
Digital Switchover (DSO) Programme

Radio DSO Block 10C Liverpool

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Company Confidential

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Ver	Date	Amendment
1.0	24/01/11	Draft version for review.
1.1		Initial release
2.0	11/05/11	Original population analysis based upon England Only data; Tables 2-1, 2-2, 2-3 and 2-4 revised; Liverpool Boundary (9/05/11) used
2.2	7/06/11	Warrington Population Increase, Table 2.1 revised to 91,508, Table 2.3 'incrementals' added.

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1 Liverpool DSO narrative

The current allocation on 11B for Liverpool has been implemented and 3 stations are currently on air. It is proposed to reallocate this multiplex to Block 10C the Editorial area has been adjusted slightly to exclude Prestatyn in N Wales.

There is an overlap in the east of the region with the proposed Manchester 10B allocation; an overlap in the north with Central Lancashire 12A; and a substantial overlap in the south west of the Mersey, with the North Wales & West Cheshire Block 10D allocation

The proposed Block 10C allocations including North Yorkshire, Gloucester, North Devon, Northampton, Surrey and Liverpool are shown Fig 1.1 below.

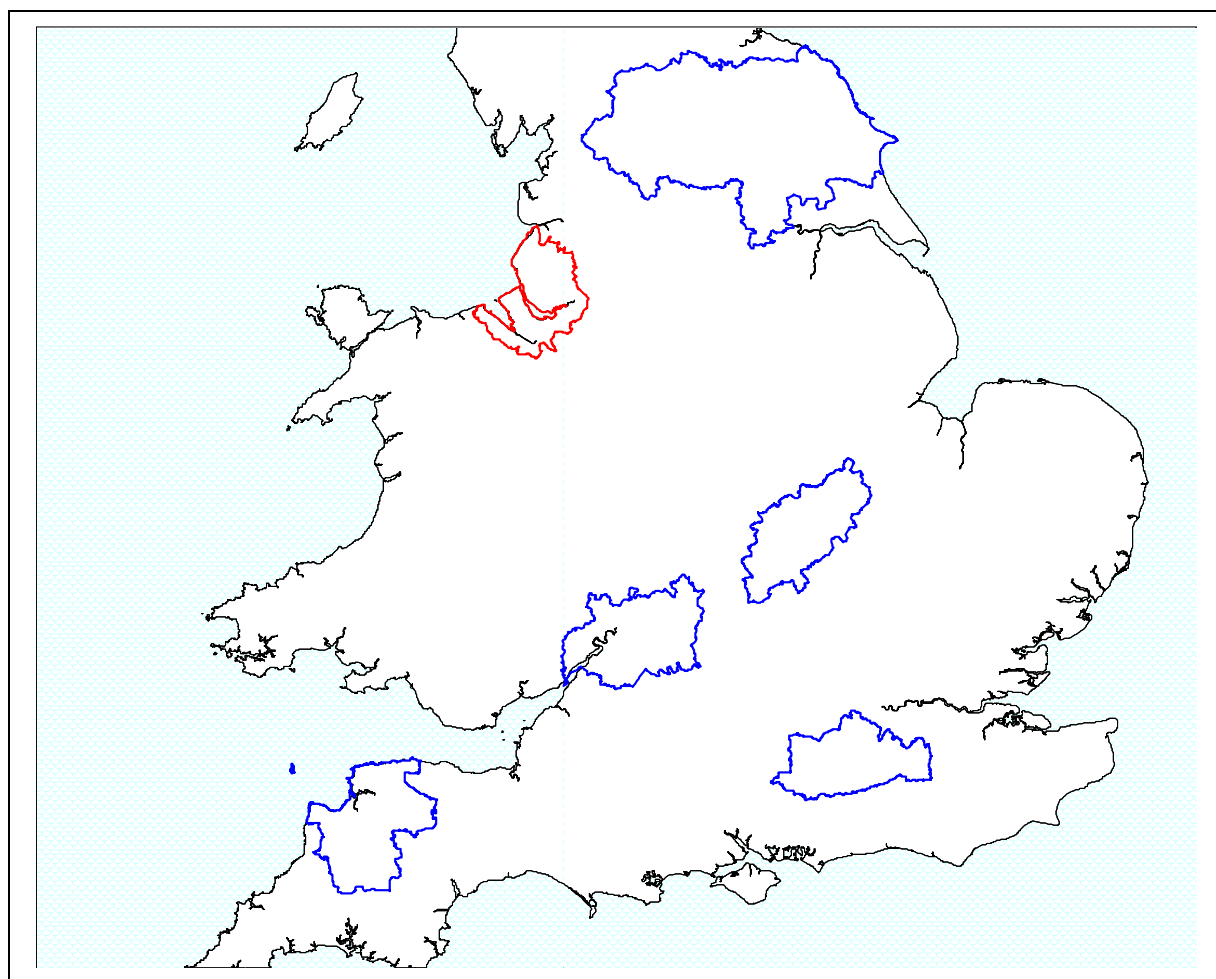


Figure 1.1: Proposed Block 10C allocations

The current allocated transmission characteristics are:

Site name	ERP	Site height m a.o.d	Antenna height m a.g.l	Antenna type
Billinge Hill	1kW	170	31	Yagi
Hope Mountain	0.2kW	315	18	Cardioids
St Johns Beacon	0.5	10	127	Dipoles

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

Coverage is shown Fig 2-1

For case 2: Modified network 1

All three transmitters currently on air on Block 11B allocation have been reallocated to Block 10C and the ERPs have been increased; Billinge Hill from a maximum ERP of 1 kW to 1.6kW, Hope Mountain from 0.2kW to 0.6kW and St Johns Beacon from 0.5kW to 0.85 kW. Coverage is shown Fig 2-2

Mobile coverage is approximately 7% less than Case 1, even with these ERP increases, in the more challenging Block 10C environment due to interference from the proposed South Yorkshire multiplex, and to a lesser extent from the proposed Gloucester and Northampton multiplexes. However, the position is improved by some 9 percentage points if 5% time interference from South Yorkshire is permitted.

The indoor coverage is approximately 1% greater than that of the existing 11B service for 99% Time.

For case 3: Modified Network 2

In this it was required to cover areas where existing local FM provision (BBC Merseyside and Independent Radio City) is robust. To achieve this, six sites were required; the coverage of the Modified Network 2 is shown in Figure 2.3.

