Digital Switchover (DSO) Programme

Radio DSO Block 12D Coventry

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1.0	16/02/11	Draft version for review.
1.1	14/04/11	Initial release
2.0	23/05/11	Editorial Area Changed, All Maps and Populations changed + Text changes

Table of Contents

1 Coventry (12D) DSO Narrative

Block 12D assigned to Coventry is an existing allocation with four existing transmitters 'On - Air' :-

Transmitter	ERP (kW)
Barwell	0.200 *
Leamington Spa	0.500
Meriden	0.500
Samuel Vale House	0.500

* Barwell has now been increased to 500W and this has been included in case 2.

There are nine proposed Block 12D allocations throughout UK :-

N. Ireland

Edinburgh

Leeds

West & Mid Wales

Stoke

Reading & Basingstoke

Southend & Chelmsford

Peterborough

Coventry

All these multiplexes, above, with the exception of West & Mid Wales, are currently radiating on block 12D. In addition, West Wilts(12D) is also currently radiating, but the area covered by this multiplex is to be re-allocated to another block.

Fig 1.1 shows these proposed multiplexes in the area surrounding Coventry (12D). This also gives an idea of the terrain in the editorial area in relation to the other co-block allocations.

Multiplexes which have an affect upon or are affected by Coventry (12D), are Stoke (12D), Reading & Basingstoke (12D), Peterborough (12D) and, to a lesser extent, Leeds (12D). N. Ireland (12D), West & Mid Wales (12D) and Edinburgh (12D) and Southend & Chelmsford (12D), have little or no affect upon Coventry (12D). Similarly, Coventry (12D) has little or no affect upon these distant multiplexes.

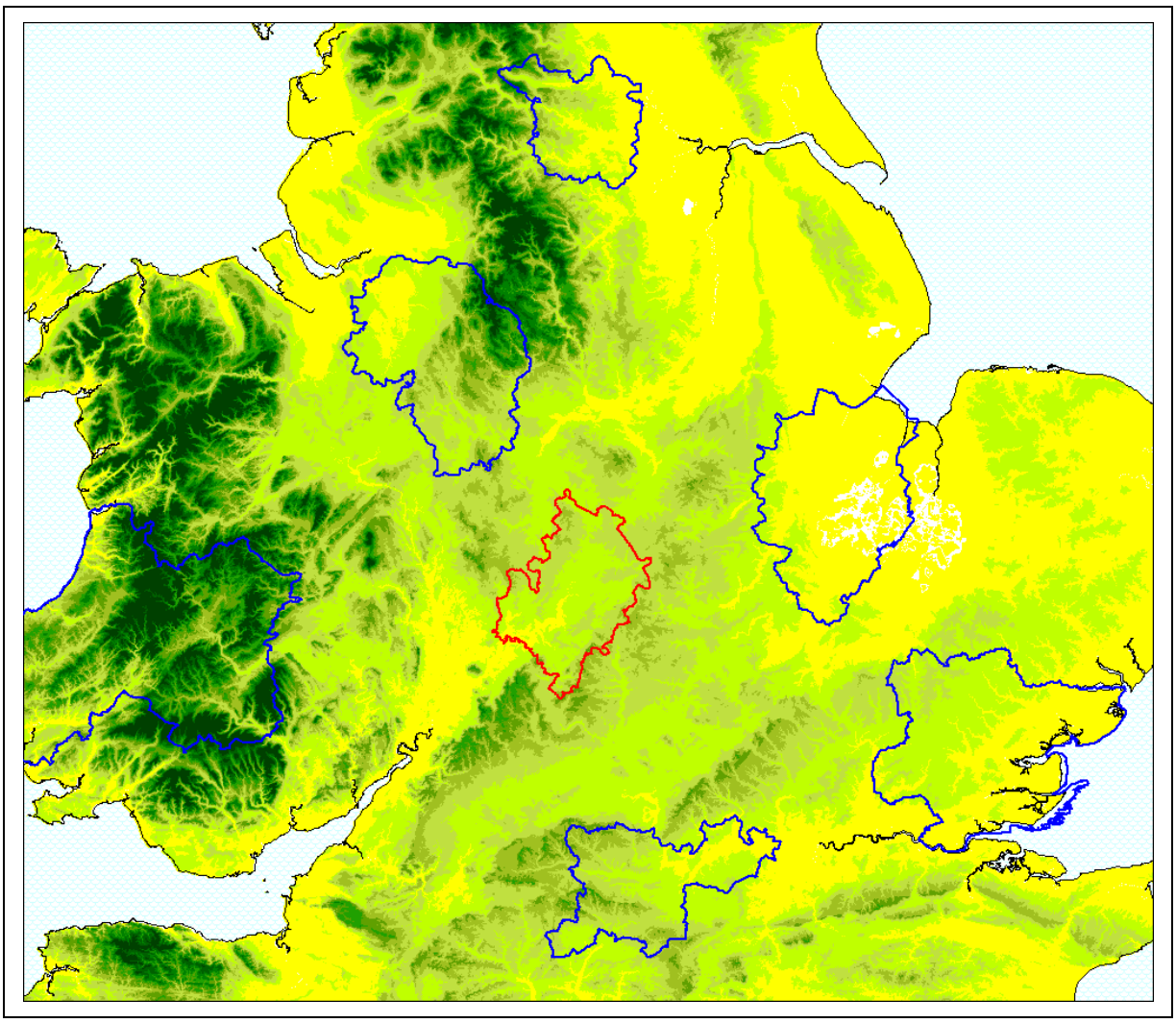

Figure 1.1: Proposed Block 12D allocations

There is an editorial area overlap with Leicester (11B), Northants (10C) and Birmingham (11C); these are shown on map, Figure 1.2 overleaf :-

