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## **Digital Switchover (DSO) Programme**

# **Radio DSO Block 12A Swansea**

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## 1 Swansea DSO narrative

The current Swansea local licence transmits on Block 12A and consists of three 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 West Midlands and London (Switch). This multiplex does not suffer from any significant interference from any of the other 12A allocations.

The incoming interference assessment is based on the latest planning for London, West Midlands, Yorkshire and Central Lancashire.

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

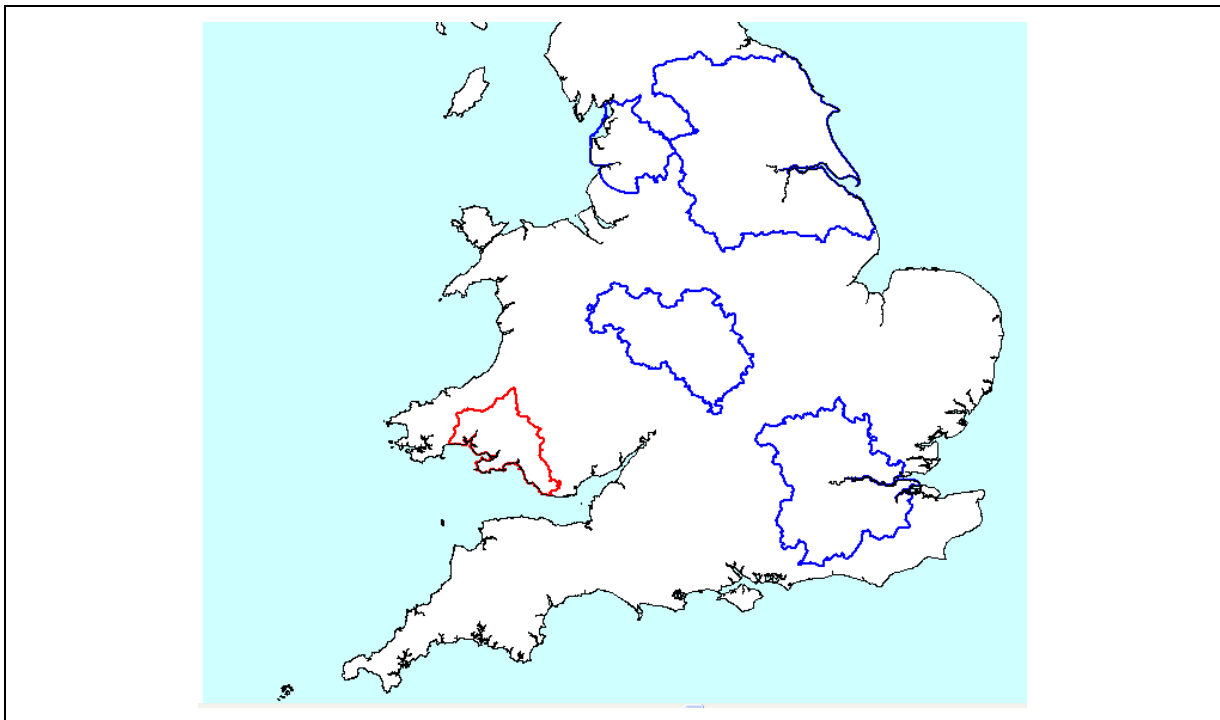


Figure 1.1: 12A block allocations

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
Kilvey Hill	2kW	193	46	directional
St Hilary	1kW	126	210	yagis
Carmel	1kW	259	142	Panels

The coverage for the existing situation is shown in figure 2.1

For case 2: Modified Network 1

It is proposed to use the BBC national antenna and increase ERP to 2kW; the other transmission sites remain unchanged.

For case 3: Modified Network 2

For this case an additional 15 transmitters will be required (i.e. 18 transmitters in total).

For case 4: Modified Network 3

In this case it is the same as case 3. No additional transmitters have been planned.

## 1.1 Outgoing interference and sensitivity to other co-block multiplexes

This multiplex does not suffer from significant incoming co-block interference. As part of this process improvements to London (Switch; as per licence renewal), MXR Yorkshire and West Midlands have been investigated. This is to improve their own 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

Transmitter station modified or added	Characteristics of proposal
Central London site added	Nominally BT tower at 800W ERP
Epping Green added	Same as BBC national
A nominal site in the West London area	Nominal at this stage