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). To achieve this coverage 8 sites will be required. This is shown in figures 2.4 & 2.5.

1.1 Outgoing interference and sensitivity to other co-block multiplexes

The general 'Benchmark' for indoor and outdoor co-block interference protection is for 99% time; however, as mentioned in 'case 2; Modified Network 1' outdoor coverage is affected more than is desirable from 1% time interference from the proposed South Yorkshire multiplex. Incoming interference from South Yorkshire is more marked for outdoor mobile coverage so coverage has also been assessed at 5% time for outdoor coverage only, gaining some six percentage points in terms of road km

South Yorkshire in particular is impacted by the Liverpool proposals contained in this document and it impacts very slightly to Gloucester and Northampton.

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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 Current Situation – Interference Limited Coverage (Block 11B)
- Figure 2-2 Current Situation – Interference Limited Coverage (Block 11B) – Outdoor Only
- Figure 2-3 Modified Network 1
- Figure 2-4 Modified Network 1 – Outdoor Only 1%Time Interference
- Figure 2-5 Modified Network 1 – Outdoor Only 5%Time Interference from North Yorkshire
- Figure 2-6 Modified Network 2
- Figure 2-7 Modified Network 2 – Outdoor Only 1% Time Interference
- Figure 2-8 Modified Network 2 – Outdoor Only 5%Time Interference from North Yorkshire
- Figure 2-9* Modified Network 3
- Figure 2-10 Modified Network 3 Outdoor Only 1% Time Interference
- Figure 2-11 Modified Network 3 – Outdoor Only 5%Time Interference from North Yorkshire

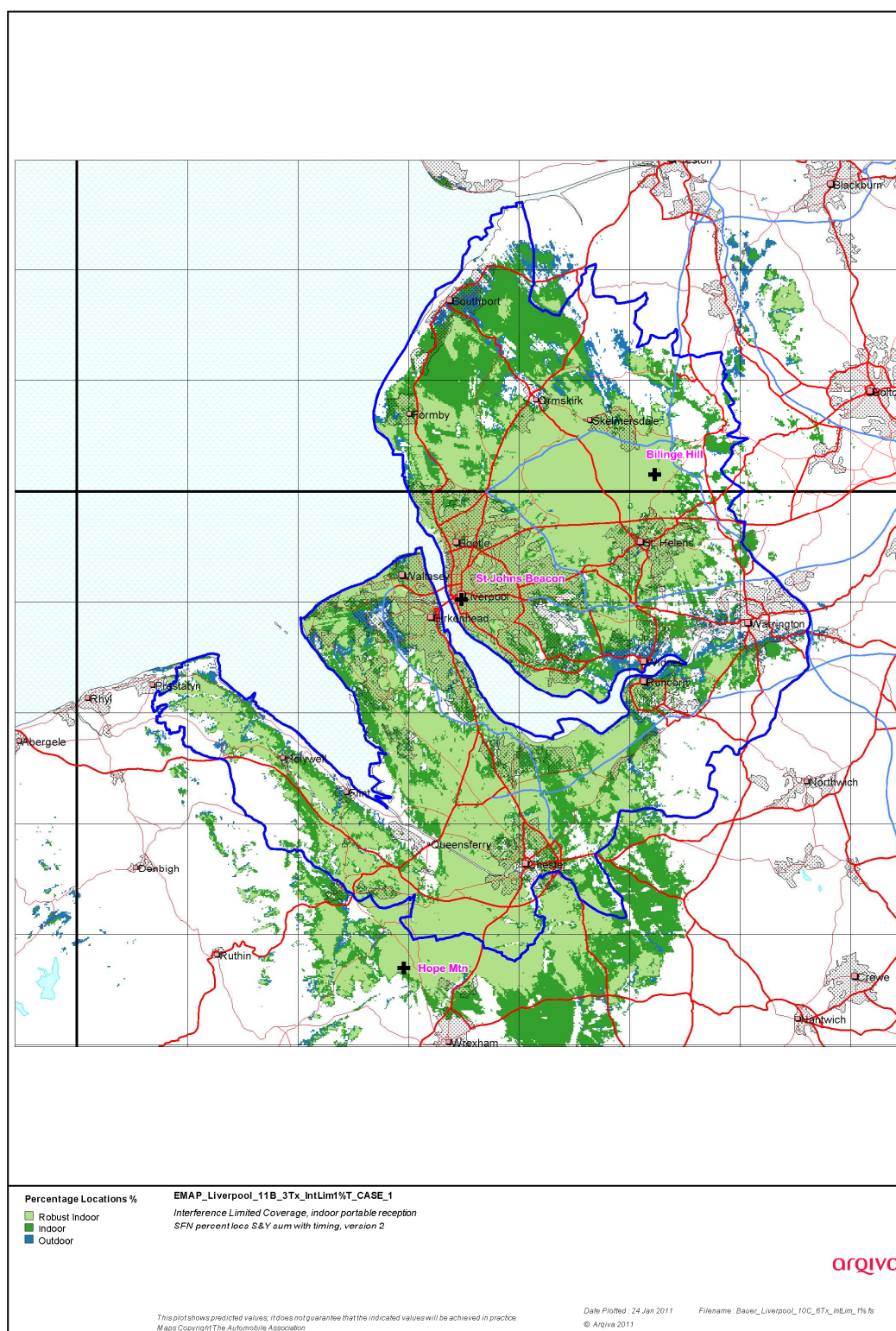


Figure 2-1. Current Situation - Interference Limited Coverage (Block 11B)

