
700 MHz clearance programme timescale review

Review of progress, risks and readiness

[700 MHz clearance programme timescale review](#) – Welsh overview

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1. Overview

Ofcom has today published a statement setting out its decisions on an award of 200 MHz of spectrum in the 700 MHz and 3.6 – 3.8 GHz bands to enable the industry to provide services with greater capacity and wider coverage, and to support new wireless technologies including 5G – the latest generation of mobile services.

The 700 MHz band is currently used by Digital Terrestrial Television (DTT) and Programme Making and Special Events (PMSE). To make the spectrum available for mobile services, these users are being cleared from the band through a programme known as 700 MHz clearance. DTT services will be moved to alternative portions of spectrum and the 700 MHz band frequencies will cease to be available to PMSE.¹

We have reviewed the progress of the 700 MHz clearance to ensure the programme remains on track and that the spectrum is available for mobile to use as planned. Previous reviews concluded that the programme was on target to complete in Q2 2020 as planned, with some risks to that timescale arising out of the possibility of poor weather or unplanned events of national significance.

We have carried out a final progress review as we approach the end of the clearance programme in 2020. This document summarises its findings. Our overall conclusion remains the same as previously: the 700 MHz clearance programme is delivering to schedule and we expect to clear the band for use by mobile services by May/June 2020.

This overview is a simplified high-level summary only.

The 700 MHz clearance programme is clearing the band for use by mobile

- 1.1 Of the spectrum that Ofcom has decided to award, 80 MHz is in the 700 MHz band. This band is well-suited for providing mobile coverage over wide areas and indoors. Spectrum in this band can be used to improve the level of mobile coverage across the UK, including mobile voice and data coverage in rural areas, as well as in buildings and other harder-to-reach places.
- 1.2 For mobile services to be able to use the 700 MHz band, its existing users must be cleared from the spectrum. These users are DTT and PMSE. The process of removing existing users from the band is called 700 MHz clearance and the overall programme of work – including among other things frequency planning, infrastructure work and establishing and operating a grant scheme for PMSE users – is called the 700 MHz clearance programme. The programme commenced in 2016.

¹ We have previously announced alternative spectrum will be made available for PMSE use: New spectrum for audio PMSE https://www.ofcom.org.uk/_data/assets/pdf_file/0021/62481/New-Spectrum-for-Audio-PMSE-statement.pdf

We have published timescale reviews to ensure timely programme delivery

- 1.3 When we decided to release the 700 MHz band for mobile in Q2 2020, we said we would review the delivery timescale in 2017.² When we undertook this review, we found that all the workstream areas were on track. We concluded that the clearance programme would deliver to schedule and complete in Q2 2020 as planned.³
- 1.4 We followed up with a second review one year after the first. Our conclusions remained the same. All the workstream areas were on track and frequency planning and infrastructure plans were well advanced and stable. The main risks to the programme had not arisen.

We have carried out a final review to assess progress and status of risks

- 1.5 The 700 MHz clearance programme is scheduled to conclude in Q2 2020. We have reviewed its progress and other associated activities against the target clearance date.
- 1.6 We considered several contributing workstreams and information sources. The main areas are below:
- development of the frequency plan and progress towards international coordination agreements;
 - status of the work planning infrastructure changes;
 - infrastructure build programme progress;
 - knowledge gained from clearance events carried out during 2018 and 2019, including viewer support;⁴ and
 - PMSE grant scheme.

The 700 MHz band will become available for mobile on schedule if the clearance continues to remain on track

- 1.7 All workstream areas are progressing to plan. Risks foreseen for 2019 did not emerge. The 700 MHz band will become available for mobile by Q2 2020 if the clearance programme continues to remain on track. We summarise the main conclusions of our review by workstream below. We set out more detail in section 2.

² Maximising the benefits of 700 MHz clearance, Ofcom consultation, March 2016

https://www.ofcom.org.uk/data/assets/pdf_file/0026/84176/maximising-benefits-of-700mhz-clearance.pdf

³ 700 MHz clearance programme timescale review, Ofcom statement October 2017

https://www.ofcom.org.uk/data/assets/pdf_file/0022/106933/700mhz-clearance-timescale-review.pdf

⁴ We use the term 'clearance event' to describe when frequency changes are made at a transmitter and viewers need to take action to retune their TV equipment.