### Possible proposed changes to London (Switch)

## 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

Figure 2.2 Case 2 modified network 1

Figure 2.3 Case 3 &4 modified network 2

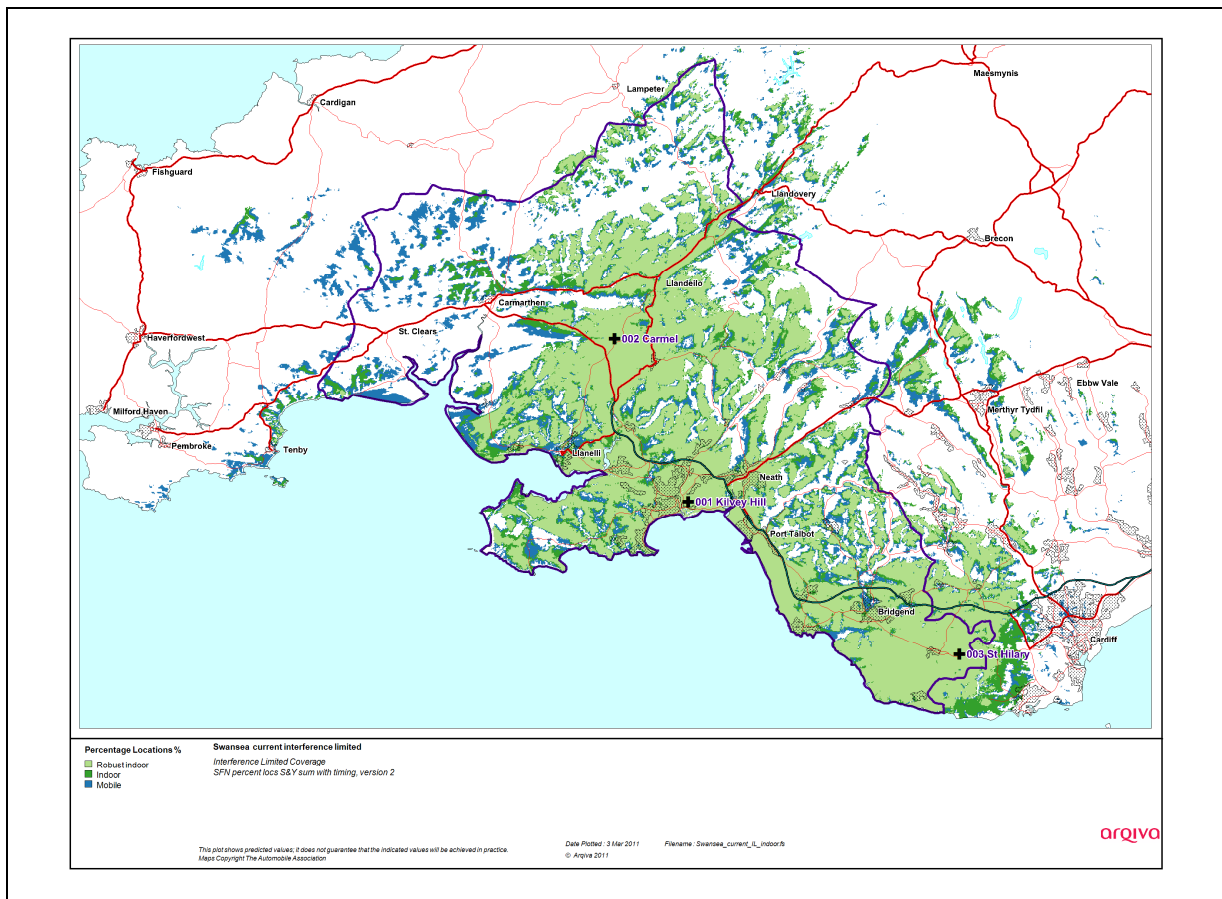


Figure 2.2 Case 1 Current Situation

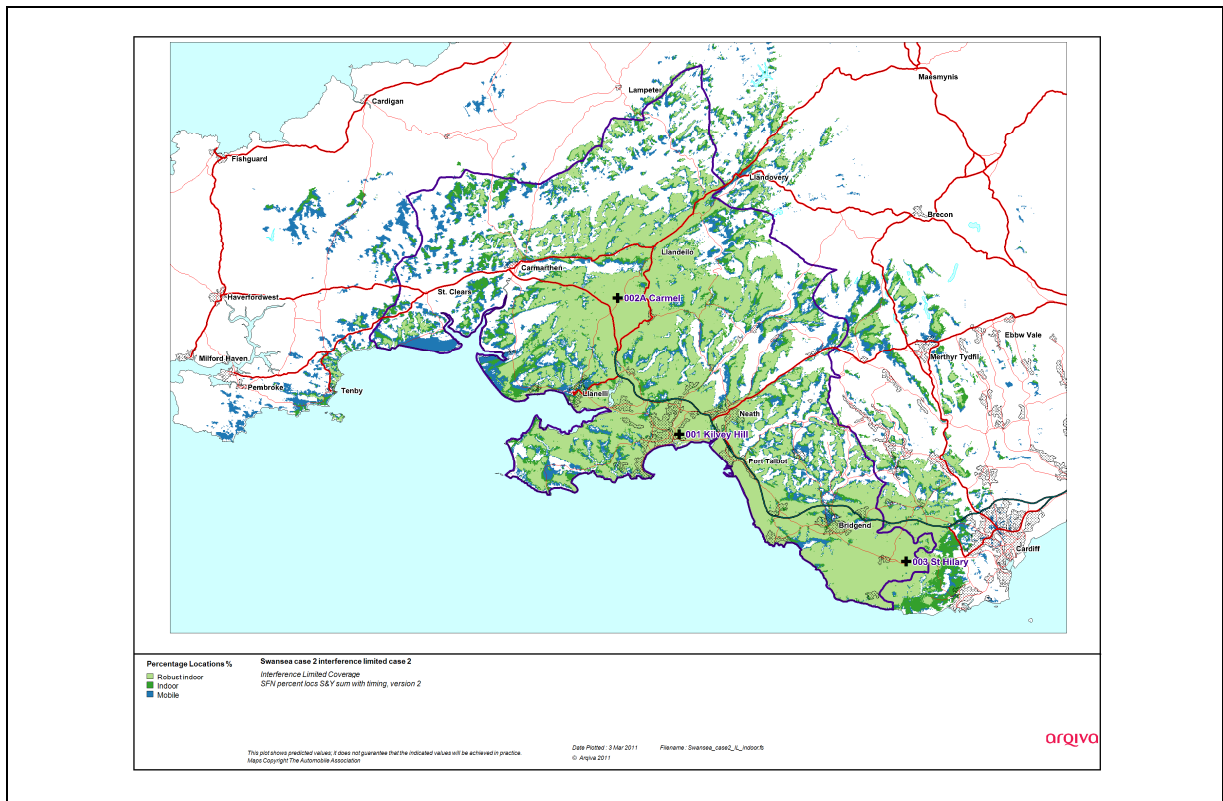


Figure 2.2 Case 2 modified network 1

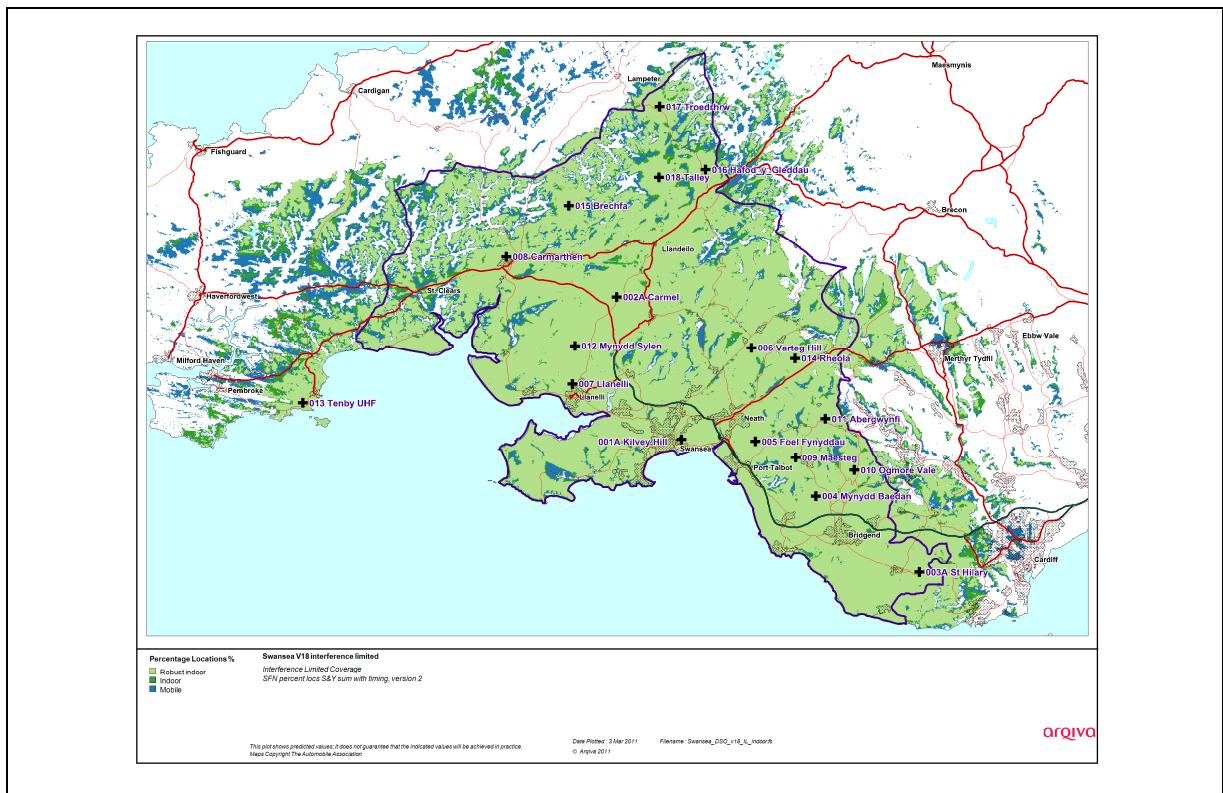


Figure 2.3 Case 3 & 4 modified network 2



## 2.2 Population Coverage tables within Editorial Area

Table 2-1. Population coverage proportional indoor 1% time interference

: Total 321823

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
Swansea	Current infrastructure 3 sites	237460	237460	-	-	73.79%
Modified Carmel	Share BBC national	240849	240849	-	-	74.84%
Varteg Hill	Share BBC national	32460 (10.09%)	251801	10952	3.4	78.24%
Foel Fynyddau	Share BBC national	121878 (37.87%)	267591	15790	4.89	83.15%
Maesteg	Existing site new infrastructure	15334 (4.76%)	277831	10240	3.18	86.33%
Carmarthen	Share BBC national	11765 (3.66%)	287550	9719	3.02	89.35%
Mynydd Sylen	New structure new site	72124 (22.41%)	295458	7908	2.46	91.81%
Ogmore Vale	Existing site new infrastructure	22051 (6.85%)	303700	8242	2.56	94.37%
Rheola	New structure existing site	5083 (1.58%)	307244	3544	1.1	95.47%
Mynydd Baedan	Share BBC national	41971 (13.04%)	307653	409	0.13	95.60%
Llanelli	Share BBC national	47419 (14.73%)	307973	320	0.1	95.70%