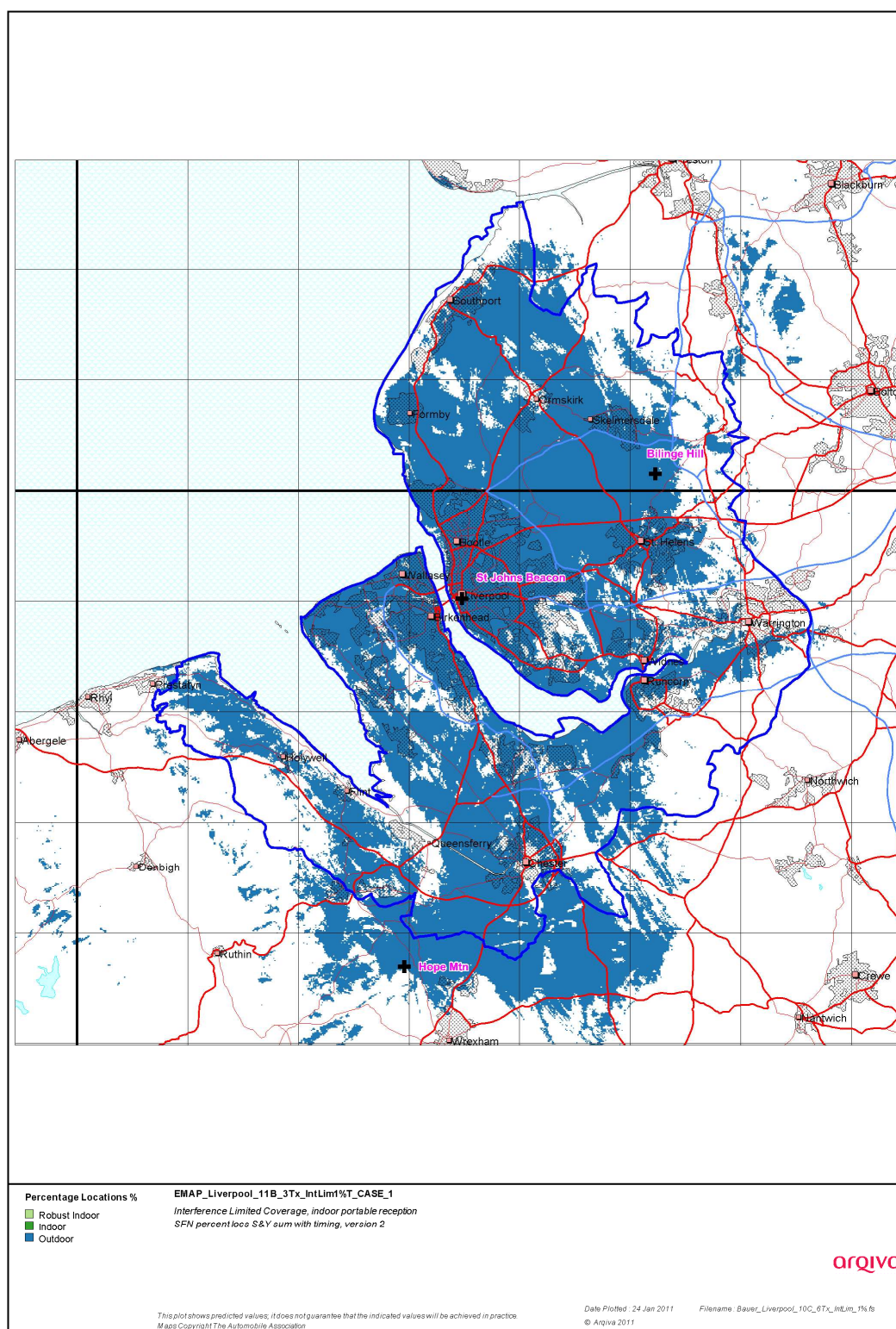


Figure 2-2. Current Situation - Interference Limited Coverage Block 11B – Outdoor Only