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

Oxford (future 5A) to south east

Gloucester (10C) to south west

Hereford & Worcs (10B) to west

FM Radio coverage is currently provided by BBC Coventry & Warwickshire (from *Lark Stoke, Meriden & Nuneaton* transmitters) and Mercia FM (from Leamington Spa *and Shilton* transmitters). The editorial area is generally well served by these combined services, except for a broad swathe of countryside in the east of the editorial area (south of Rugby) and the town of Alcester, to the west of Stratford upon Avon, in the south-west of the editorial area

The proposed Editorial Area has changed significantly; see coverage map *Fig 1-2, overleaf,* for comparison.

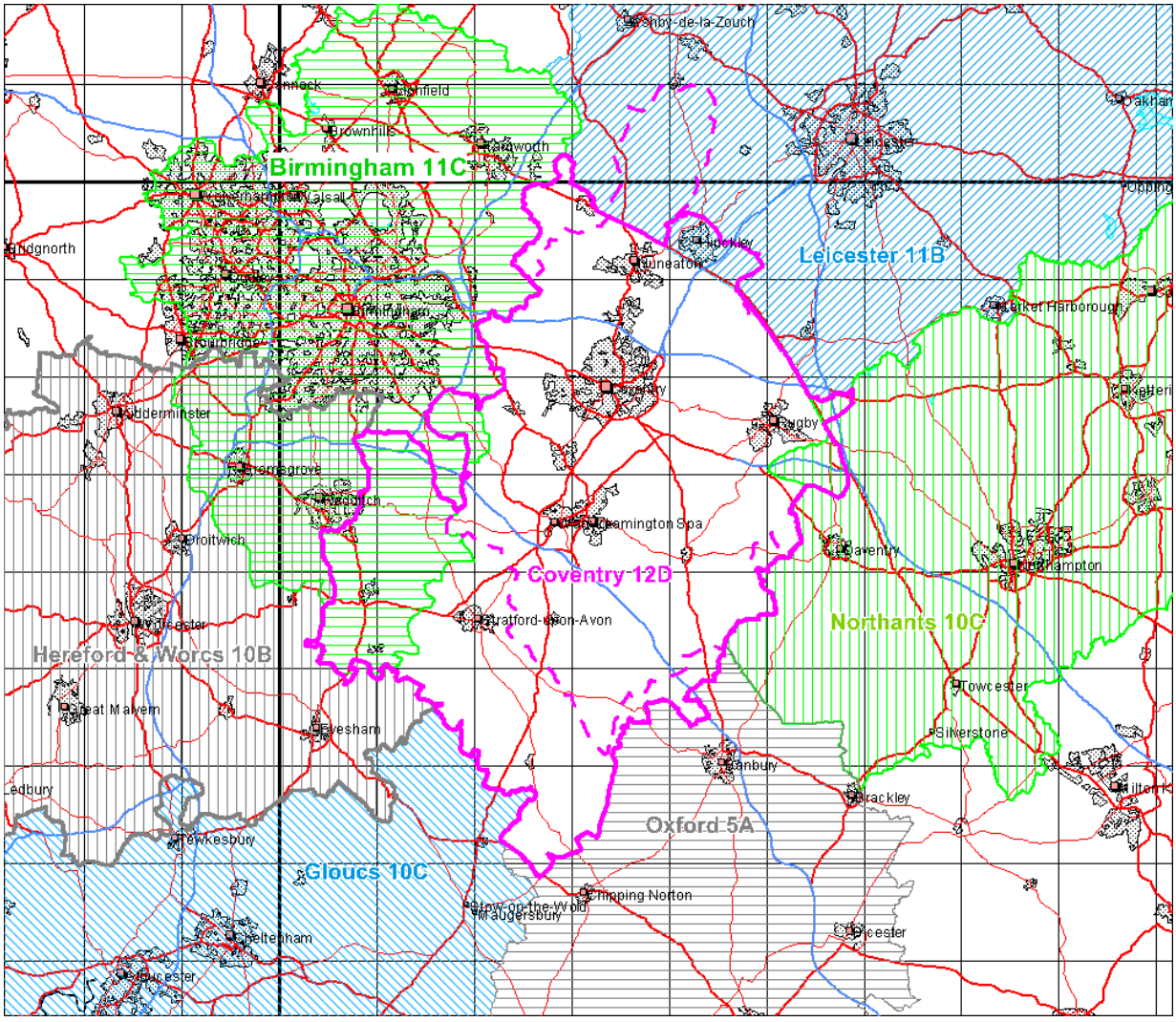

Figure 1.2: Coventry (12D) Editorial Area showing Surrounding Multiplexes

(Existing Coventry (12D) Editorial Area shown with broken purple contour)

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.

For case 1: Current situation

Figures 2-1 and 2-2 shows the current 'on-air' situation in Coventry (12D), there are four transmitters on-air, listed at beginning of *Section 1* the antenna horizontal radiation patterns (HRPs) are overlaid. Outdoor interference limited coverage includes the nine co-block interferers including West Wilts (12D). In the proposed plan, this West Wilts (12D) allocation will move to another block.