Frequency planning

- 1.8 The DTT frequency plan is stable and we have concluded international frequency negotiations and signed agreements with all relevant countries (Ireland, The Netherlands, France and Belgium).

Infrastructure work and clearance events

- 1.9 Plans for modifying broadcast transmission infrastructure and implementing the changes are highly advanced and stable for the remainder of the 2020 clearance events.
- 1.10 Delivery of clearance events in 2019 and early 2020 proceeded to schedule. Preparations for the final clearance events are proceeding to plan.
- 1.11 We previously identified some risks inherent to complex engineering implementation projects which could delay completion. The most significant are:
- prolonged periods of poor weather that delay work performed out outdoors, particularly the installation of antennas at the larger transmitters; and
 - unplanned occurrences that could prevent infrastructure works (such as national emergencies or events of significant media interest) could jeopardise the overall timetable if they prevent work on the broadcast network during periods of intensive activity.

Neither of these risks has materialised to the extent that they have delayed the programme.

- 1.12 Work is routinely scheduled to avoid planned major broadcast events. Since our last review, no unplanned events have arisen necessitating delays to transmitter work.
- 1.13 We conclude that the clearance programme has made sufficient progress to deliver to schedule. We expect the process to complete by 29 April 2020 as planned.

PMSE funding scheme

- 1.14 We appointed Equiniti Ltd to operate the grant scheme to support PMSE equipment owners who had to vacate the 700 MHz band. The scheme opened for claimants to register and submit their claims in February 2019. Equiniti Ltd has been receiving surrendered equipment and making payments to claimants since July 2019 in accordance with the surrender schedule set out after registration.

2. Commentary on main workstreams

- 2.1 Our review reviewed progress, forecasts and risks for the key workstreams contributing to delivery of 700 MHz clearance and the availability of the 700 MHz band for use by mobile services. We set out the conclusions for each workstream below.

We have completed frequency planning and coordination

- 2.2 Principal frequency planning for all regions is complete. Occasionally we undertake minor adjustments to the plan to take account of updated infrastructure information (e.g. final antenna patterns) and any implementation changes during roll out.
- 2.3 700 MHz clearance requires the UK to negotiate and agree new frequency plans with four Administrations: The Republic of Ireland, France, The Netherlands and Belgium. We have completed and signed Final Agreements with all four Administrations.
- 2.4 Overall, the frequency planning and international coordination workstreams have delivered to target and any remaining risks are minor and manageable.

Infrastructure planning has made good progress, with the scope of work and rollout plans agreed

- 2.5 The scope of infrastructure works to deliver 700MHz clearance was controlled during 2019.
- 2.6 We developed a stable sequence for the planned frequency changes. We now understand the timings for when changes will be made in the UK and their interactions with continental transmitters.
- 2.7 The rollout plan is now stable, having adopted some small refinements as transition arrangements developed in more detail. These refinements were minor, only affecting a small number of the smaller transmitters.
- 2.8 The technical and rollout plans are now developed and understood. They are not a significant risk to successful delivery of 700 MHz clearance to schedule.

Infrastructure build works are progressing well and delivery of the programme to schedule is achievable

- 2.9 Infrastructure work falls into two categories.
- ‘Airworks’ – Replacing broadcasting antennas at transmitters sites where the existing antennas will not function on the post clearance frequencies. Some of the transmitter structures are very tall – up to around 300m in height.
 - ‘Groundworks’ – Site preparation, then installation of temporary transmitters and combining equipment to carry the broadcast TV services while the permanent equipment is retuned to new frequencies.