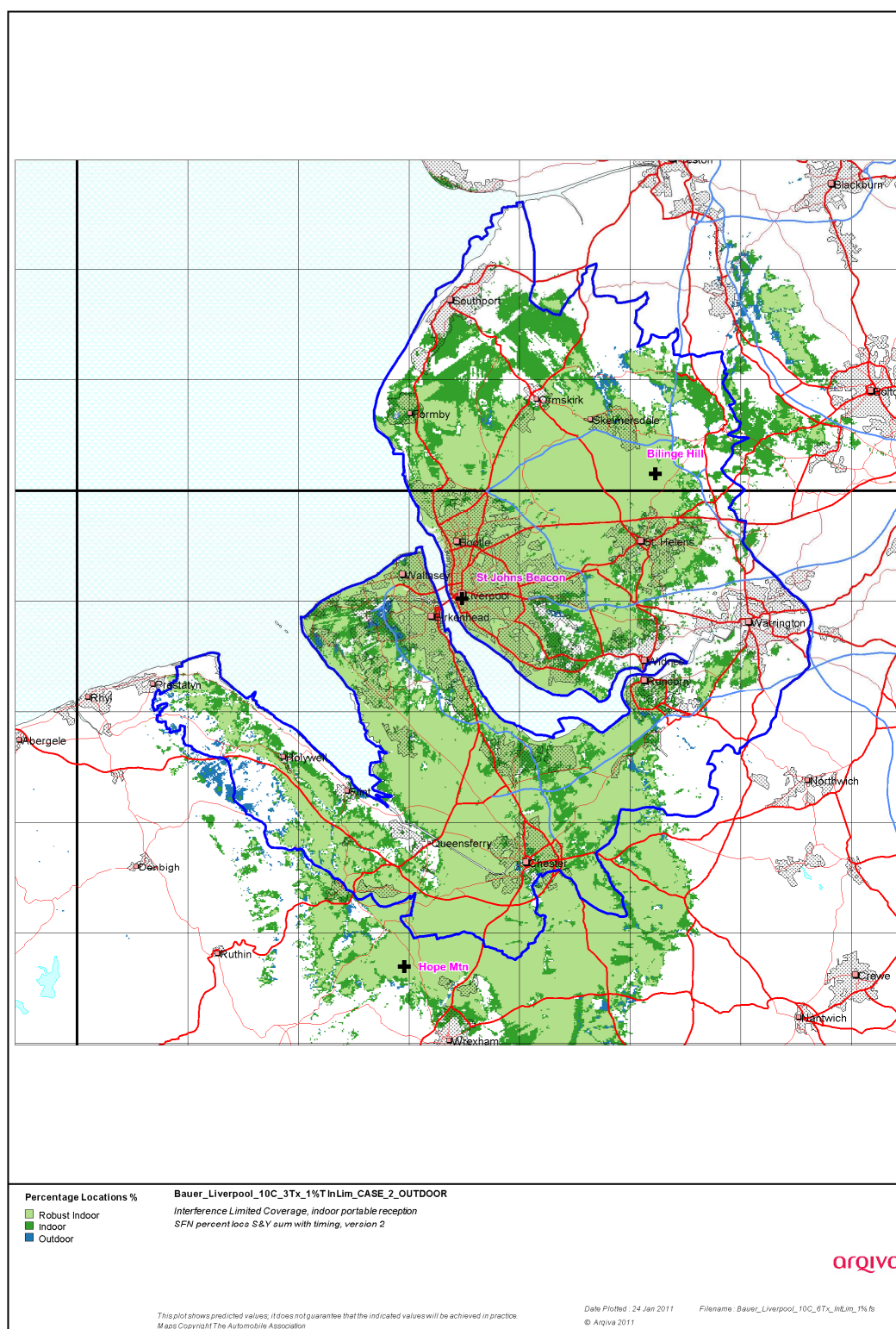


Figure 2-3 Modified Network 1

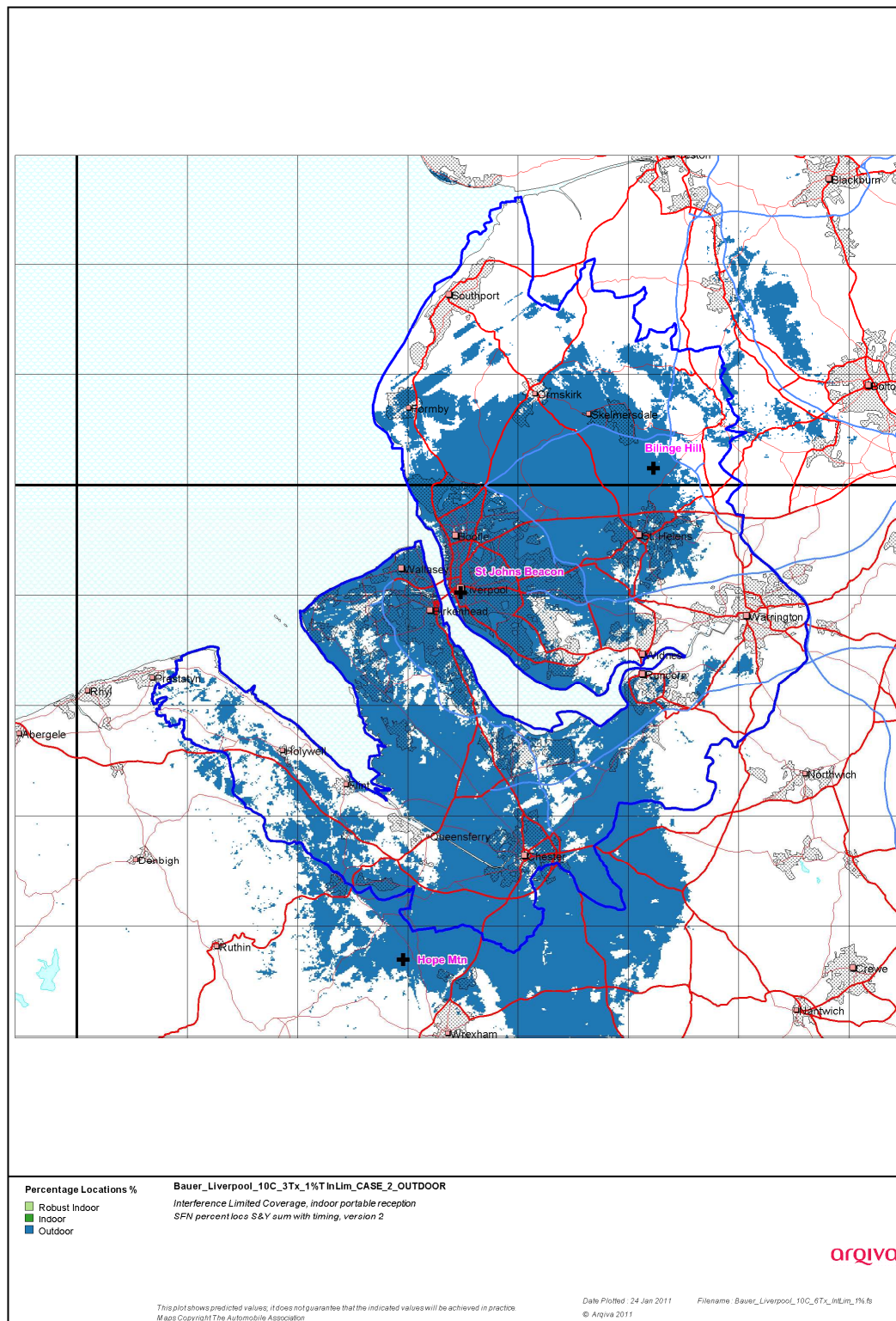


Figure 2-4 Modified Network 1 – Outdoor Only 1%T interference

