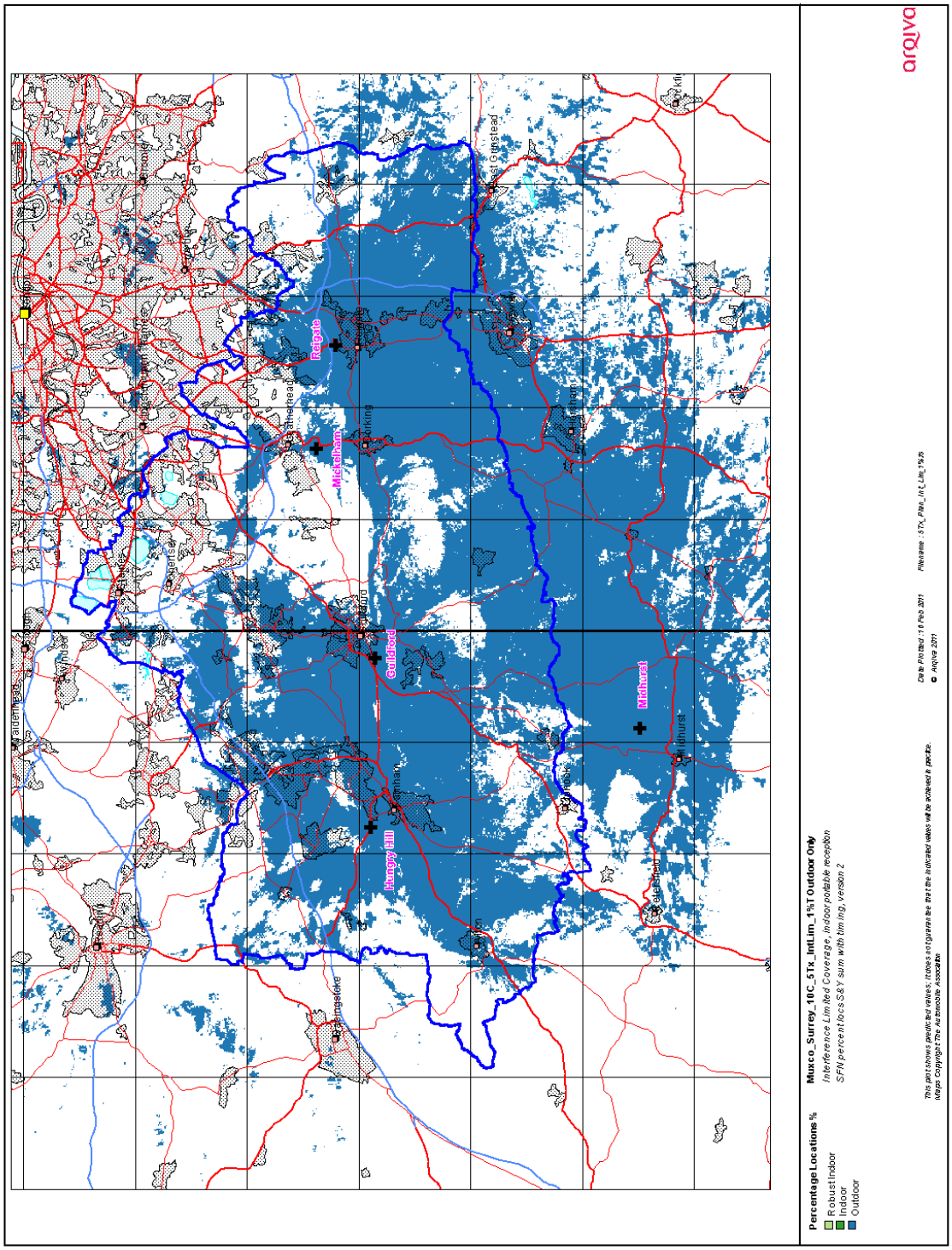


Figure 2-2. Modified