Digital Switchover (DSO) Programme

Radio DSO Block 12D Peterborough

Document Reference: Radio DSO Peterborough–2.0

Release Date: 01 June 2011

Company Confidential

Document Details

General Detail				
Abstract	Radio DSO plan and details of the Peterborough local multiplex on Block 12D			
Author	Denis Ripley			
Verifier	Brian Tait			
Owner	Glenn Doel			
Optional Information				
Author Defined Reference No	Not used	Project No	951223	
Cross Reference				

Document History		
Ver	Date	Amendment
1.0	16/02/11	Draft version for review.
1.1		Initial release
2.0	23/05/11	Remove Sandy Heath from Plan and changes to editorial area

Table of Contents

1 Peterborough (12D) DSO Narrative

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

Transmitter	ERP (kW)
Peterborough	6.34
Hinchingbrooke	0.25

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

N. Ireland

Edinburgh

Leeds

West & Mid Wales

Stoke

Coventry

Reading & Basingstoke

Southend & Chelmsford

Peterborough

All these multiplexes, 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 Peterborough. This also gives an idea of the terrain in the Peterborough (12D) multiplex editorial area in relation to the other co-block allocations.

The close proximity and interposing terrain between Peterborough (12D) and Southend & Chelmsford (12D) is particularly challenging and has required compromises, particularly on the part of Southend & Chelmsford (12D), to enable these multiplexes to co-exist in an effective manner. Other multiplexes which have an affect upon or are affected by Peterborough (12D) are Reading & Basingstoke (12D), Coventry (12D), Stoke (12D) and Leeds (12D). The more distant multiplexes of N. Ireland (12D), West & Mid Wales (12D) and Edinburgh (12D), using the characteristics proposed, have little or no affect upon Peterborough (12D). Similarly, Peterborough (12D) has little or no affect upon these distant multiplexes.