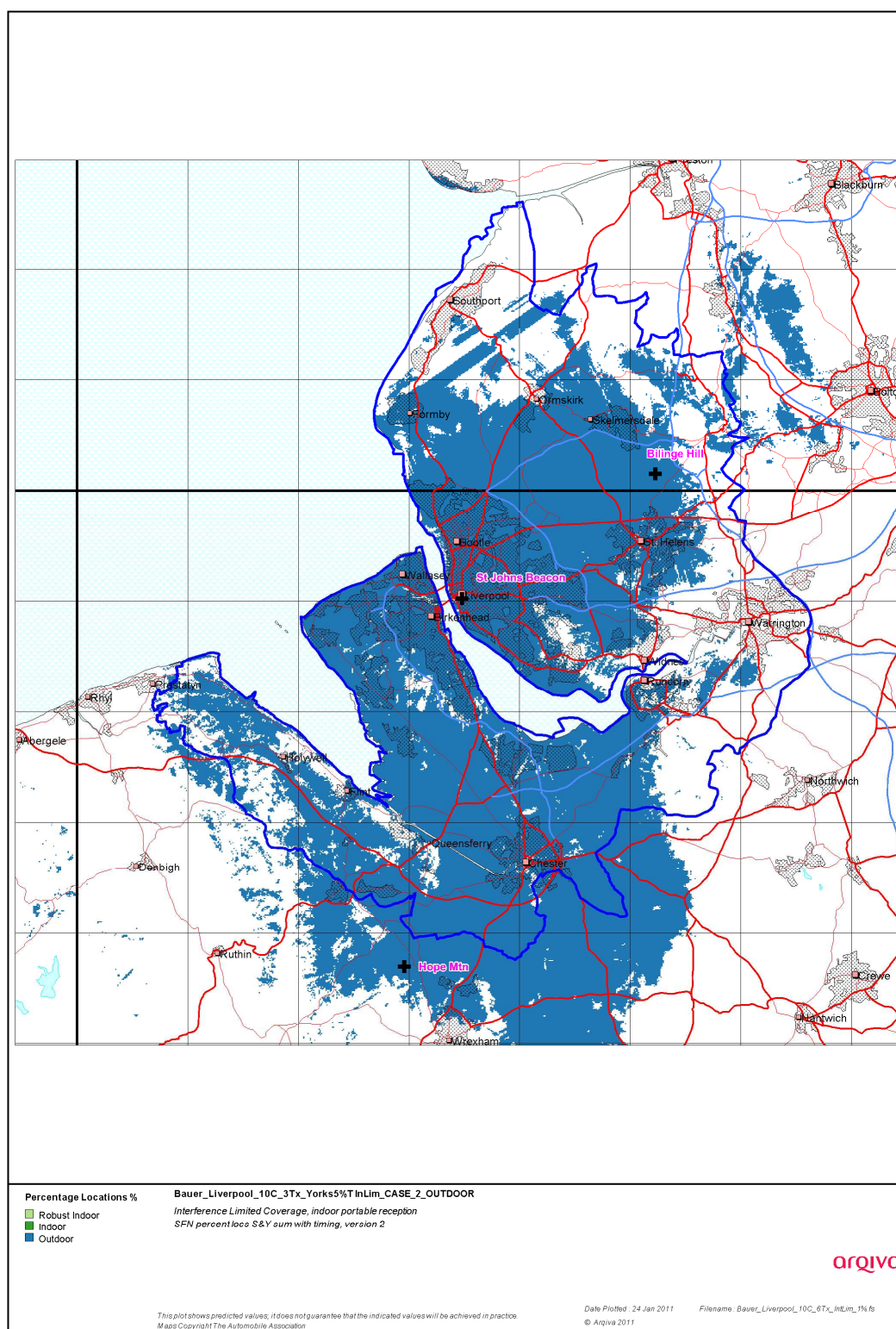


Figure 2-5 Modified Network 1 – Outdoor Only 5%T interference from North Yorkshire
 (1%Time Interference from Gloucester & Northampton)