Network 2- Outdoor Only 1% Time Interference

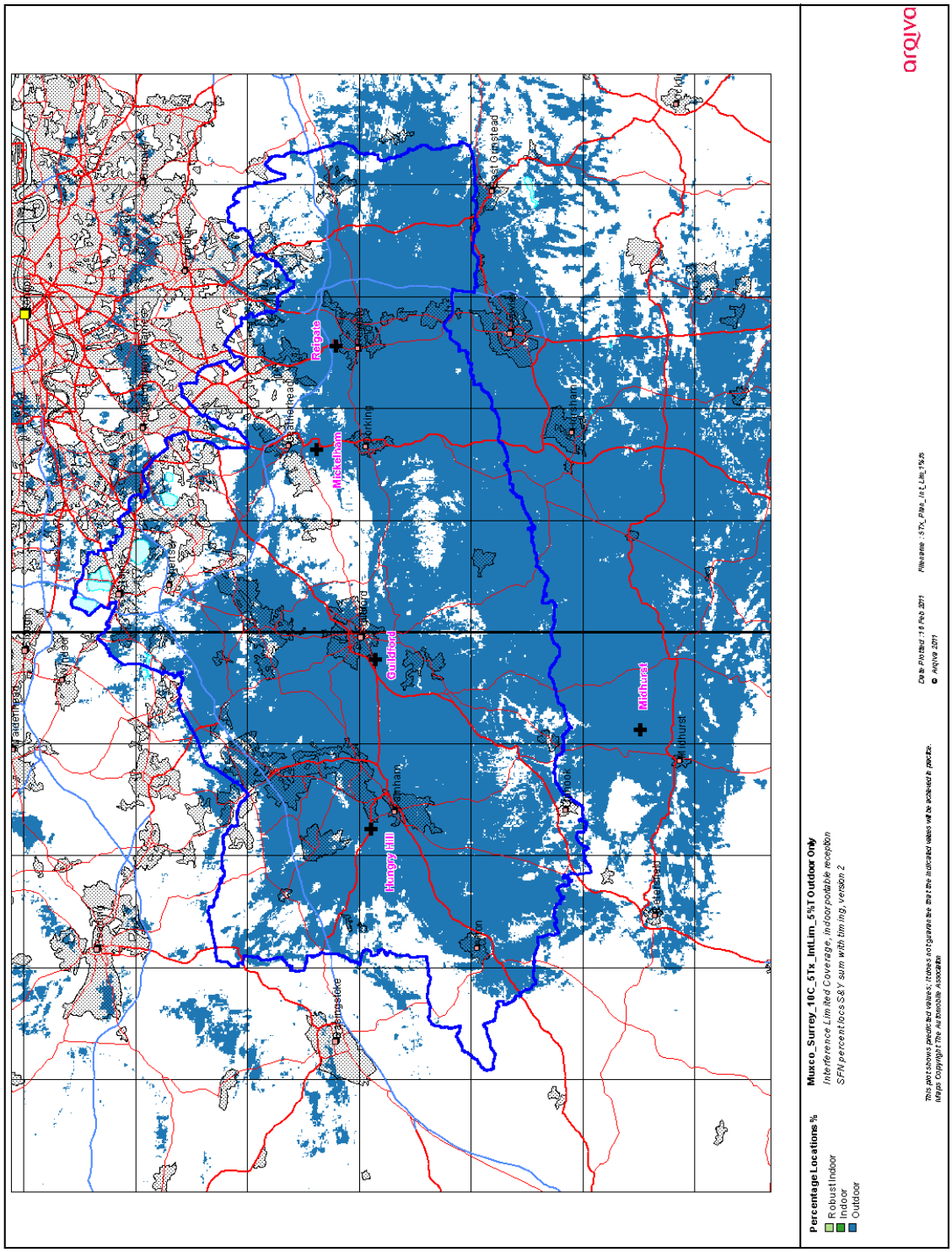
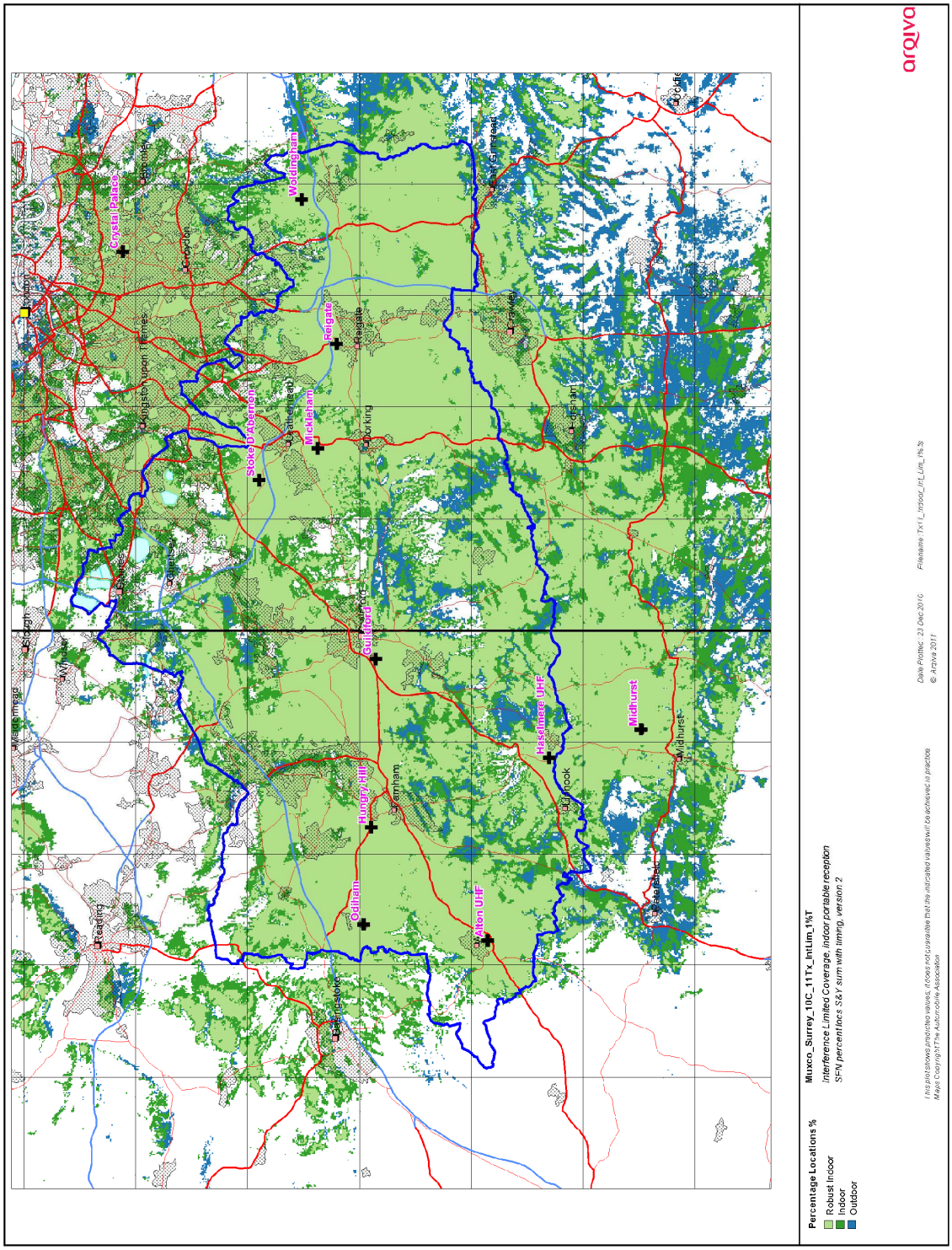