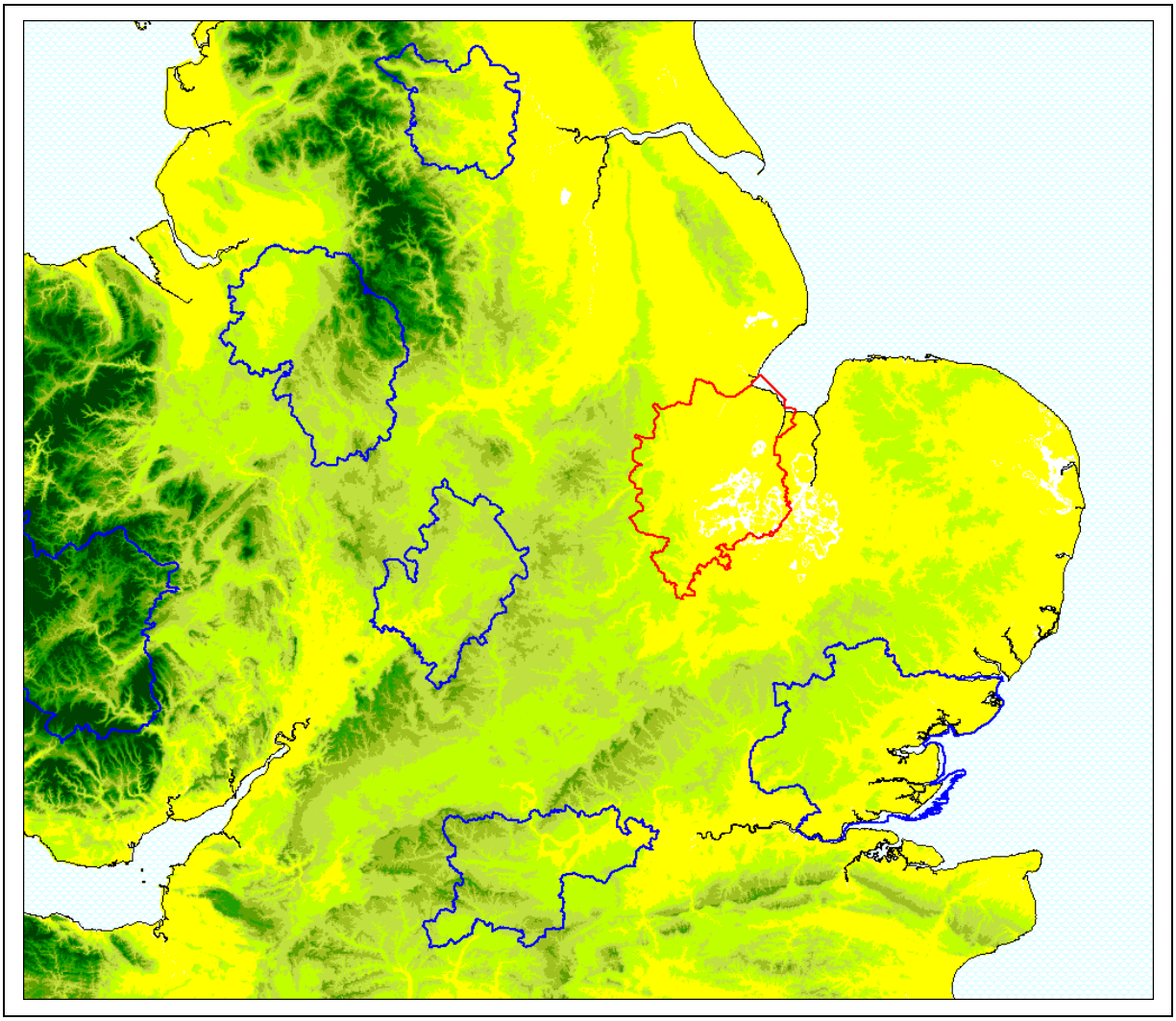

Figure 1.1: Proposed Block 12D allocations

There are editorial area overlaps, shown on map, Figure 1.2, and listed below :-

Leicester (11B) – to the west

Lincoln (10B) – to the north

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

Cambridge (11C) to south east

Norwich (11B) to east

Northants (10C) to west

Herts, Beds & Bucks (10D) to south-west

FM Radio coverage is currently provided by BBC Cambridgeshire (from *Peterborough & Madingley* transmitters) and Heart Cambridgeshire (from *Gunthorpe & Madingley* transmitters). The editorial area is generally well served by these combined services.