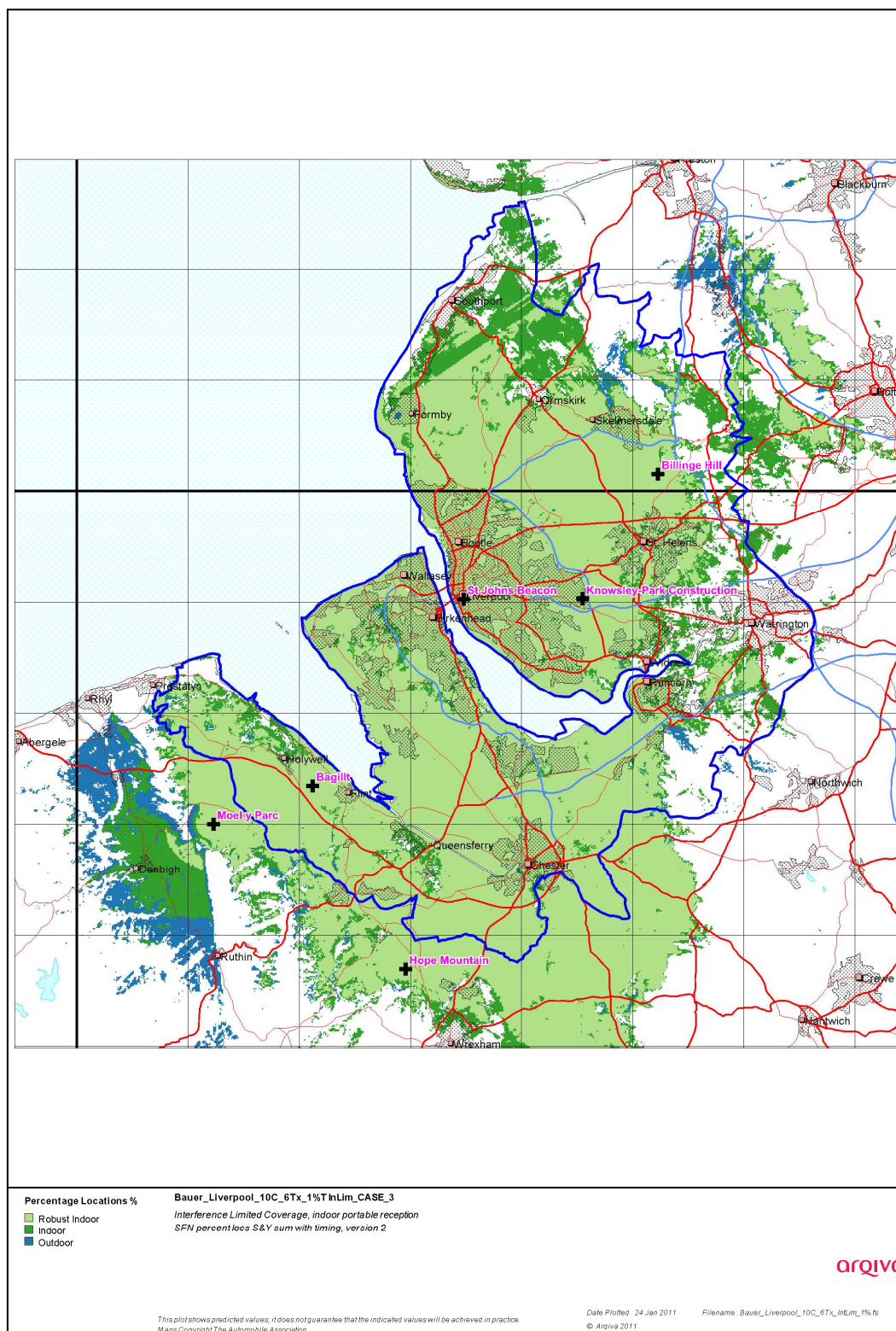


Figure 2-6. Modified Network 2

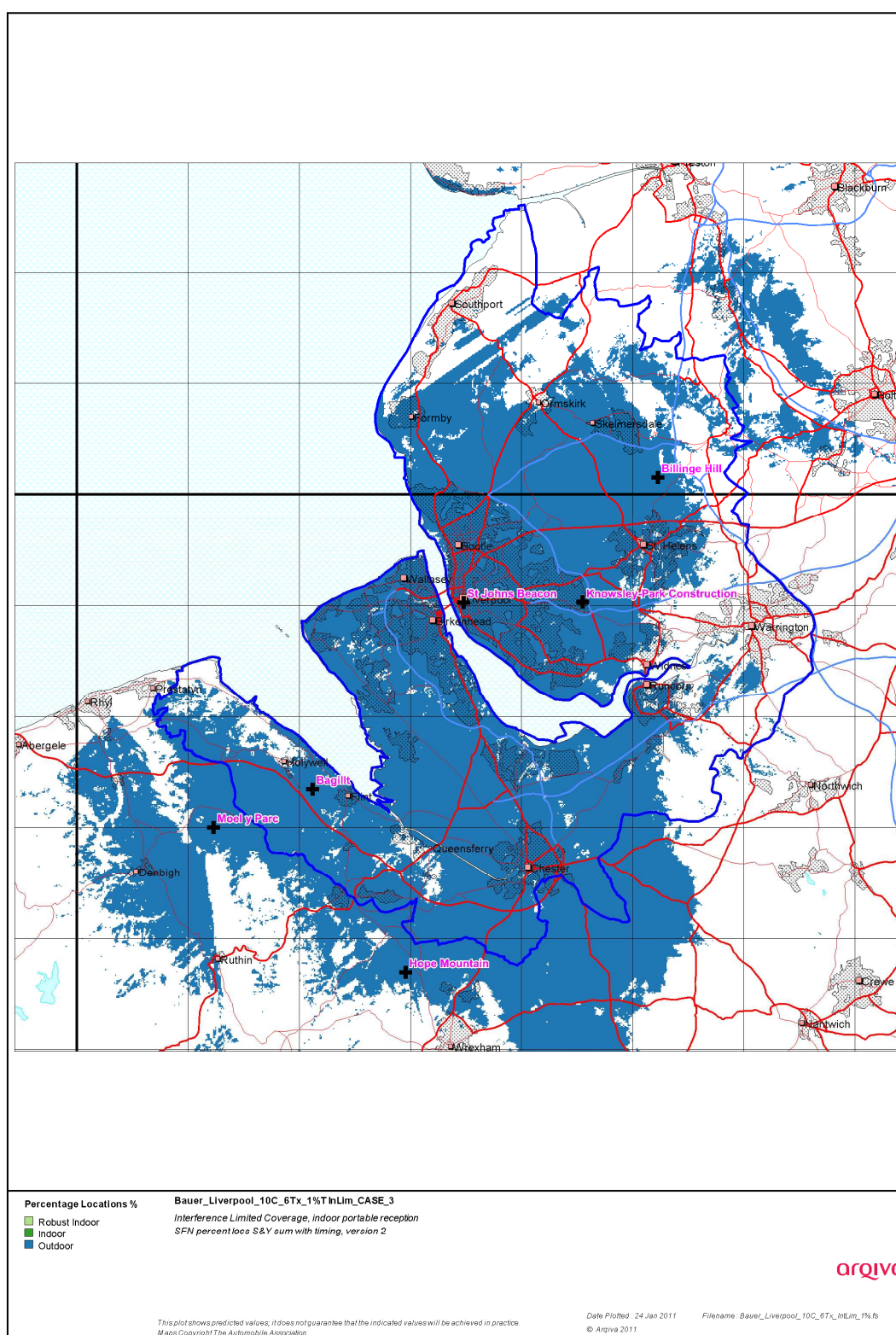


Figure 2-7. Modified Network 2- Outdoor Only 1% Time Interference