Abergwynfi	Existing site new infrastructure	2422 (0.75%)	310077	2104	0.65	96.35%
Tenby (UHF)	Existing site new infrastructure	3083 (0.96%)	310543	466	0.15	96.50%
Talley	Existing site new infrastructure	450 (0.14%)	311004	461	0.14	96.64%
Troedrhwr	New structure new site	255 (0.08%)	311283	279	0.09	96.73%

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
Brechfa	Existing site new infrastructure	377 (0.12%)	311595	312	0.09	96.82%
Hafod-y-Gleddau	New structure new site	589 (0.18%)	311849	254	0.08	96.90%

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 734 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
Swansea	Current infrastructure 3 sites	460	-	-	62.71%
Modified Carmel	Share BBC national	478	-	-	65.13%
Varteg Hill	Share BBC national	524	46	6.25	71.38%
Foel Fynyddau	Share BBC national	560	36	4.94	76.32%
Maesteg	Existing site new infrastructure	570	10	1.3	77.62%
Carmarthen	Share BBC national	615	45	6.2	83.82%
Mynydd Sylen	New structure new site	629	14	1.8	85.62%
Ogmore Vale	Existing site new infrastructure	652	23	3.25	88.87%
Rheola	New structure existing site	663	11	1.4	90.27%
Mynydd Baedan	Share BBC national	664	1	0.13	90.40%
Llanelli	Share BBC national	664	<1	0.01	90.41%

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
Abergwynfi	Existing site new infrastructure	672	8	1.12	91.53%
Tenby (UHF)	Existing site new infrastructure	674	2	0.23	91.76%
Talley	Existing site new infrastructure	677	3	0.4	92.16%
Troedrhwr	New structure new site	685	8	1.21	93.37%