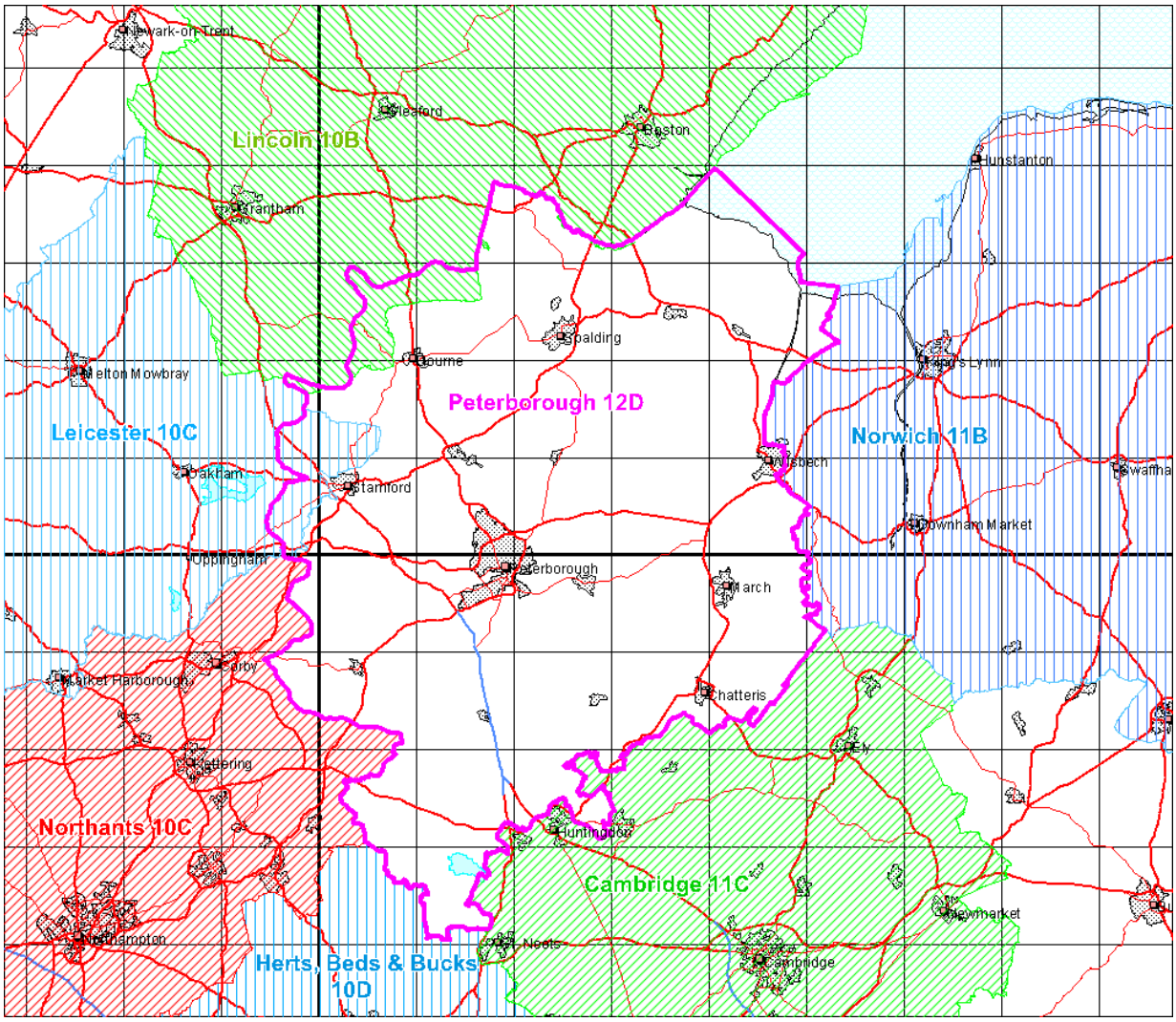

Figure 1.2: Peterborough (12D) Editorial Area with Surrounding Multiplexes

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- and 2-3 shows the current 'on-air' situation in Peterborough (12D). There are only two transmitters on-air, and these are Peterborough and Hinchinbrooke. The latter transmitters serves Huntingdon in the south of the Editorial Area; an area not generally covered by FM services. The antenna horizontal radiation patterns (HRPs) are overlaid. Outdoor interference limited coverage is surprisingly poor given that the predicted noise limited coverage is near universal within the Editorial Area.

For case 2: Modified network 1

No modifications are proposed although the predictions show coverage in the new post DSO environment (with all Block 12D transmitters implemented).

For case 3: Modified Network 2

In this it was required to cover areas where existing local FM services of BBC Cambridgeshire (from *Peterborough & Madingley* transmitters) and Heart Cambridgeshire (from *Gunthorpe & Madingley* transmitters). The area is generally well served by FM except, perversely, in the south which is currently well served from the Hinchinbrooke transmitter of Peterborough (12D). In order to overcome interference from other 12D multiplexes, it is necessary to deploy a relatively large number of additional sites. Nine further sites to the two sites already on-air are required. *Figures 2-3 and 2-4* shows this coverage which broadly matches FM 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). No further transmitters are proposed at this juncture.

1.1 Incoming interference and sensitivity to other co-block multiplexes

With 11 Transmitters, outdoor, 1% time interference, road coverage remains below 80% with 78.2% coverage. Indoor Coverage is 92.29% of population within the Editorial Area.

The most significant interfering co-block multiplex is Southend & Chelmsford (12D), although Reading & Basingstoke (12D), Coventry (12D) and Stoke (12D) impact upon Peterborough (12D). Leeds (12D) has a very slight affect. N Ireland (12D), West & Mid Wales (12D) and Edinburgh (12D) have no 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, primarily to the outdoor coverage to Southend & Chelmsford (12D) because of it's close proximity to Peterborough (12D). The existing Peterborough transmitter at 6.3 kW ERP is the primary 'interferer' to Southend & Chelmsford (12D). This particularly impacts the north-west region of Southend & Chelmsford (12D), an area of the Chilterns - so a relatively high number of transmitters would be required here in order to protect the service adequately. This in turn would impact upon Peterborough (12D). It was therefore decided that for the purposes of this study, coverage to Southend & Chellmsford (12D) would have to exclude the north-west part

of the editorial area. This area could possibly be served from an adjacent multiplex but this will need to be addressed once the overall plan has been formulated.

As noted earlier, an alternative strategy enabling Peterborough (12D) and Southend & Chelmsford(12D) to co-exist may be to limit the radiation of Peterborough (Peterborough 12D) towards Southend & Chelmsford (12D) but this in turn would have a significant impact upon coverage to Peterborough (12D). The relative merits of various solutions/compromises may require further discussion in the context of a completed DAB Plan