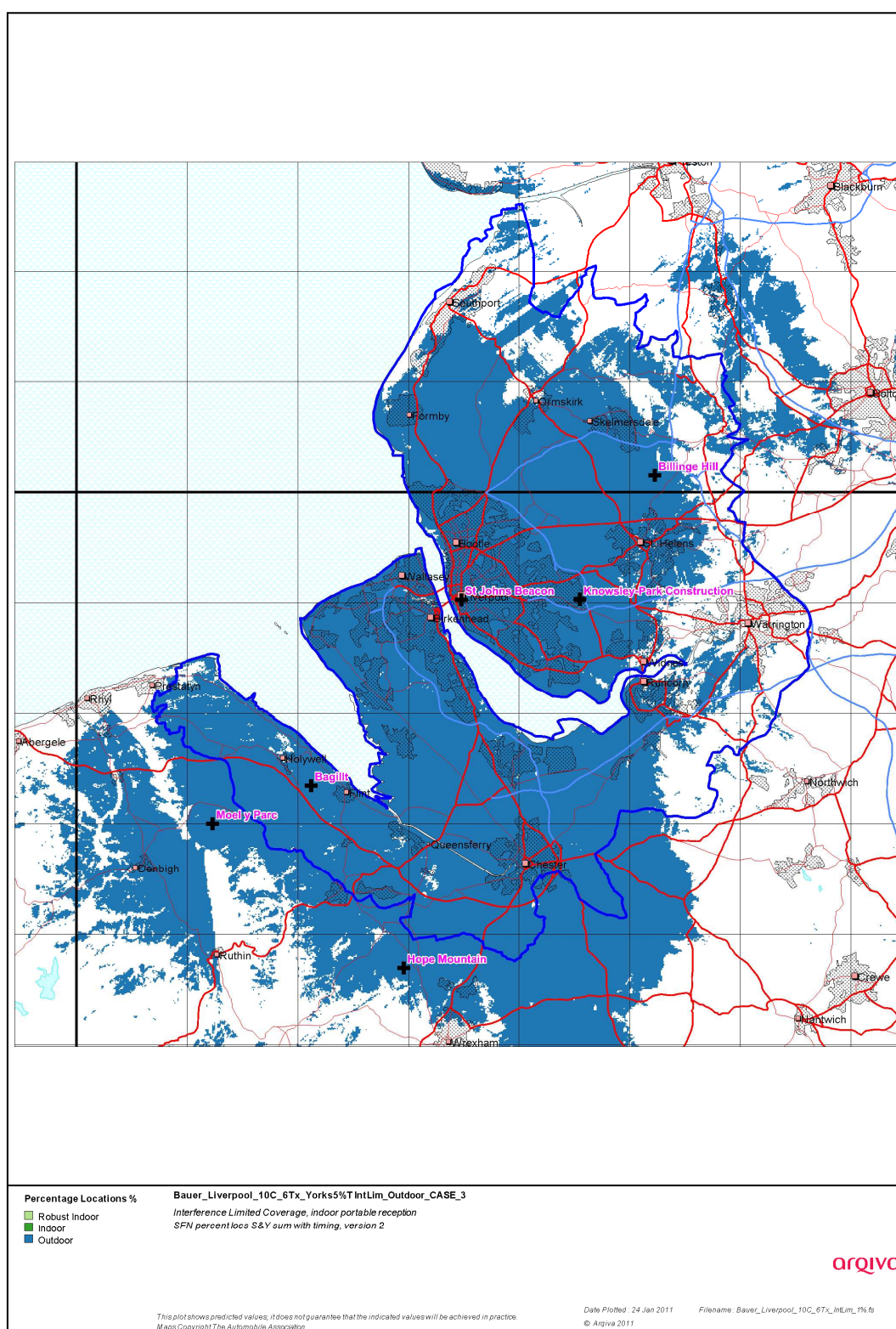


Figure 2-8. Modified Network 2- Outdoor Only 5% Time Interference (North Yorkshire)
 (1% Time Interference from Gloucester & Northampton)