Brechfa	Existing site new infrastructure	688	3	0.28	93.65%
Hafod-y- Gleddau	New structure new site	697	9	1.27	94.92%

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 &amp; 99% Time Interference Protection</i>
1	237,459 (73.49%)	460 (62.71%)
2	240,849 (74.84%)	478 (65.13%)
3	311,849 (96.9%)	697 (94.92%)
4	311,849 (96.9%)	697 (94.92%)

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

From the figures presented in this document the contribution of several sites (Mynydd Baedan, Tenby and Llanelli) seems to be quite small. Initially Mynydd Baedan and Llanelli were included because these sites are already in use by the BBC national service. But with additional sites such as Mynydd Sylen (which also effectively covers Llanelli) and St Hilary, which serves the Bridgend area better than Wenvoe, the viability of these sites for the local services is questionable. Regarding Tenby this is outside the editorial area but does provide some coverage in coastal regions within editorial area. This site is also proposed for the West and mid-Wales local multiplex.

Removing these three sites reduces indoor coverage by 1,185 households (0.07%) and roads by 3km (0.35%).

There are four sites (Talley, Troedrhwr, Brechfa and Hafod-y-Gleddau) which cover small rural populations in the northern part of the multiplex where there is some predicted FM coverage (albeit patchy). These sites are also included in the West and mid Wales's local multiplex.