- 2.10 Airworks is the clearance activity most dependent upon favourable weather. Therefore, Arqiva planned antenna installations to take place early in the programme. During 2019, airworks continued to make good progress, taking advantage of the favourable weather. Work on most main transmitter antennas is now complete and remaining airworks activity is very limited for the remaining 2020 clearances.
- 2.11 A much-reduced risk remains that prolonged poor weather or other events of national significance could prevent infrastructure work for a period. Such an occurrence could threaten the overall timescale for clearance should it occur during clearance events. The risk from poor weather has declined as the emphasis of the on-site engineering work moved from airworks to remaining groundworks.
- 2.12 Clearance events (where a transmitter switches to broadcasting on new frequencies and viewers need to re-tune their TV sets) commenced in the latter half of 2017 in the North of Scotland. During 2019, the level of activity has increased considerably, with a corresponding increase in groundworks activity for the 2019 clearance events. Clearance events have, with two exceptions, kept to schedule. In one case (South Knapdale), clearance was delayed due to a technical issue in 2018 and deferred to June 2019 and then again to August 2019 when it was successfully completed. In the other case (the Angus simulcast) a retune was removed from the programme following a technical review with the project partners. The re-scheduling did not impact programme timescales.
- 2.13 The programme has accommodated some significant broadcast events that were not known about when planning rollout schedules. Two examples are the Royal Wedding in May 2018 and the General Election in December 2019. On-site engineering works and clearance events were re-scheduled to avoid interrupting transmissions around those dates. They were successfully completed shortly afterwards without impacting the overall timescale.
- 2.14 During the remaining 2020 the programme focuses on six clearance events with high power transmitters, including Winter Hill and Sandy Heath, which provide DTT service to high population areas. Arqiva has planned extensively and has significant resources assigned to ensure clearances are completed to plan.
- 2.15 Progress on the infrastructure works has been very good. While some residual risks remain as described above, we judge that progress in 2019 was sufficient to enable clearance events in early 2020 to complete as planned.

Viewers have not been unduly impacted by the clearance events and have received good support

- 2.16 As the infrastructure works progress, TV sets and set top boxes in viewers homes need to be re-tuned to the new frequencies. Not all transmitters in the UK need to change frequencies and therefore not all DTT viewers are affected by clearance. Cable and satellite viewers are not affected at all.

- 2.17 For those that do need to take some action, the vast majority of householders will only need to retune their television sets. This requires them to press a few buttons on their TV remote controls.
- 2.18 Viewers are alerted to the forthcoming changes by on-screen captions that provide a number to call and a website where they can find further information. Digital UK has also been providing targeted publicity through local advertising. Digital UK has so far provided advice to viewers in more than 200,000 calls, emails, web chats and social media interactions.
- 2.19 In addition, in-home support has been provided for those that require additional assistance. This service has been provided by the organisation DMSL and has been operating well with high levels of customer satisfaction.
- 2.20 A small number of viewers (we originally estimated less than 1% of households) may need to replace their TV aerials if they are of an old type that does not work sufficiently well when the TV services move to their new frequencies. In these cases, there is help available for DTT-only viewers, including free installer visits and aerial replacements where required. DMSL has provided over 30,000 home visits so far.
- 2.21 The level of calls to viewer support services has been around the lower end of expected ranges and feedback on viewer satisfaction levels has been good. This suggests that most viewers find the clearance process relatively straightforward and the information provided sufficient.

Preparations for 2020 are on track

- 2.22 Digital UK, on behalf of the DTT Multiplex Licensees, carried out risk reviews relating to the programme, recommending enhancements in some project areas. We have implemented these recommendations to de-risk the delivery of the programme.
- 2.23 We undertake monthly high-level stakeholder meetings. The main programme stakeholders continue to agree that, subject to no significant unforeseen events occurring, the planned end date of 29 April 2020 remains achievable.
- 2.24 As noted above, work in preparation for the 2020 clearance events has been progressing well. The Multiplex Operators, their agent Digital UK and the transmission company Arqiva have continued to work to deliver 700 MHz clearance to the 29 April 2020 date.