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 Existing Situation

Figure 2-2 Existing 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

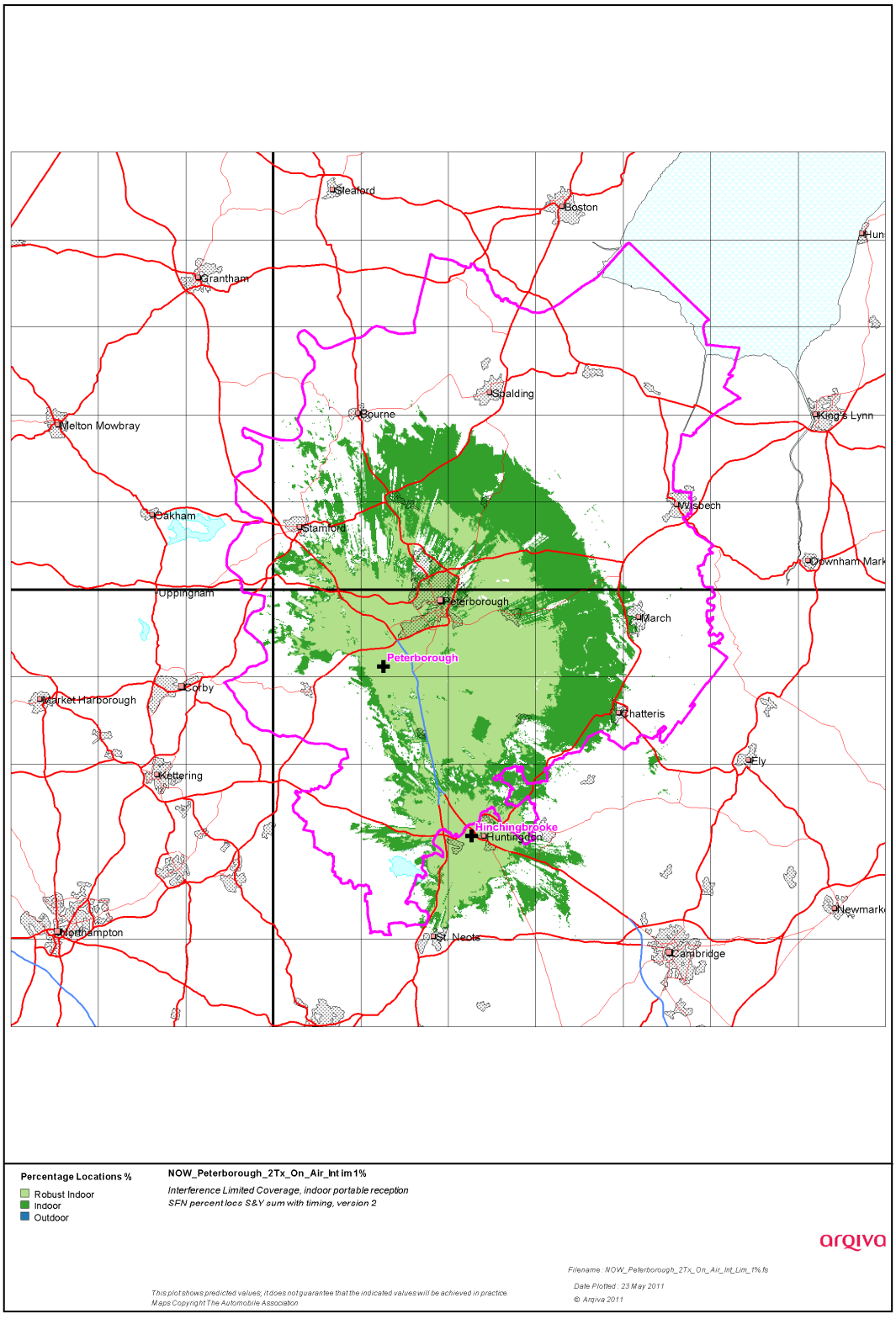

Figure 2-1. Current Situation

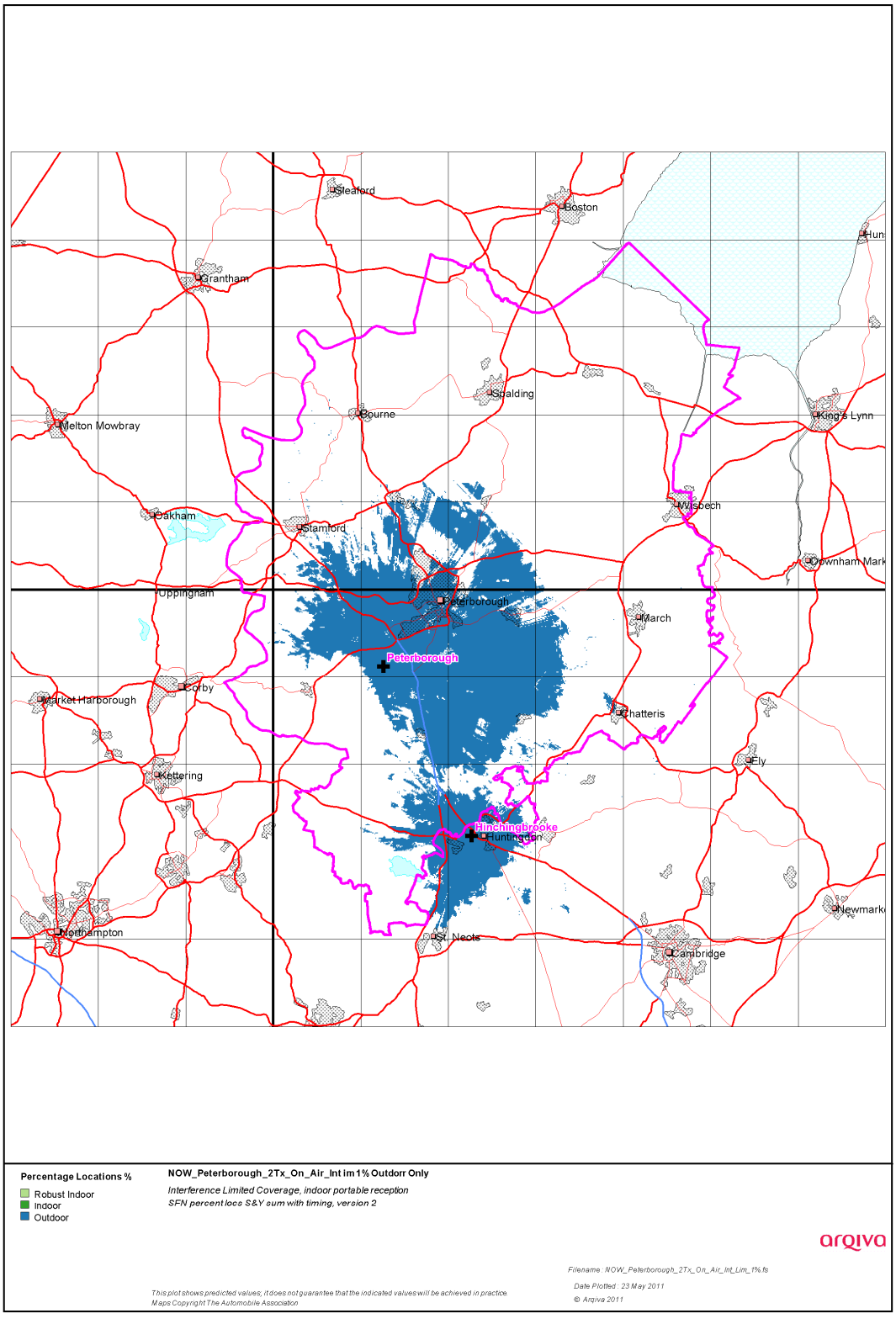

Figure 2-2. Current Situation – Outdoor Only 1% Time Interference

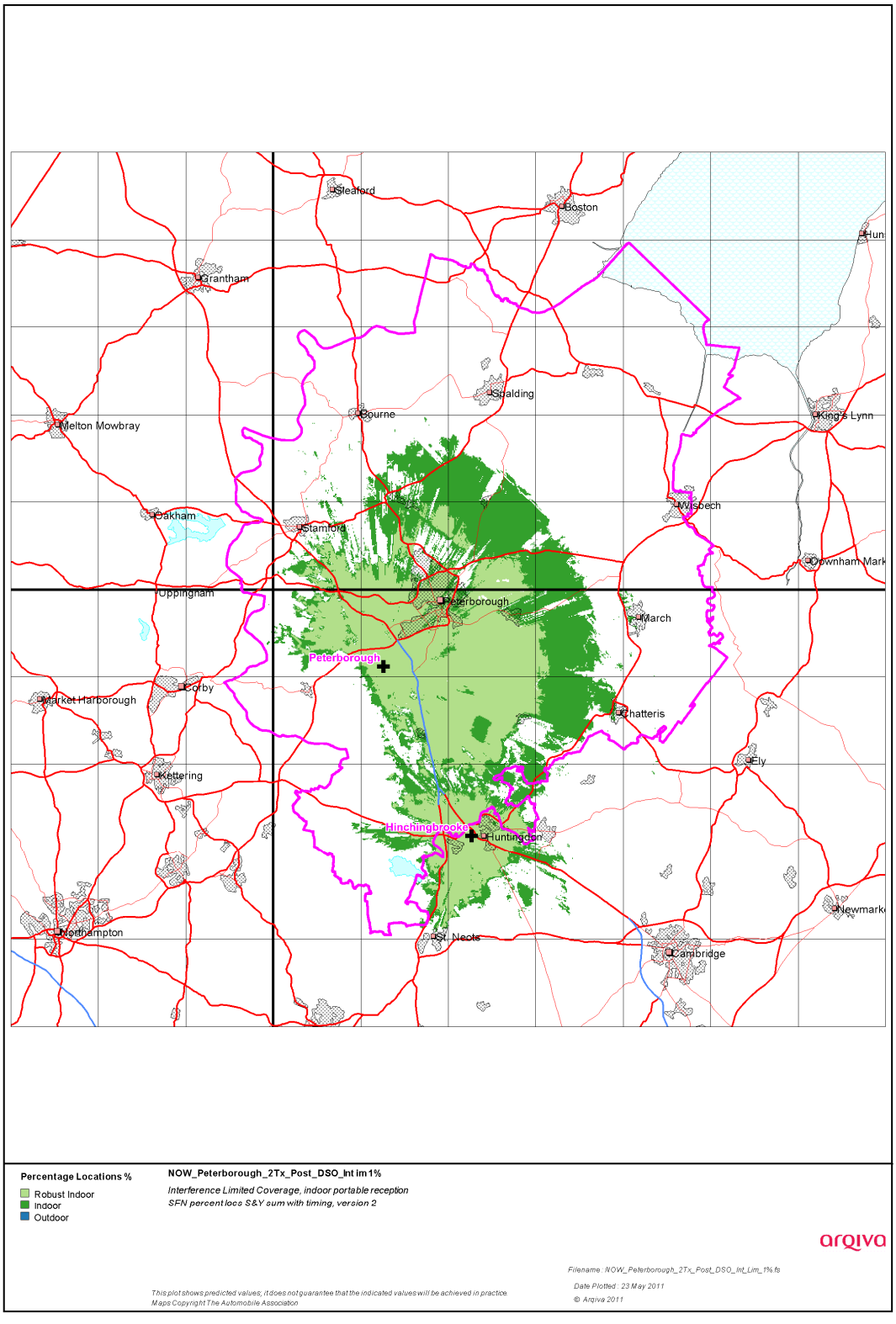

Figure 2-3. Modified Network 1

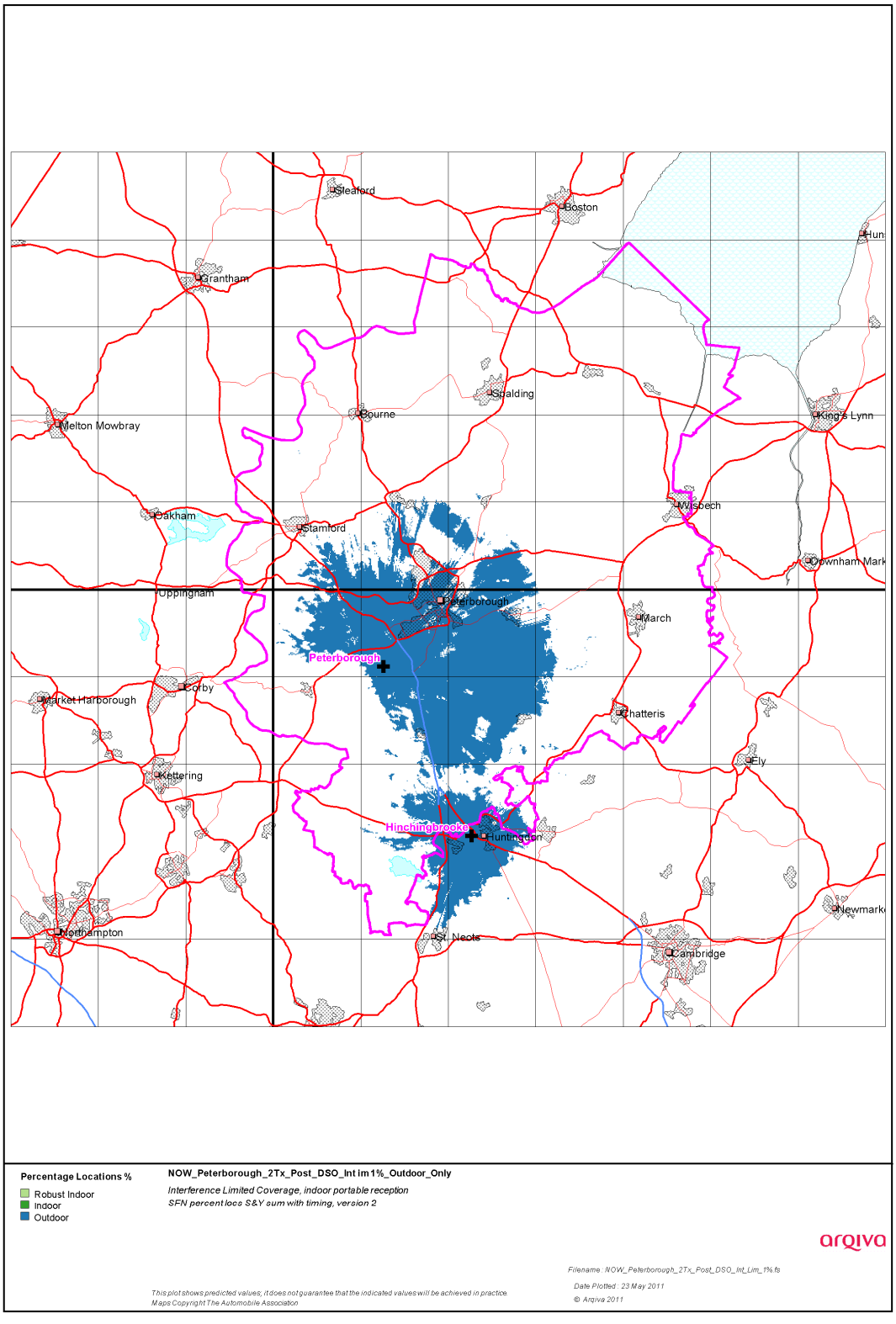

Figure 2-3. Modified Network 1– Outdoor Only 1% Time Interference