Figure 2-3. Modified Network 2 – Outdoor Only 5% Time Interference



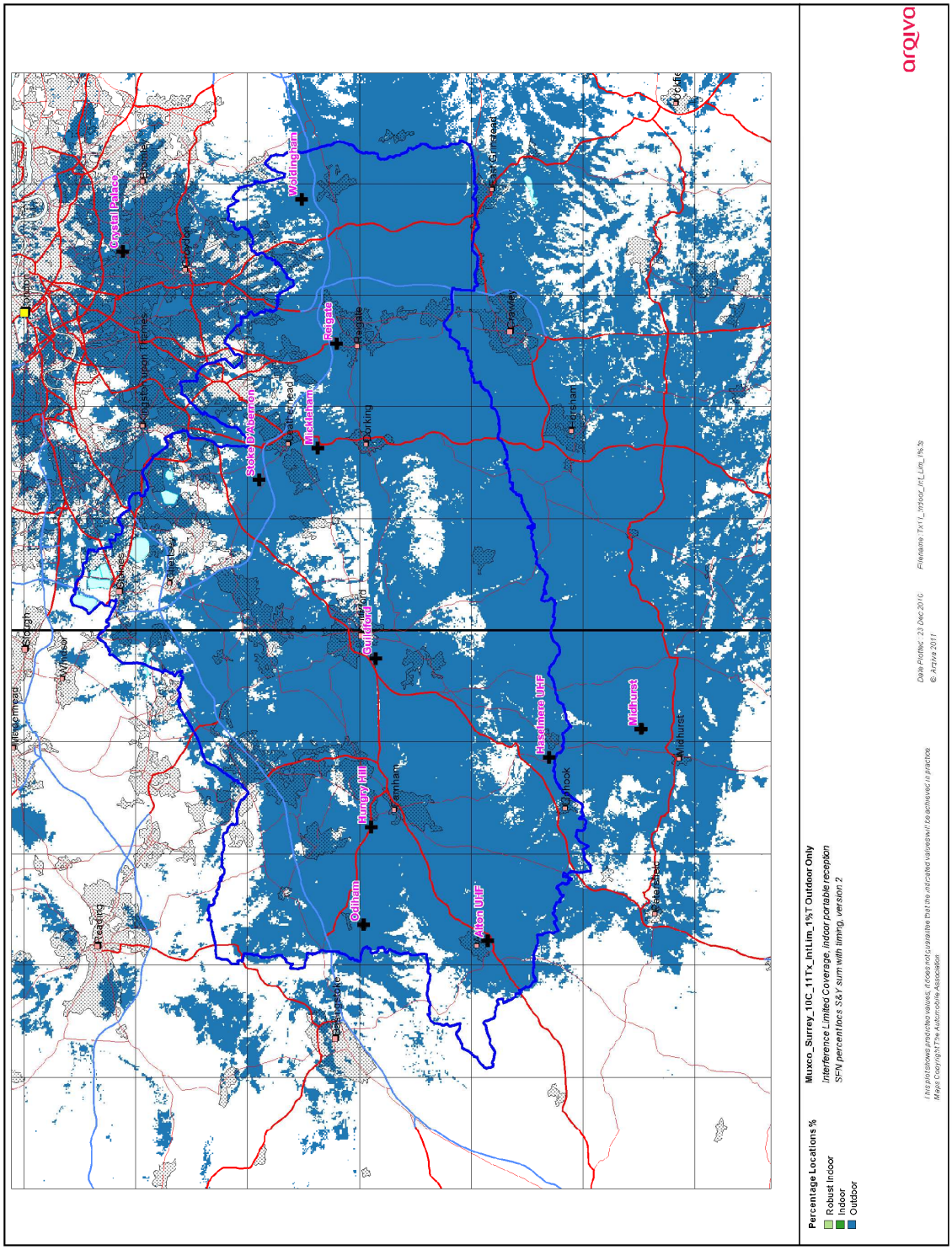


Figure 2-5. Modified Network 3 – Outdoor Only 1% Time Interference

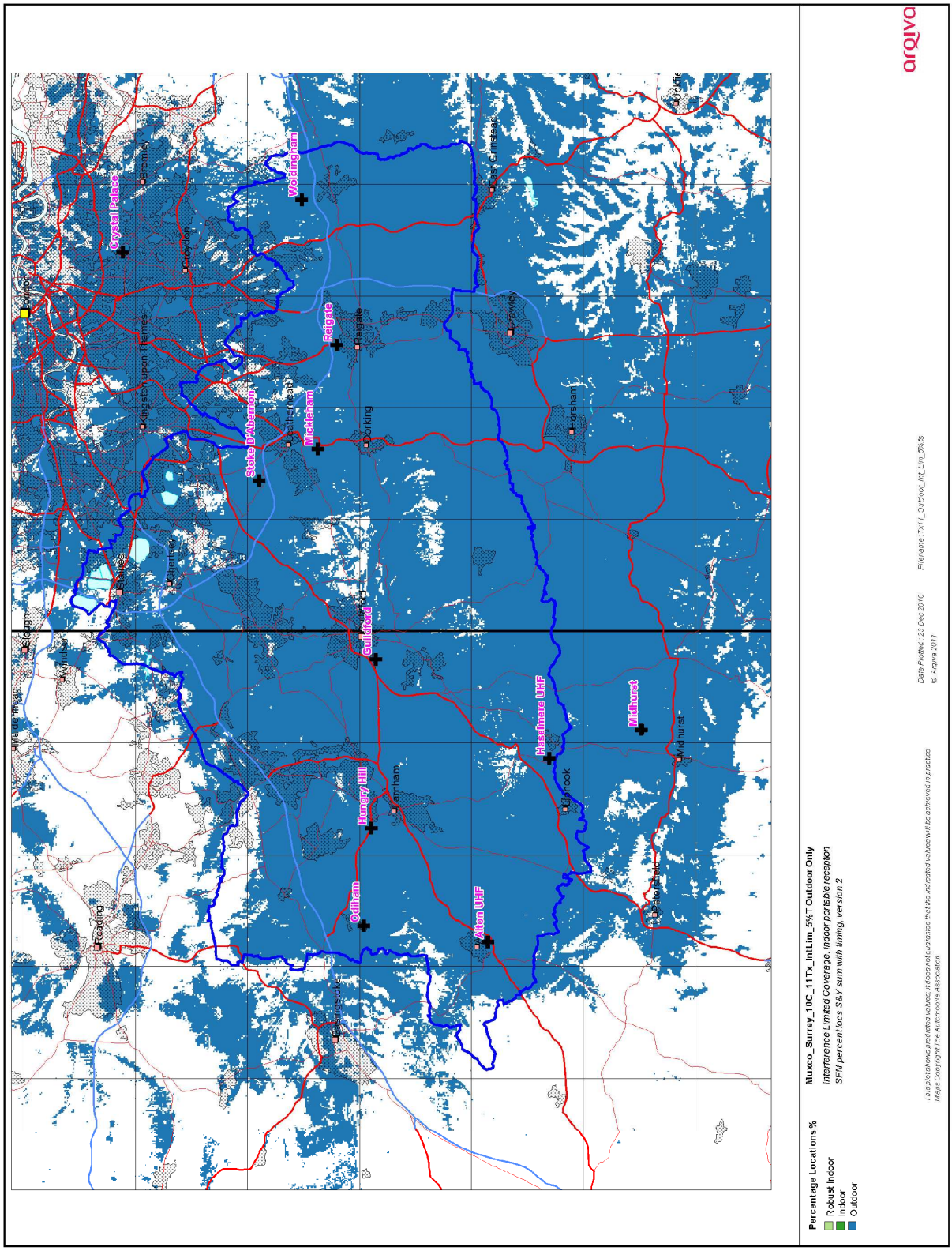


Figure 2-6. Modified Network 3 – Outdoor Only 5% Time Interference

2.2 Population Coverage tables within Editorial Area

Table 2-1 Population - Proportional Indoor Coverage: Total 582,738 households

Site Scenario and Incremental Additional Sites	Site Type	Individual Gross Interference Limited Coverage within Editorial Area	Number of Households within Editorial Area	Increase in Number of Households	Incremental Percentage Increase of Population (%)	Percentage of Editorial Area (%)
Hungry Hill	New - Existing in use Infrastructure	95,262 (16.35%)	95,262	95,262	16.35	16.35
Reigate	New	77,868 (13.33%)	183,579	88,317	15.15	31.50
Guildford	New	72,001 (12.36%)	271,706	88,127	15.13	46.63
Stoke D'Abernon	New - Existing in use Infrastructure	44,706 (7.67%)	354,417	82,711	14.19	60.82
Crystal Palace	New - Existing in use Infrastructure	24,805 (4.26%)	415,319	60,902	10.45	71.27
Woldingham	New	228,194 (4.84%)	440,902	25,583	4.39	75.66
Midhurst	New - Existing in use Infrastructure	12,153 (2.09%)	463,507	22,605	3.88	79.54
Haslemere	New	10,953 (1.88%)	475,877	12,370	2.12	81.66
Alton	New	9,290 (1.59%)	480,033	4,165	0.72	82.38
Mickelham	New	6,500 (1.12%)	484,335	4,302	0.73	83.11