For case 2: Modified network 1

The maximum effective radiated power (ERP) of Barwell, which serves the area around Hinkley, has been increased from 200W to 500W in order to improve coverage (this has in fact happened just recently). Similarly, the ERP of Leamington Spa has been increased from 500W to 1 kW; which improves the general rural reach. Samuel Vale House cannot be increased from its current 500W ERP because of potential impact to Stoke (12D). The antenna at Meriden has been changed in order to improve isolation towards Peterborough (12D), Reading & Basingstoke (12D) and Southend & Chelmsford (12D) whilst providing coverage to the area. The ERP has been increased to 1 kW

Figures 2-3 & 2-4 show the predicted coverage's.

For case 3: Modified Network 2

In this it was required to serve areas where there is existing local FM coverage the area is generally well served by FM, except for a broad swathe of countryside in the east of the editorial area (south of Rugby) and the town of Alcester, to the west of Stratford upon Avon, in the south-west of the editorial area the town of Alcester is in the overlap region with Birmingham (11C) and it is predicted that Alcester should be served from this alternative multiplex.

Five further sites are required to emulate the FM coverage - although coverage still does not match exactly that of the FM coverage. *Figures 2-5 and 2-6* show the predicted coverage.

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). This case remains the same as 'Case 3 'above, although further small infill transmitters could be added to the network without causing undue outgoing interference. The villages of Southam (Banbury to Coventry road) and Shipston on Stour (in the south of the Editorial Area) could benefit from small infill transmitters but in the latter case, the 'reach' would be limited since it's in 'The Cotswolds' and will be limited by terrain.

Proposals for the overlapping Birmingham 11C service, covers much of the areas remaining unserved, from Coventry (12D), in the west.

1.1 Incoming interference and sensitivity to other co-block multiplexes

With nine Transmitters, indoor coverage was predicted to be 92.56% of the Editorial Area and the outdoor (Road) coverage is 73.3% (1% Time interference).

The most significant interfering co-block multiplexes are West & Mid Wales (12D) transmitter -*Llandridod (proposal);* Stoke (12D) - *transmitters of Alsagers Bank (on-air), Sutton Coldfield (on-air), Mow Cop (proposal)*, Cheadle (proposal); Reading & Basingstoke (12D) – *transmitters of Hannington (on-air) & Basingstoke (on-air)*

N Ireland (12D), Southend & Chelmsford (12D), Leeds (12D) and Edinburgh (12D) have no, or only slight, impact.

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, principally to the coverage of Stoke (12D), primarily from the Coventry (12D) transmitters of Ilmington, Daventry and Hartshill Quarry. Ilmington was selected as a potential site in order to serve Stratford upon Avon and surrounding areas – an area previously outside the existing Coventry (12D) Editorial Area. Ilmington ERP is restricted to 2kW in order to minimise outgoing interference to Stoke (12D) and Peterborough (12D).

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)

Note: There are no separate plots for Modified Network 3 because they are identical to Modified Network 2

