
Digital Switchover (DSO) Programme

Radio DSO Block 12A Central Lancashire

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1 Central Lancashire DSO narrative

The current Central Lancashire local licence transmits on Block 12A and consists of two transmission sites. It is proposed in the new Ofcom block allocation plan to retain block 12A.

This multiplex is co-block with a number of regional multiplexes notably MXR Yorkshire and West Midlands. In fact Yorkshire is adjacent to this multiplex. Currently Central Lancashire suffers significant incoming interference from Yorkshire and to a lesser extent West Midlands. The current infrastructure has been limited significantly by the requirement to protect the regional editorial areas. Any improvement in coverage will have a direct impact on both of the regional multiplexes.

For this multiplex investigations revealed that any increase in height of Winter Hill or change of antenna (to the national antenna for example) has serious consequences to the coverage of MXR Yorkshire.

Therefore a modified antenna at the same antenna height but with increased ERP (with the radiated power in the direction of Yorkshire remaining the same) is proposed, this option significantly improves coverage from Winter Hill without affecting MXR Yorkshire.

Additional transmission sites do not have such a significant impact on the regional multiplexes, with the exception of Whitworth. This has already been planned for Manchester. Whitworth has a significant impact on the West Midlands multiplex; it is included in the plan for Central Lancashire. It is recommended that Whitworth be allocated to Manchester and not Central Lancashire multiplex.

The current and proposed block 12A allocations are shown below figure 1.