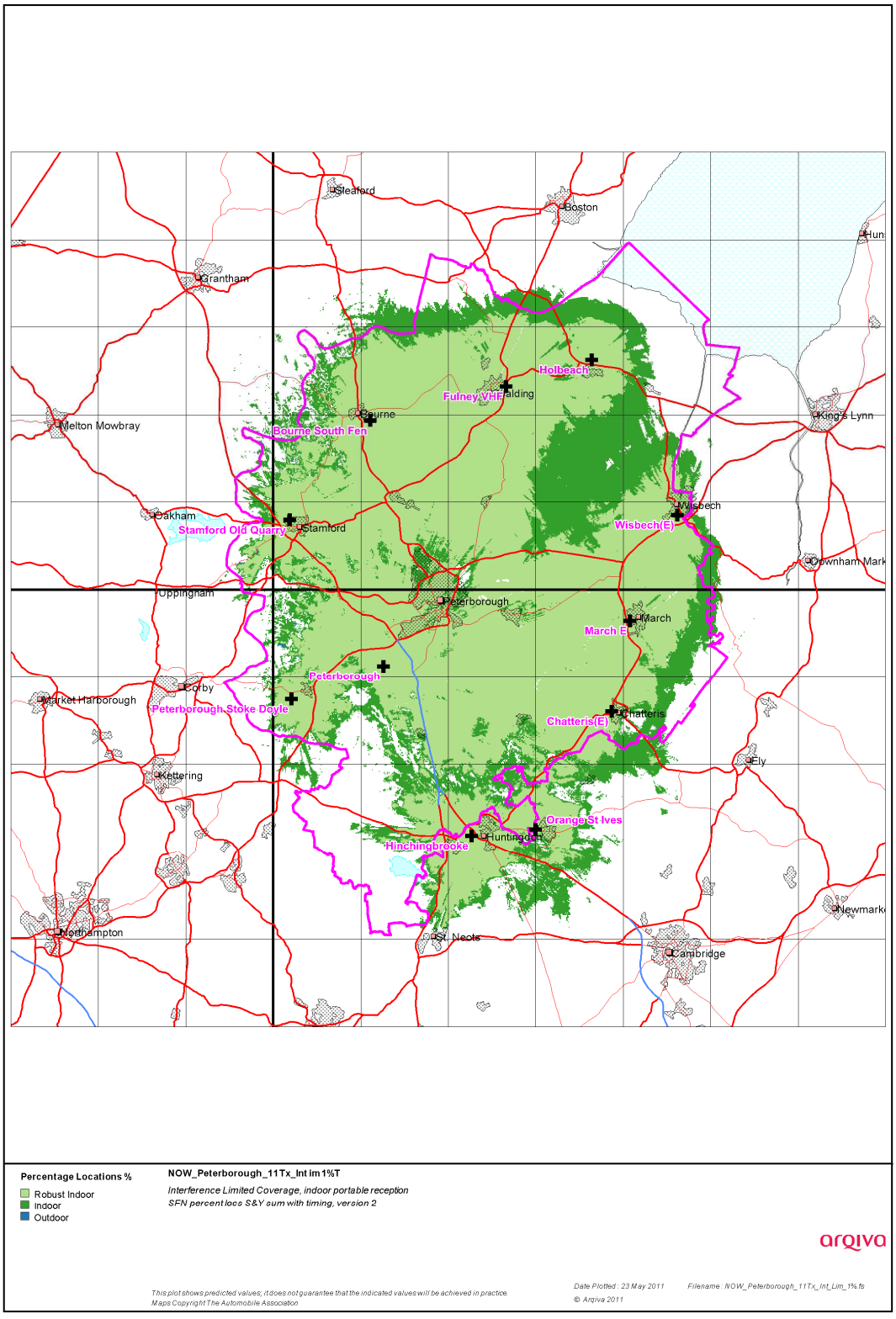

Figure 2-4. Modified Network 2

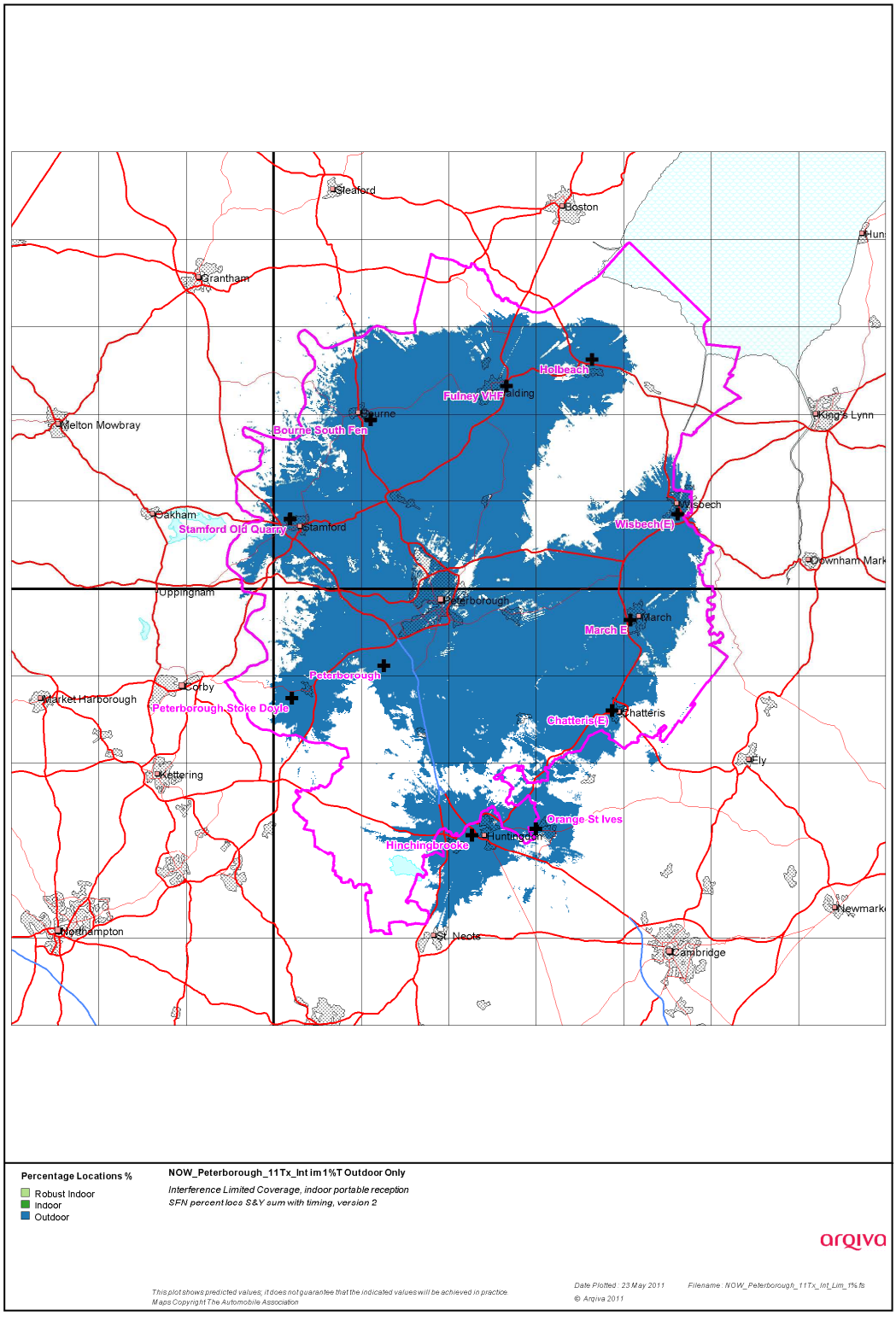

Figure 2-5. Modified Network 2 – Outdoor Only, 1% Time Interference

2.2 Population Coverage tables within Editorial Area

Table 2-1 Population - Proportional Indoor Coverage:

Total Households within Boundary 213,543

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 (2Tx)	Existing		121,135	-	-	46.72
Post DSO (2Tx)	Existing		90,773	-	-	42.51