Odiham	New - Existing in use Infrastructure	13,183 (2.26%)	492,168	7,833	1.35	84.46

Case 1		Light yellow	Existing Network – Not Applicable
Case 2	-	Purple	Modified Network 1 –Not Applicable
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3

Table 2-2. Road Coverage 99% Locations and 99% Time Interference Protection

Total Roads 882.5 km

Site Scenario and Incremental Additional Sites	Site Type	Total Road Length (km)	Increase in Road Length (km)	Incremental Percentage of Road Length (%)	Percentage of Roads within Editorial Area (%)
Hungry Hill	New - Existing in use Infrastructure	132.1	132.1	14.97	14.97
Reigate	New	321.4	189.3	21.45	36.42
Guildford	New	463.9	142.5	16.15	52.57
Stoke D'Abernon	New - Existing in use Infrastructure	552.3	88.4	10.01	62.58
Crystal Palace	New - Existing in use Infrastructure	607.4	55.1	6.24	68.82
Woldingham	New	639.2	31.8	3.60	72.42
Midhurst	New - Existing in use Infrastructure	683.3	44.1	5.00	77.42
Haselmere	New	704.9	21.6	2.45	79.87
Alton	New	711.7	6.8	0.78	80.65
Mickelham	New	718.8	7.1	0.79	81.44
Odiham	New - Existing in use Infrastructure	734.9	16.1	1.83	83.27

Case 1		Light yellow	Existing Network - Not Applicable
Case 2	-	Purple	Modified Network – Not Applicable
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3

Table 2-3. Road Coverage 99% Locations and 95% Time Interference Protection

Total Roads 882.5 km