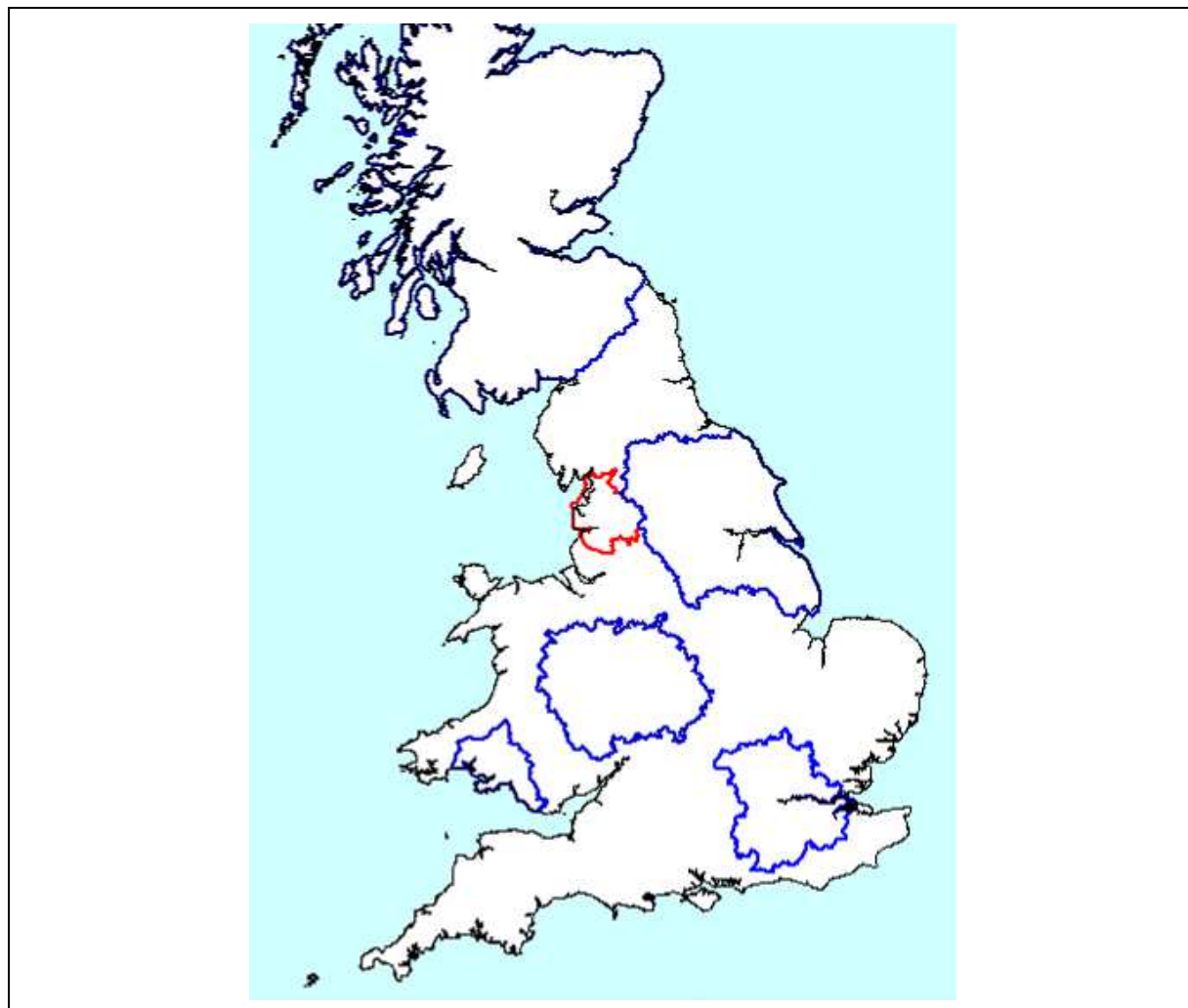


Figure 1.1: 12A block allocations

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 m a.g.l	Antenna type
Winter Hill	1.5kW	438	40	Cardioids
Pendle Forest	1.5kW	273	38	Dipoles

The coverage for the existing situation is shown in figure 2.1

For case 2: Modified Network 1

It is proposed to modify the transmit antenna at Winter Hill and increase the ERP to 3kW, Pendle Forest remains unchanged.

For case 3: Modified Network 2

For this case an additional six transmitters will be required eight transmitters in total.

For case 4: Modified Network 3

To complete the multiplex it will be necessary to use 15 transmitters.

1.1 Outgoing interference and sensitivity to other co-block multiplexes

This multiplex suffers from significant co-block interference from MXR Yorkshire and MXR West Midlands. Any major changes to Winter Hill significantly affect the coverage of Yorkshire. The additional sites proposed have some impact on Yorkshire and West Midlands. As part of this process improvements to both Yorkshire and West Midlands have been investigated. This is in order to offset any impact from Central Lancashire but also to improve coverage. These improvements have been included in any interference limited coverage assessments and are summarised in the table below:

Transmitter station modified or added	Characteristics of proposal
Belmont	Increase ERP from 2kW to 4kW
Chesterfield added	Same characteristics as nationals
Bridlington added	Same characteristics as nationals
Oliver's Mount added	Same characteristics as nationals
Emley Moor (low antenna)	Bearing altered by 40 degrees clockwise

Proposed changes to MXR Yorkshire

Transmitter station modified or added	Characteristics of proposal
The Wrekin	Change to national antenna and increase ERP to 2kW
Turners Hill	Increase ERP to 2kW