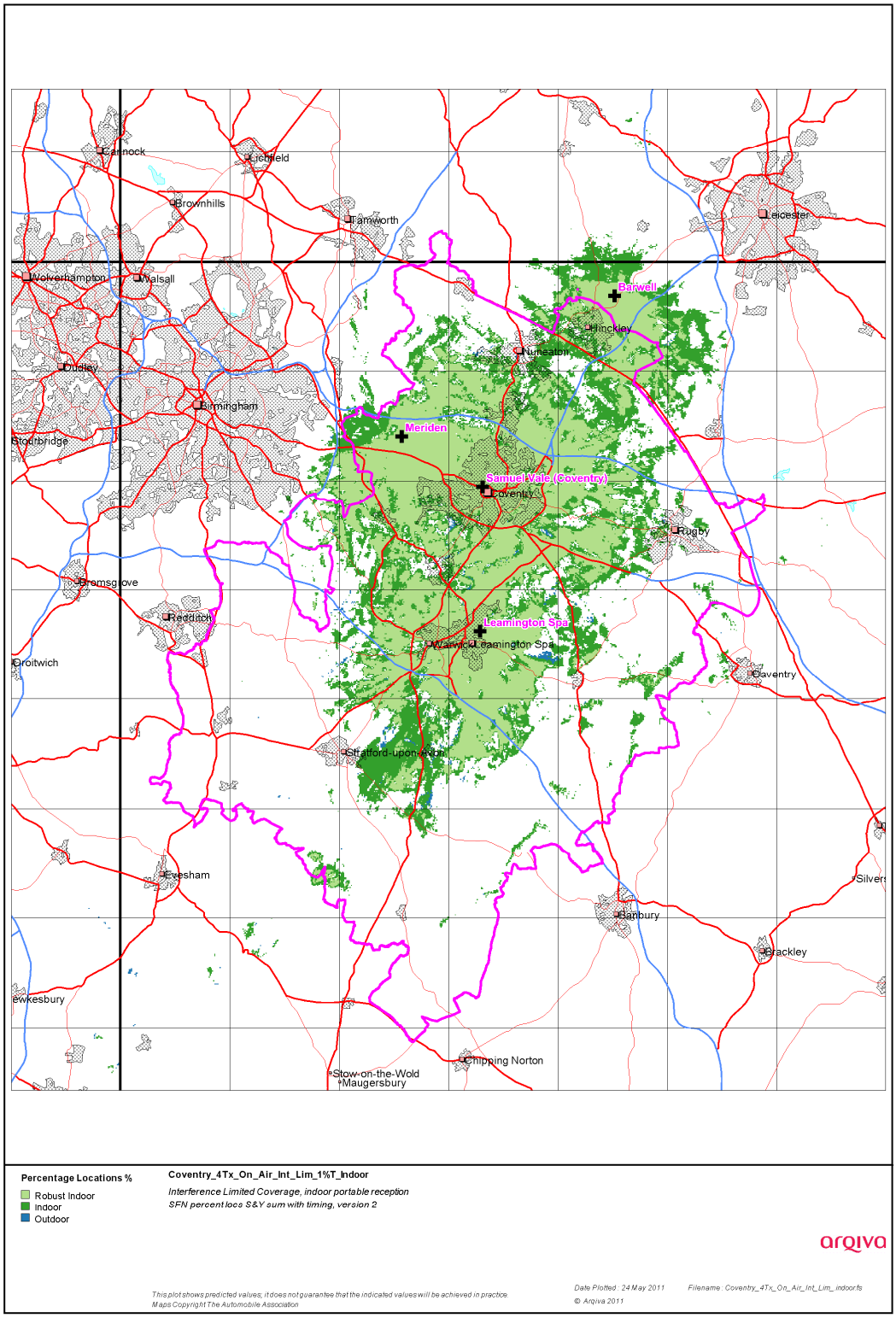

Figure 2-1. Current Situation

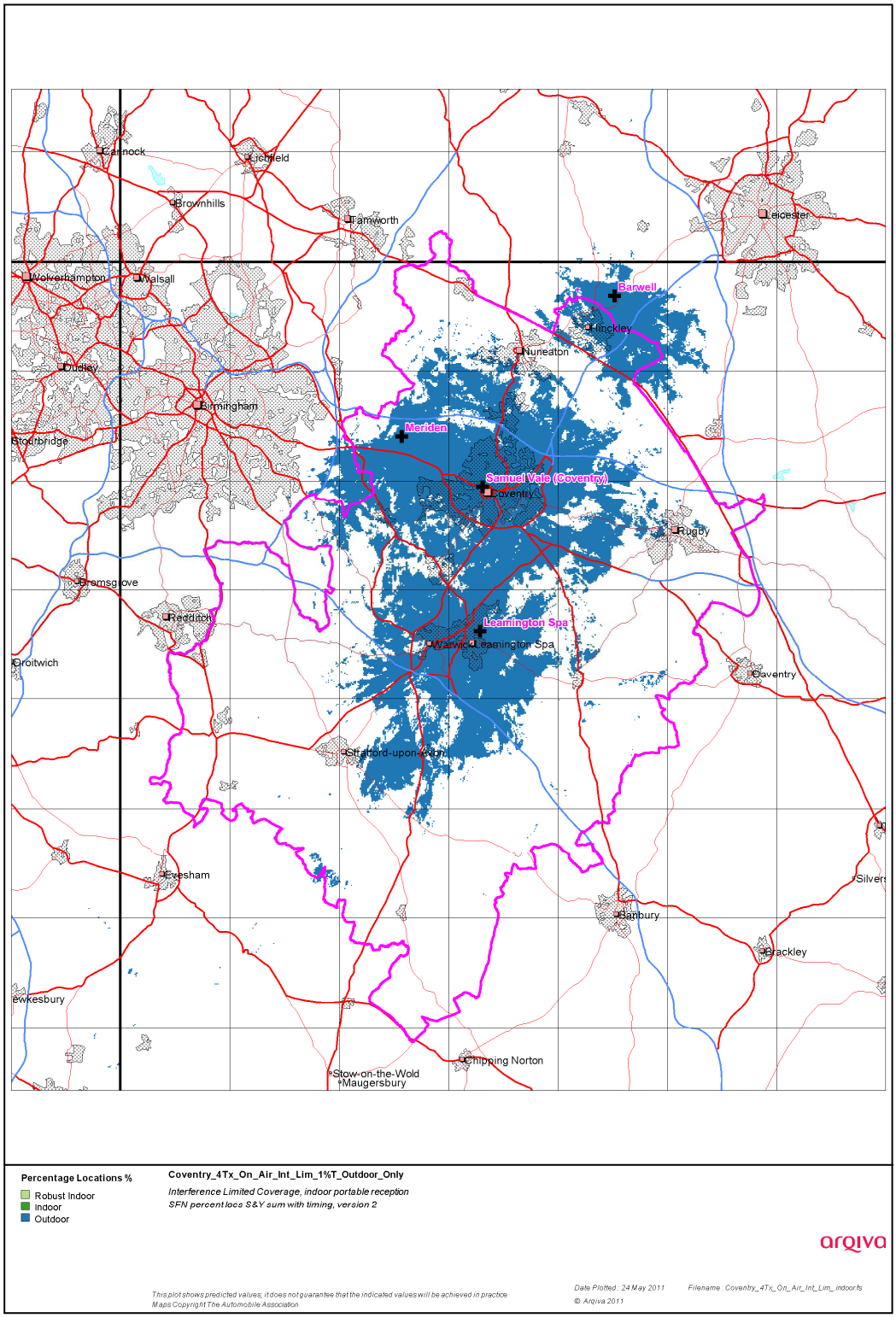

Figure 2-2. Current Situation – Outdoor Only 1% Time Interference

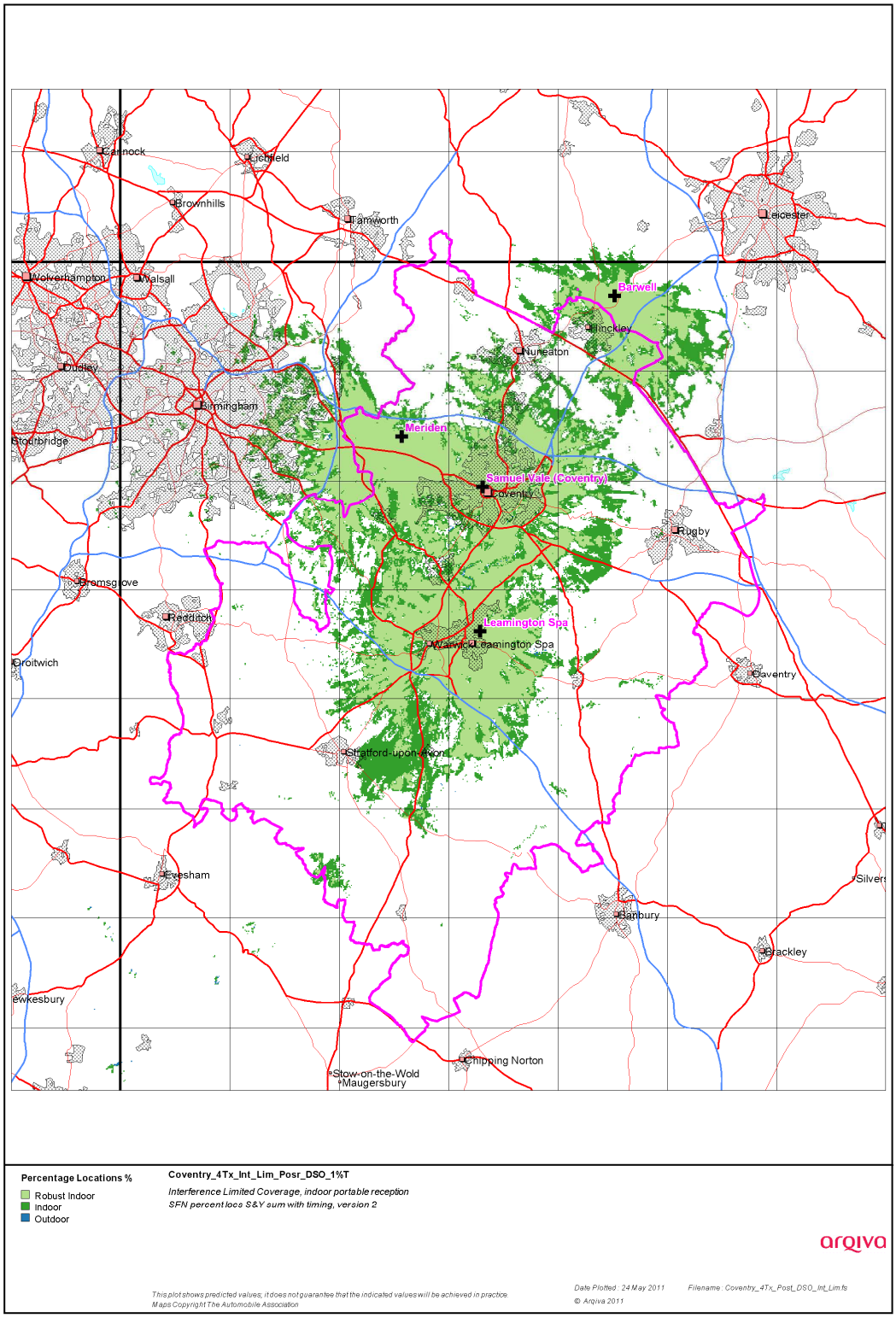

Figure 2-3. Modified Network 1

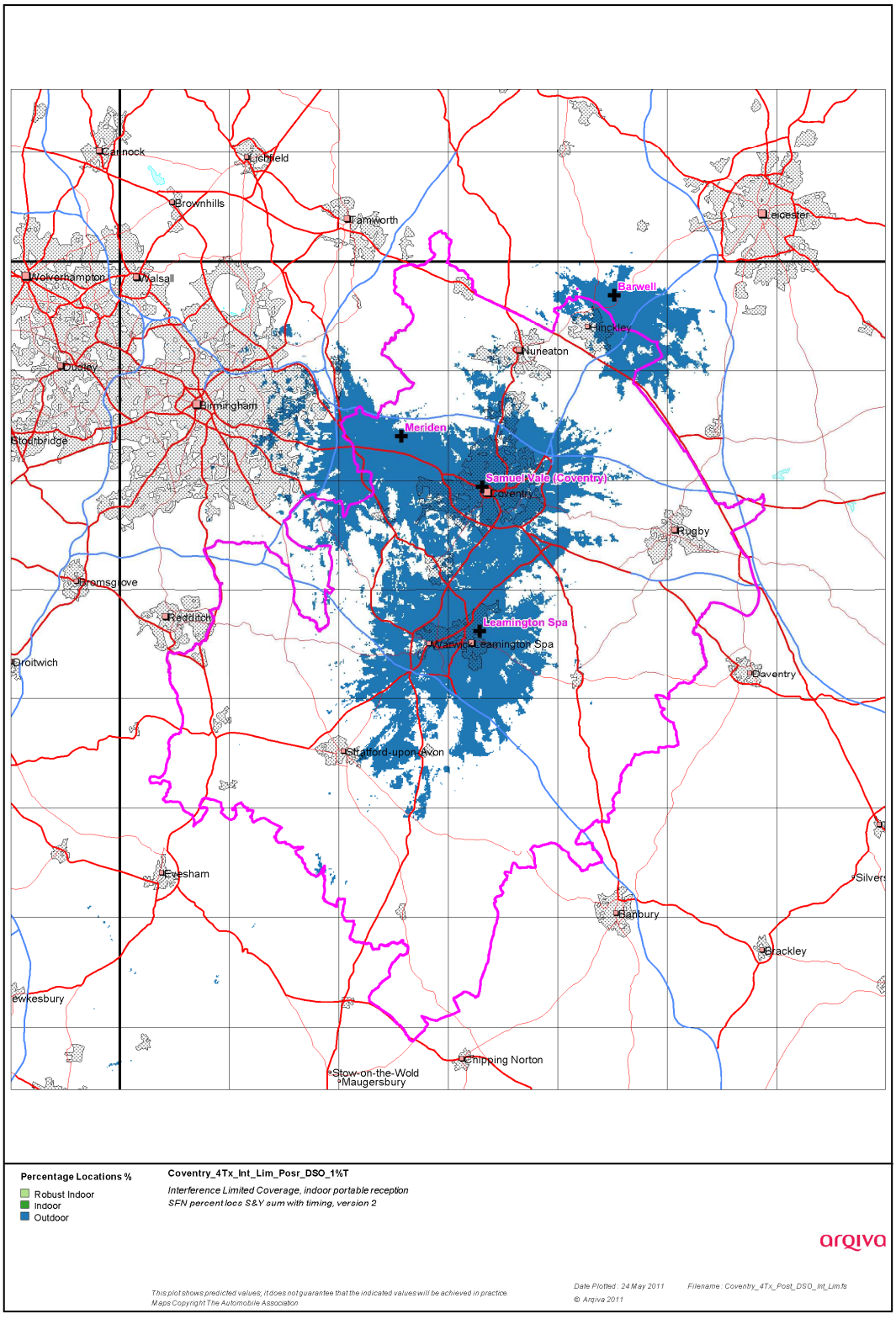

Figure 2-4. Modified Network 1 – Outdoor Only, 1% Time Interference

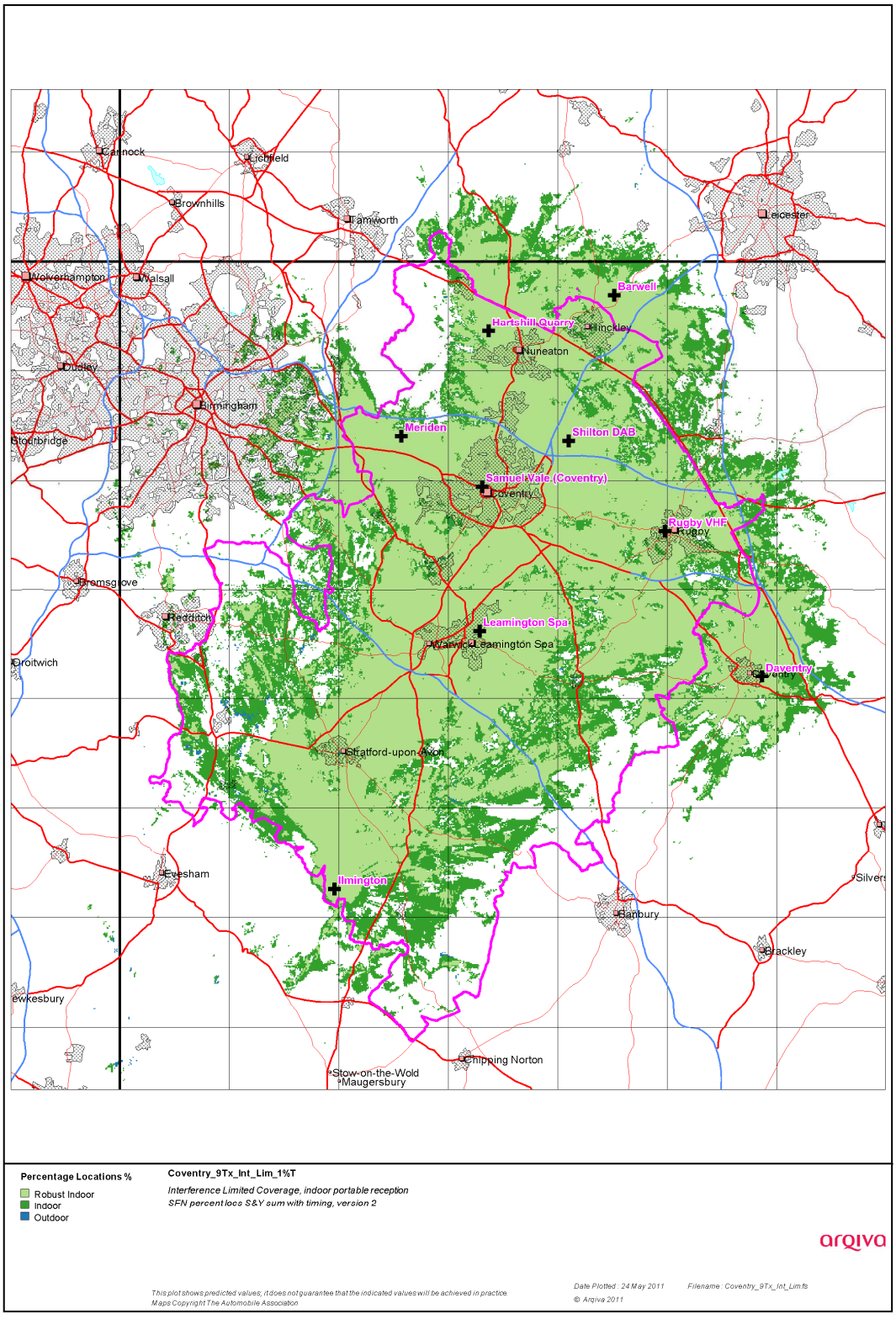

Figure 2-5. Modified Network 2

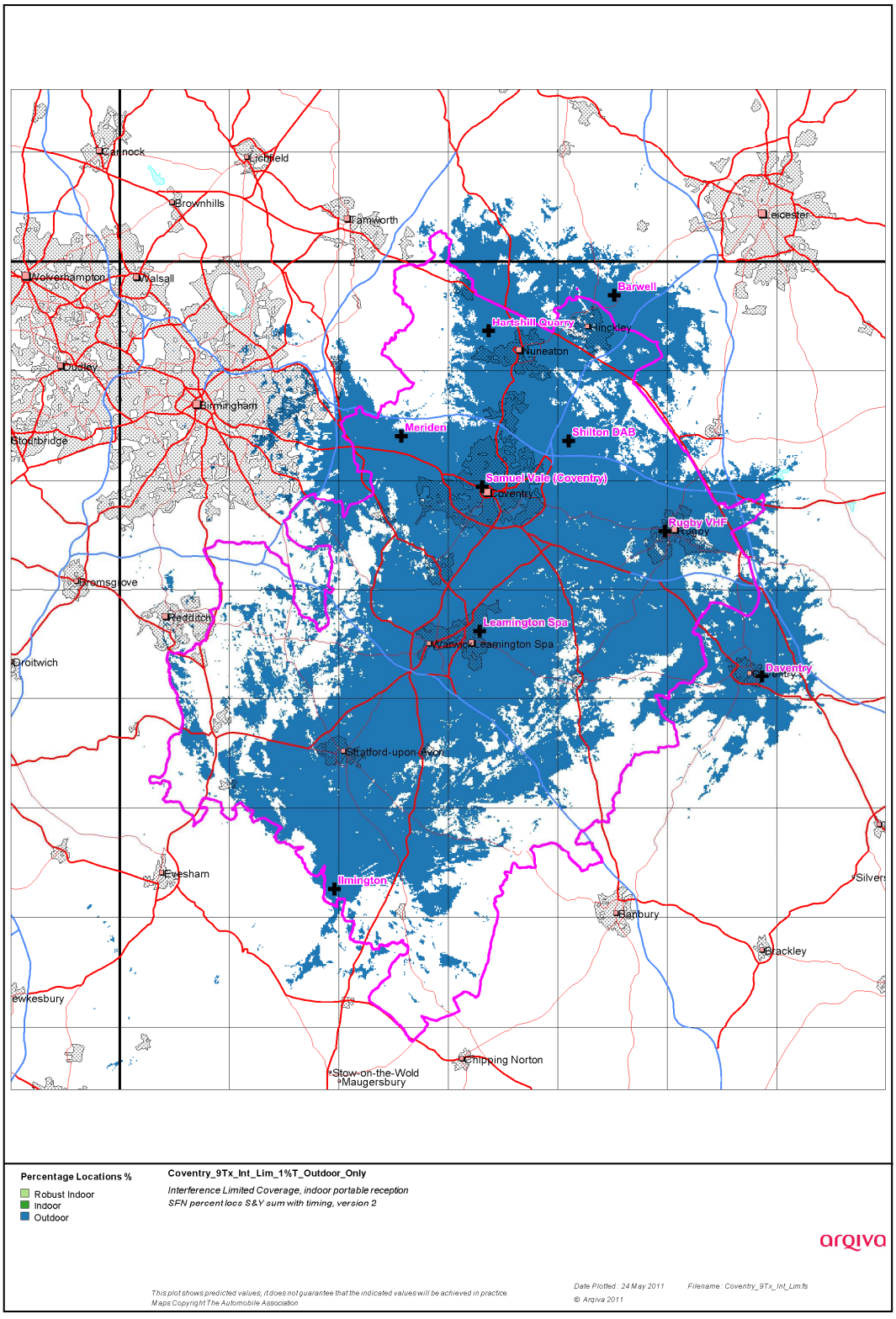