Fulney VHF	New	18,596 (8.71%)	119,151	28,378	16.99	59.50
Wisbech(E)	New	13,705 (6.42%)	137,260	18,109	4.78	64.28
Stamford Old Quarry	New	16,167 (7.57%)	161,129	23,869	11.18	75.46
Bourne South Fen	New	8,659 (4.05%)	168,674	7,545	3.53	78.99
Holbeach	New	4,340 (2.03%)	174,849	6,175	2.89	81.88
Peterborough Stoke Doyle	New	3,421 (1.60%)	179,378	4,529	2.12	84.00
Chatteris(E)	New	5,739 (2.69%)	189,176	9,798	4.59	88.59
March(E)	New	10,370 (4.86%)	196,342	7,166	3.35	91.94
Orange St Ives	New	679 (0.32%)	197,072	730	0.35	92.29

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 – As Case 3

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

Total Roads within Boundary 519.8 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 (2Tx)	Existing	154.7	-	-	29.77
Post DSO (2Tx)	Existing	142.3	-	-	27.39
Fulney VHF	New	204.3	62.0	11.91	39.3
Wisbech(E)	New	218.8	14.5	2.8	42.1
Stamford Old Quarry	New	293.1	74.3	14.3	56.4
Bourne South Fen	New	321.2	28.1	5.4	61.8
Holbeach	New	331.2	10.0	1.9	63.7
Peterborough Stoke Doyle	New	350.5	19.3	3.7	67.4
Chatteris(E)	New	372.0	21.5	4.2	71.6
March(E)	New	405.1	33.1	6.3	77.9
Orange St Ives	New	406.5	1.4	0.3	78.2

Case 1		Light yellow	Existing Network
Case 2	-	Purple	Modified Network
Case 3	-	Blue	Modified Network 2
Case 4	-	Blue + Green	Modified Network 3 – 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	121,135 (46.72%)	154.7 (29.77%)
2	90,773 (42.51%)	142.3 (27.39%)
3	197,072 (92.29%)	406.5 (78.2%)
4	197,072 (92.29%)	406.5 (78.2%)

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