Proposed changes to MXR West Midlands

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 noise limited

Figure 2.2 Case 1 Current Situation interference limited

Figure 2.3 Case 2 modified network 1

Figure 2.4 Case 3 modified network 2

Figure 2.5 Case 4 modified network 3

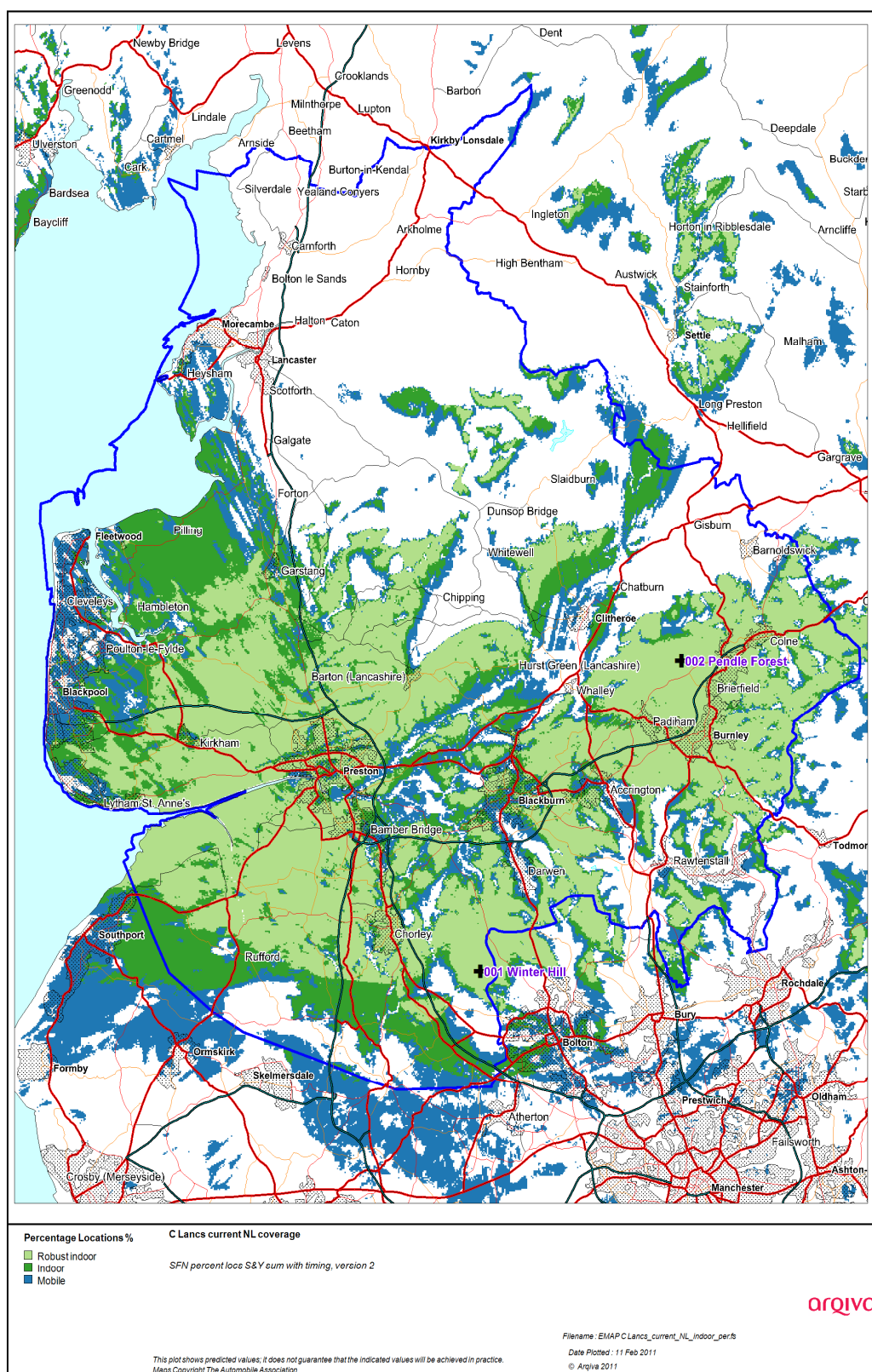


Figure 2.1 Case 1 Current Situation noise limited

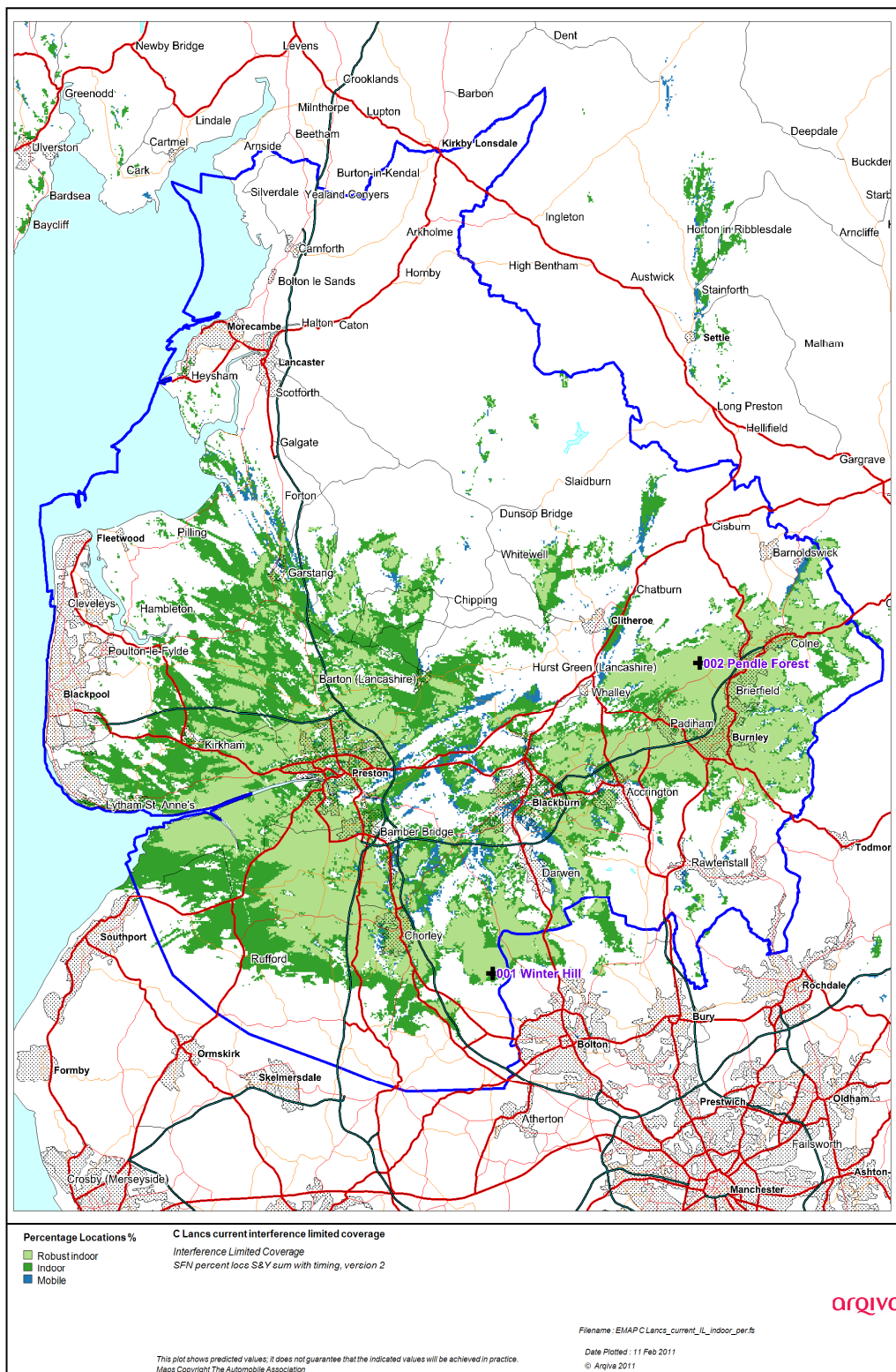


Figure 2.2 Case 1 Current Situation interference limited

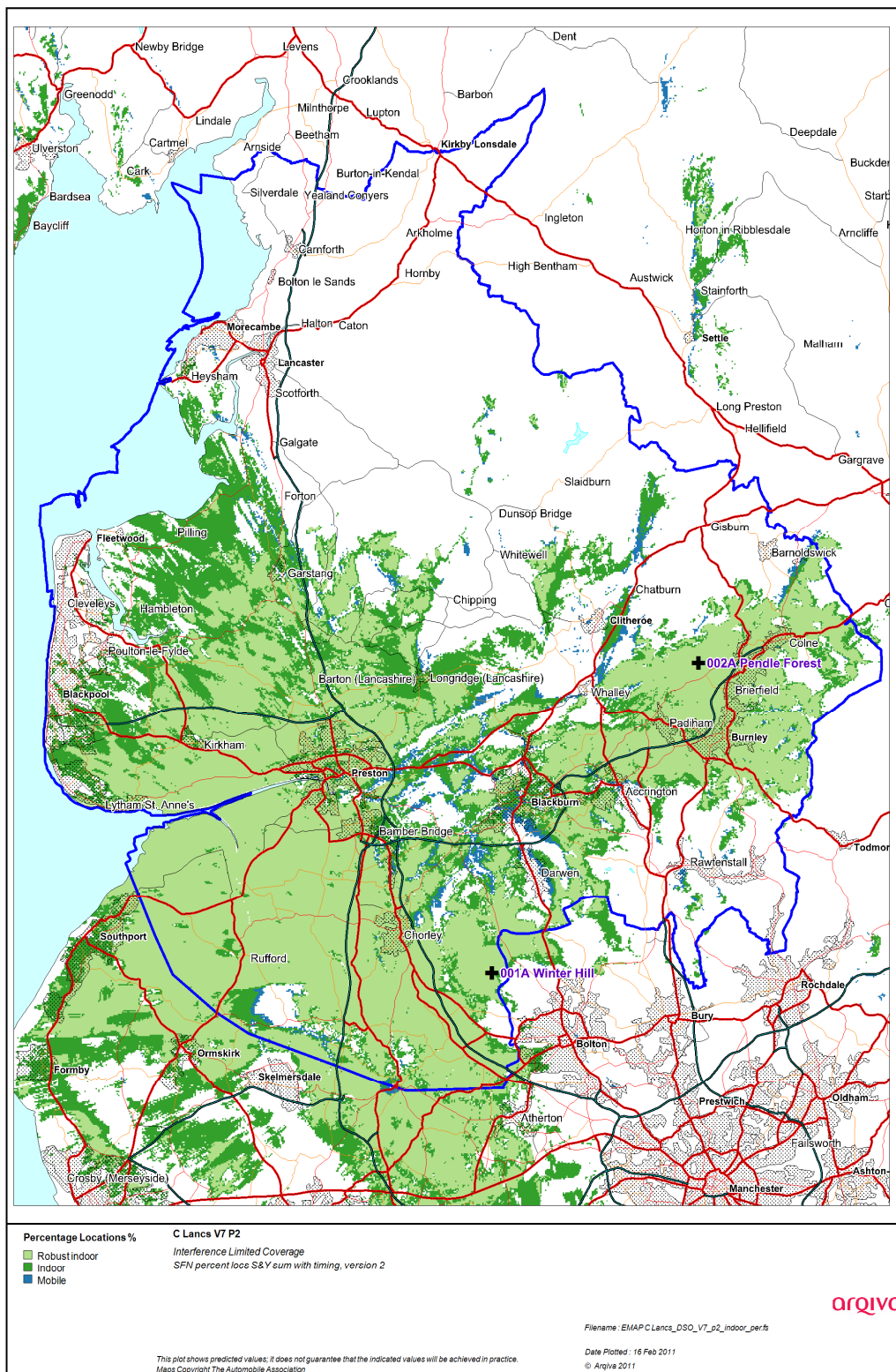


Figure 2.3 Case 2 modified network 1



Figure 2.4 Case 3 modified network 2



Figure 2.5 Case 3 modified network 3

*Population Coverage tables within Editorial Area**Table 2-1. Population coverage proportional indoor 1% time interference**: Total 679,308*