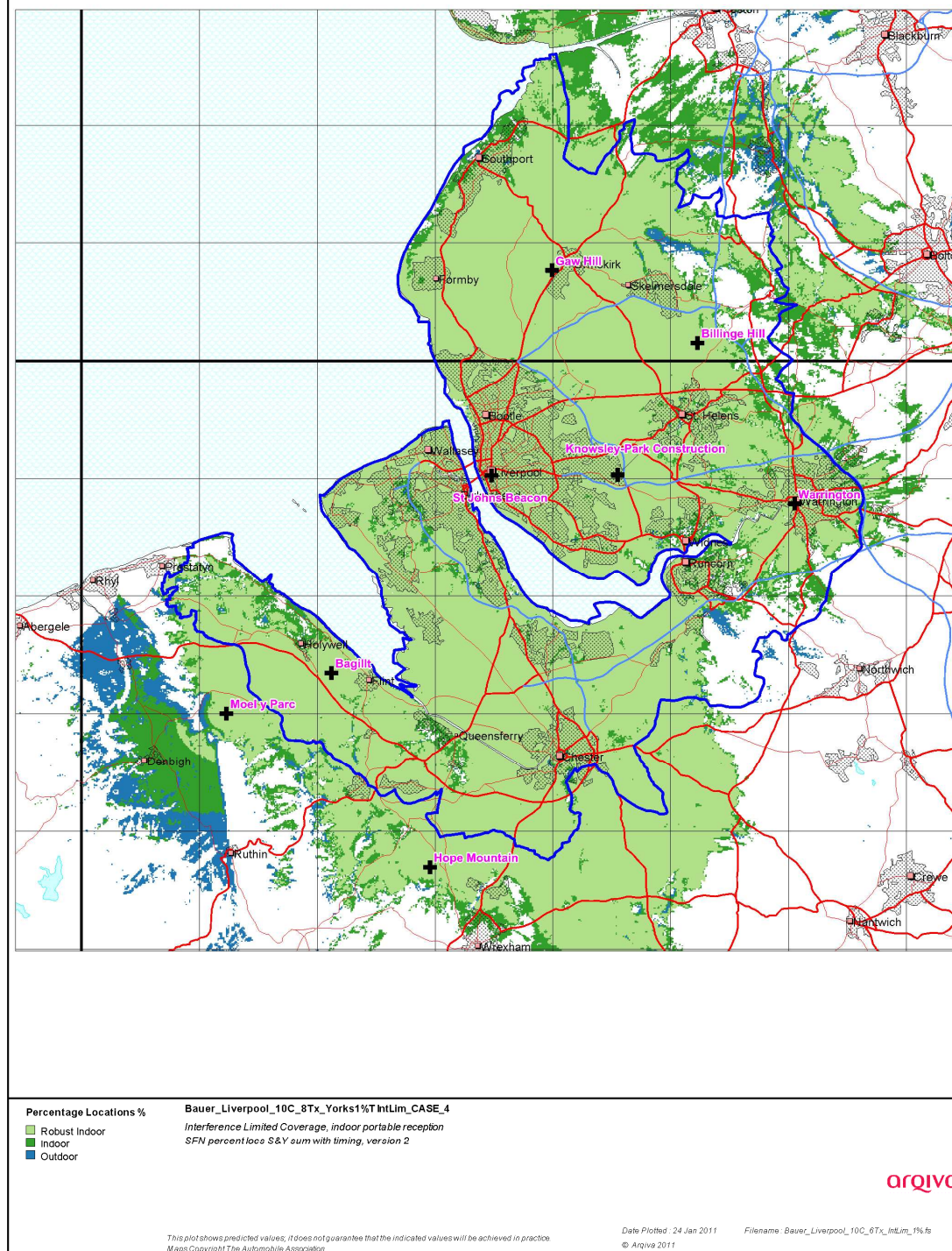


Figure 2-9. Modified Network 3

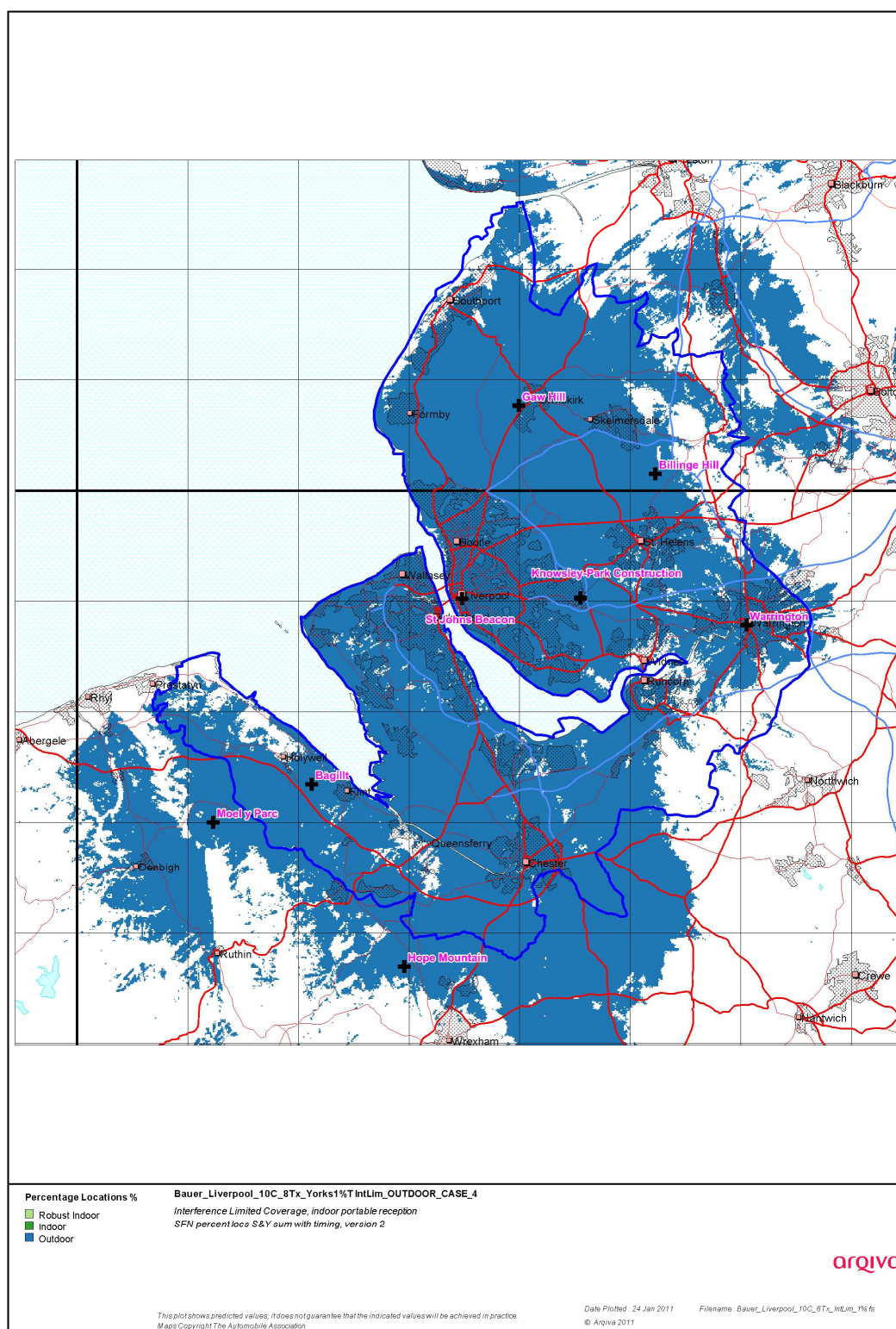
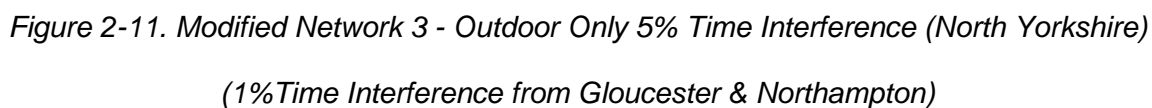


Figure 2-10. Modified Network 3 – Outdoor Only 1% Time Interference



2.2 Population Coverage tables within Editorial Area

Table 2-1 Population coverage proportional indoor: Total 1,013,249 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 Block 11B (3 Tx)	Existing	-	737,738	-	-	72.81
Modified Block 10C (3 Tx)	Existing	-	744,865			73.51
Warrington	New Site	74,633 (7.37%)	836,373	91,508	9.03	82.54
Gaw Hill	New Site	66,280 (6.54%)	885,574	49,201	4.86	87.40
Moel-y-Parc	New Site Existing Infrastructure	205,859 (20.32%)	927,183	41,609	4.11	91.51
Knowsley, Park Construction	New Site	75,440 (7.45%)	939,639	12,456	2.32	93.83
Bagillt	New Site Existing Infrastructure	34,513 (3.41%)	951,964	12,325	0.12	93.95

Case 1

Light yellow

Existing 11B Sites Unchanged

Case 2

-

Purple

Modified Network 1

Case 3

-

Purple + Blue

Modified Network 2

Case 4

-

Purple + Blue + Green

Modified Network 3

Table 2-2. Road coverage 99% Locations and 99% Time: Total roads 1,148.2 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 Block 11B (3 Tx)	Existing	787.8	-	-	68.6
Modified Block 10C (3 Tx)	Existing	709.0			61.7
Warrington	New Site	805.5	96.5	8.5	70.2
Gaw Hill	New Site	857.9	52.4	4.5	74.7
Moel-y-Parc	New Site Existing Infrastructure	960.8	102.9	9.0	83.7
Knowsley, Park Construction	New Site	972.8	12.0	1.0	84.7
Bagillt	New Site Existing Infrastructure	996.0	23.2	2.0	86.7

Case 1		Light yellow	Existing 11B Sites Unchanged
Case 2	-	Purple	Modified Network 1
Case 3	-	Purple + Blue	Modified Network 2
Case 4	-	Purple + Blue + Green	Modified Network 3

Table 2-3. Road coverage 99% Locations and 95% Time: Total roads 1,140 km

(Interference is 5% Time from North Yorkshire only, Gloucester & Northampton is 1% Time)

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 Block 11B (3 Tx)	Existing	-	-	-	-
Modified Block 10C (3 Tx)	Existing	819.3			71.3
Warrington	New Site	927.6	108.3	9.5	80.8
Gaw Hill	New Site	980.6	5.3	4.6	85.4
Moel-y-Parc	New Site Existing Infrastructure	1,044.5	63.9	5.6	91.0
Knowsley, Park Construction	New Site	1,053.4	8.9	0.7	91.7
Bagillt	New Site Existing Infrastructure	1,065.1	11.7	1.1	92.8

Case 1		Existing Sites(11B)	not applicable at 95% Time Interference
Case 2	-	Purple	Modified Network 1
Case 3	-	Purple + Blue	Modified Network 2
Case 4	-	Purple + Blue + 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	737,738 (72.81%)	787.8 (68.6%)	-
2	744,865 (73.51%)	709.0 (61.7%)	819.3 (71.3%)
3	838,782 (82.78%)	855.4 (74.51%)	926.8 (80.7%)
4	951,964 (93.95%)	996.0 (86.7%)	1,059.3 (92.8%)