Figure 2-6. Modified Network 2 – Outdoor Only, 1% Time Interference

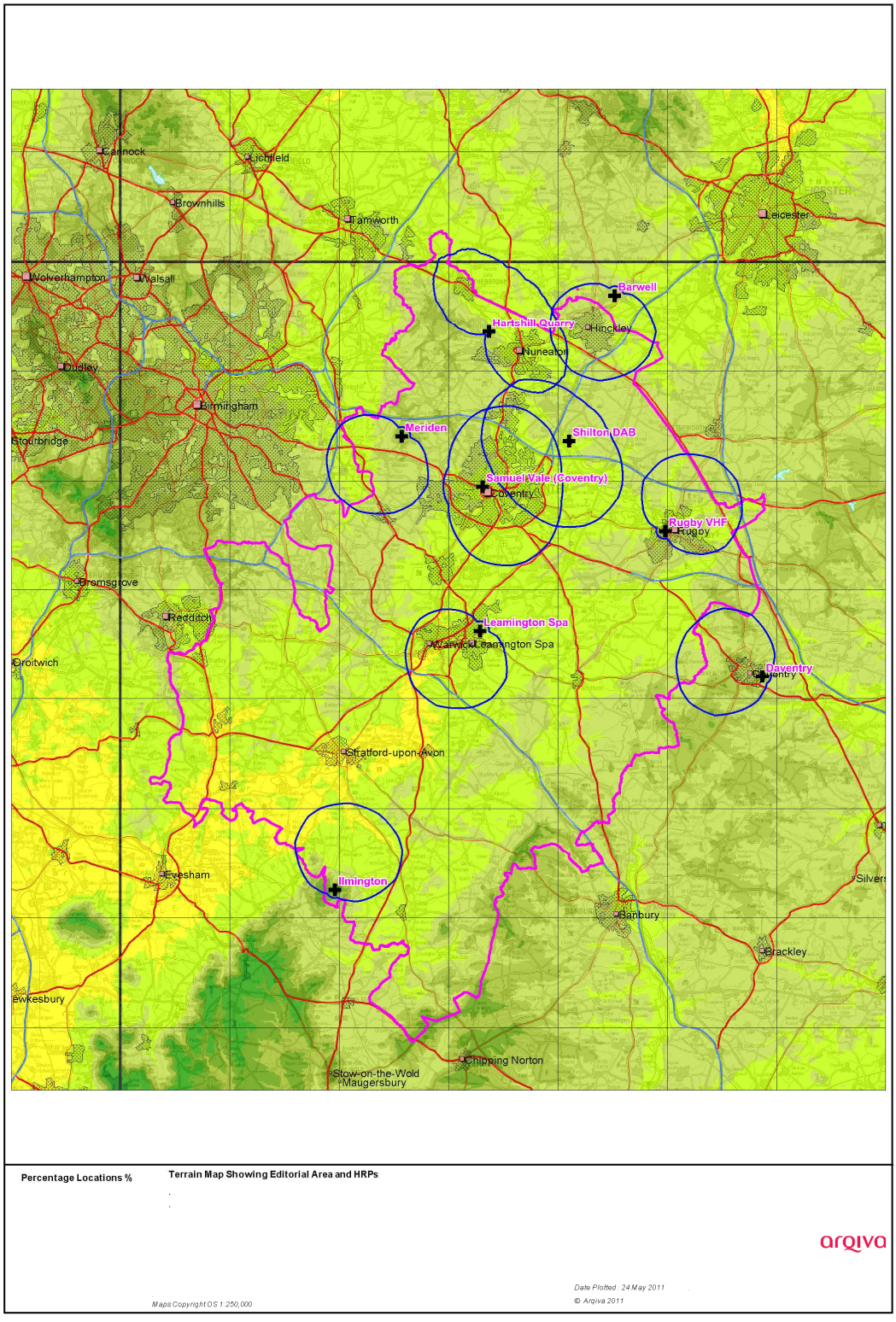

Figure 2-7. Terrain Map with Modified Network 2/3 Transmitters

2.2 Population Coverage tables within Editorial Area

Table 2-1 Population - Proportional Indoor Coverage: Total 400,225 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 (%)
Current (4Tx)	Existing	-	264,524	-	-	66.94
Current 4Tx Post DSO	Existing	-	240,915	-	-	60.96