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
C Lancashire	Current infrastructure 2 sites	274436.1	274436.1	-	-	40.40%
Winter Hill	Modified infrastructure	264002.2	264002.2	-	-	38.86%
Pendle Forest	Current infrastructure	113490.5	402446.9	-	-	59.24%
Lancaster	Existing infrastructure	55735.7 (8.2%)	485164.2	82717	12.18	71.42%
Darwen	Existing site new infrastructure	46580.2 (6.86%)	529149.4	43985	6.48	77.90%
Warbreck	Existing infrastructure	117523.6 (17.30%)	596177.5	67028	9.86	87.76%
Haslingden	Existing infrastructure	42607.7 (6.27%)	626323.1	30146	4.44	92.20%
Whalley	Existing site new infrastructure	65556.7 (9.65%)	639013.8	12691	1.87	94.07%
Barnoldswick	Existing site new infrastructure	10705.0 (1.58%)	647232.9	8219	1.21	95.28%
Whitworth	Existing site new infrastructure	3410.1 (0.50%)	650673.9	3441	0.5	95.78%
Bacup	Existing site new infrastructure	8505.7 (1.25%)	655511.9	4838	0.72	96.50%
Waddington Fell	Existing site new infrastructure	7979.2 (1.17%)	657976.1	2464	0.36	96.86%
Parbold	Existing site new infrastructure	7044.8 (1.04%)	660846.9	2869	0.42	97.28%
Newchurch	Existing site new infrastructure	8103.5 (1.19%)	661991.0	1144	0.17	97.45%

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
Melling	Existing site new infrastructure	2091.7 (0.31%)	663684.8	1694	0.25	97.70%
Trawden	Existing site new infrastructure	9183.3 (1.35%)	664716.0	1031	0.15	97.85%

Case 1	-	Yellow =	Current coverage
Case 2	-	Purple + Yellow=	Modified Network 1
Case 3	-	Purple + Yellow +Orange=	Modified Network 2
Case 4	-	Purple + Yellow +Orange + green =	Modified network 3

Table 2-2. Road coverage 99% location 99%T: Total roads 933 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
C Lancashire	Current infrastructure 2 sites	342	-	-	36.68%
Winter Hill	Modified infrastructure	335	-	-	35.85%
Pendle Forest	Current infrastructure	511	-	-	54.72%
Lancaster	Existing infrastructure	644	133	14.22	68.94%
Darwen	Existing site new infrastructure	692	48	5.23	74.17%
Warbreck	Existing infrastructure	777	85	9.03	83.20%
Haslingden	Existing infrastructure	822	45	4.91	88.11%
Whalley	Existing site new infrastructure	840	22	1.88	89.99%
Barnoldswick	Existing site new infrastructure	853	13	1.36	91.35%
Whitworth	Existing site new infrastructure	859	6	0.62	91.97%
Bacup	Existing site new infrastructure	868	7	1.03	93.00%
Waddington Fell	Existing site new infrastructure	882	14	1.45	94.45%
Parbold	Existing site new infrastructure	884	2	0.24	94.69%
Newchurch	Existing site new infrastructure	884	0.2	0.01	94.70%
Melling	Existing site new infrastructure	898	14	1.46	96.16%
Trawden	Existing site new infrastructure	899	1	0.14	96.30%

Case 1	-	Yellow =	Current coverage
Case 2	-	Purple + Yellow=	Modified Network 1
Case 3	-	Purple + Yellow +Orange=	Modified Network 2
Case 4	-	Purple + Yellow +Orange + green =	Modified network 3

Table 2-3. 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>
1 (noise limited)	333794.9 (49.14%)	659 (73.45%)
1 (interference limited)	274436.1 (40.40%)	342 (36.68%)
2	402446.9 (59.24%)	511 (54.72%)
3	647232.9 (95.28%)	853 (91.35%)
4	664,716 (97.85%)	899 (96.3%)

Case 1	-	Yellow =	Current coverage
Case 2	-	Purple + Yellow=	Modified Network 1
Case 3	-	Purple + Yellow +Orange=	Modified Network 2
Case 4	-	Purple + Yellow +Orange + green =	Modified network 3