Site Scenario and Incremental Additional Sites	Site Type	Total Road Length (km)	Increase in Road Length (km)	Incremental Percentage of Road Length (%)	Percentage of Roads within Editorial Area (%)
Hungry Hill	New - Existing in use Infrastructure	164.6	164.6	18.67	18.67
Reigate	New	398.2	233.6	26.45	45.12
Guildford	New	548.2	150.0	16.00	61.12
Stoke D'Abernon	New - Existing in use Infrastructure	648.0	99.8	12.31	73.43
Crystal Palace	New - Existing in use Infrastructure	710.1	62.1	7.03	80.46
Woldingham	New	741.5	31.4	3.56	84.02
Midhurst	New - Existing in use Infrastructure	784.0	42.5	4.82	88.84
Haselmere	New	799.4	15.4	1.74	90.58
Alton	New	807.3	7.9	0.9	91.48
Mickelham	New	810.5	3.2	0.36	91.84
Odiham	New - Existing in use Infrastructure	824.2	13.7	1.55	93.39

Case 1		Light yellow	Existing Network - Not Applicable
Case 2	-	Purple	Modified Network – Not Applicable
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3

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

Case	Indoor Households & (percentage coverage) *Proportional & 99% Time Interference Protection*	Mobile Coverage km & percentage coverage) *99% Locations & 99% Time Interference Protection*	Mobile Coverage km & percentage coverage *99% Locations & 95% Time Interference Protection*
1	n/a	n/a	n/a
2	n/a	n/a	n/a
3	307,424 (52.76%)	533.9 (60.5%)	626.2 (70.95%)
4	492,168 (84.46%)	734.9 (83.27%)	824.2 (93.39%)

Note; Case 4, Indoor Population Proportional & 95% Time Protection, is 515,925 (89.11%)