Hartshill Quarry	New	53,004 (13.24%)	288,574	47,659	12.14	72.10
Ilmington	New, Existing Infrastructure	27,893 (6.97%)	322,350	33,776	8.44	80.54
Rugby VHF	New	22,469 (5.61%)	349,812	27,462	6.86	87.40
Daventry	New, Existing Infrastructure	18,435 (4.61%)	366.887	17,075	4.27	91.67
Shilton	New, Existing Infrastructure	55,726 (13.92%)	370,429	3,542	0.89	92.56

Case 1		Light yellow	Existing Network
Case 2	-	Purple	Modified Network 1
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3 – -same as Case 3

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

Total Roads 673.9 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 (%)
Current (4Tx)	Existing	256.0			39.05
Current 4Tx Post DSO	Existing	221.7			33.82
Hartshill Quarry	New	267.7	46.0	5.88	39.7
Ilmington	New, Existing Infrastructure	365.3	97.6	14.5	54.2
Rugby VHF	New	391.9	26.6	4.0	58.2
Daventry	New, Existing Infrastructure	483.5	91.6	13.5	71.7
Shilton	New, Existing Infrastructure	493.7	10.2	1.6	73.3

Case 1		Light yellow	Existing Network
Case 2	-	Purple	Modified Network 1
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3 – same as Case 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*
1	264,524 (66.94%)	256.0 (39.05%)
2	238,404 (60.33%)	221.7 (33.82%)
3	370,042 (92.56%)	493.7 (73.3%)
4	370,042 (92.56%)	493.7 (73.3%)

Case 1		Light yellow	Existing Network
Case 2	-	Purple	Modified Network 1
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3 – same as Case 3