The PMSE funding scheme is operating as planned

- 2.25 Once 700 MHz clearance has completed, PMSE users will no longer have access to the 700 MHz band. We have given notice to PMSE users that they will need to cease use of frequencies in the 700 MHz band by 1 May 2020. In November 2017 we made the decision to allow PMSE users to continue to access the 700 MHz guard band (694 to 703 MHz).⁵

⁵ Spectrum for audio PMSE: Use of the 694 to 703 MHz guard band, November 2017
https://www.ofcom.org.uk/_data/assets/pdf_file/0027/107775/statement-spectrum-audio-pmse.pdf

Government decided to fund a grant scheme to support PMSE equipment owners that had to vacate the 700 MHz band and, following a competitive tender, Equiniti Ltd was appointed the scheme administrator.

- 2.26 The PMSE funding scheme opened for claimants to register and submit their claims in February 2019. When submitting their claims, claimants had to specify when they would surrender their equipment for testing. This information was used to schedule and plan processing of claims. The registration period was open for three months and closed in April 2019. Approximately 300 claimants registered 23,000 pieces of equipment.
- 2.27 Equiniti Ltd has been receiving surrendered equipment and making payments to claimants since July 2019 in accordance with the surrender schedule set out after registration. Final equipment surrender is in May 2020 to allow equipment owners to continue to use their equipment up to 1 May 2020. At this point access to the 700 MHz band will cease. Equipment surrender and claim payments are on schedule for clearing the band by May 2020. We have not issued licences to PMSE users to access the band after 30 April 2020.

We consulted on proposals for helping the small numbers of DTT viewers who may be affected by interference from future mobile services in the 700 MHz band

- 2.28 Based on technical analysis and stakeholder responses, we concluded that the number of households potentially affected by interference from mobile services in the 700 MHz band will be similar to the number of households currently affected by 800 MHz mobile services, around 0.2% of households using DTT as their primary means of reception. We believe that filters, which can be fitted in the aerial cable to a TV or set top box, will provide the most technically effective means to mitigate any interference. We set out these conclusions in December 2017.⁶
- 2.29 We developed a proposal for helping people affected by coexistence. We set this out in the Future Spectrum Award consultation.⁷ Having taken account of stakeholder responses we have published our decisions in the Future Spectrum Award Statement.⁸

We consulted on proposals for the future use of the centre gap by the interim multiplexes

- 2.30 We proposed in the December 2018 consultation that Arqiva could continue to use the 700 MHz “centre gap” to operate the DTT interim multiplexes, which were awarded in 2013 on

⁶ Coexistence of new services in the 700 MHz band with digital terrestrial television, December 2017, https://www.ofcom.org.uk/data/assets/pdf_file/0025/108655/update-coexistence-700-mhz.pdf

⁷ Award of the 700 MHz and 3.6-3.8 GHz spectrum bands, December 2018, https://www.ofcom.org.uk/data/assets/pdf_file/0019/130726/Award-of-the-700-MHz-and-3.6-3.8-GHz-spectrum-bands.pdf

⁸ https://www.ofcom.org.uk/data/assets/pdf_file/0020/192413/statement-award-700mhz-3.6-3.8ghz-spectrum.pdf

a temporary basis.⁹ We also set out the terms under which this continued use would occur including:

- applicable fees;
- Arqiva's responsibility to communicate with viewers;
- Arqiva's obligation not to cause interference; and
- the notice period that the centre gap licensees would be required to provide before using the spectrum.

2.31 Having taken account of stakeholder responses we have set out our final decisions on the process for the continued use of the centre gap by Arqiva for the interim multiplexes in the Future Spectrum Award Statement.¹⁰

Conclusion

2.32 Taking account of all areas of this review, we conclude that that the 700 MHz clearance programme is delivering to schedule. We consider that the 700 MHz band will be available for use by mobile services as planned if the clearance programme continues to remain on track.

⁹ Award of the 700 MHz and 3.6-3.8 GHz spectrum bands, December 2018, https://www.ofcom.org.uk/data/assets/pdf_file/0019/130726/Award-of-the-700-MHz-and-3.6-3.8-GHz-spectrum-bands.pdf

¹⁰ https://www.ofcom.org.uk/data/assets/pdf_file/0020/192413/statement-award-700mhz-3.6-3.8ghz-spectrum.pdf