
700 MHz clearance programme closure report

Review of outcomes

STATEMENT:

Publication Date: 21 December 2020

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1. Overview

On 13 March 2020 we published a progress review as we approached the end of the 700 MHz clearance programme.¹ We concluded that the programme was on target for completion in Q2 2020 as planned. We noted some risks to that timescale, arising out of the possibility of poor weather or unplanned events of national significance. We said that such an event could threaten the overall timescale for clearance should it occur during clearance events.

An event of national significance materialised very quickly with the Covid-19 pandemic and a national lockdown announced on 23 March 2020. Covid-19 necessitated the pausing of clearance events and the adoption of a revised timescale for the programme due to the national lockdown in the UK in the first half of 2020. The clearance events successfully restarted on 12 August following the easing of UK Government restrictions and the last phase of the clearance of the airwaves completed on 19 August 2020.

The 700 MHz clearance programme has successfully cleared this spectrum so that it can be used to meet the growing demand for spectrum for mobile data. All workstreams have progressed to the revised closure plan. This final closure report sets out key programme achievements for 2020 as well as the remaining programme activities now that the consumer facing aspects of the programme have completed.

The 700 MHz clearance programme was set out to clear the 700 MHz band for mobile and this has been successfully achieved

- 1.1 The goal of the 700 MHz Clearance Programme was to clear the existing users of the 700 MHz spectrum band, Digital Terrestrial Television (DTT) and Programme Making and Special Events (PMSE) licensees and make it available for mobile broadband use. DTT services would be moved to alternative portions of spectrum, while the frequencies would also cease to be available to PMSE.²
- 1.2 We decided in November 2014³ to make the spectrum available and decided in 2016⁴ that an accelerated plan would best secure optimal use of spectrum by clearing the band by mid-2020. 700 MHz clearance programme events began in 2017. We have reviewed the progress of the programme annually to ensure timely delivery.

¹ https://www.ofcom.org.uk/_data/assets/pdf_file/0025/192742/700-mhz-progress-timescale-review.pdf

² 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

³ *Decision to make the 700 MHz band available for mobile broadband*, Ofcom statement, November 2014 https://www.ofcom.org.uk/_data/assets/pdf_file/0024/46923/700-mhz-statement.pdf

⁴ *Maximising the benefits of 700 MHz clearance*, Ofcom statement, October 2016

<https://www.ofcom.org.uk/consultations-and-statements/category-1/maximising-benefits-700mhz-clearance>

Our last review showed all work areas to be on track, though risks to delivery remained

- 1.3 The March 2020 review found that all the workstream areas were on track. Delivery of clearance events in 2019 and early 2020 had proceeded to schedule and preparations for the final clearance events in April 2020 were also proceeding to plan.
- 1.4 Our March review included a high-level stakeholder meeting with the main programme stakeholders (who had carried out their own reviews). All parties agreed that, subject to no significant unforeseen events, the planned end date was on track and achievable.
- 1.5 However, we noted that the programme is a complex engineering implementation programme. As such it was subject to a number of risks that could delay completion, relating to weather and unplanned occurrences of national significance, that could jeopardise the overall timetable if they prevent work being carried out on the broadcast network during periods of intensive activity.
- 1.6 Overall, our March review concluded that that the 700 MHz clearance programme was delivering to schedule.

The Covid-19 situation paused delivery

- 1.7 On 13 March 2020, Ofcom published its update on the progress of delivery of the 700 MHz clearance. Days later, on 23 March, the Government introduced national restrictions stating that all unnecessary social contact should cease. The Covid-19 situation developed swiftly, with significant implications for life in the UK, including restrictions on travel and the need for social isolation.
- 1.8 In light of that unprecedented situation, the decision was taken to pause carrying out the final two clearance events scheduled for April until the Covid-19 issue had subsided.
- 1.9 Following intense discussions with programme partners and detailed replanning, the programme restarted in August 2020 and the final two clearance events were successfully completed on 12 and 19 August 2020.

This review concludes that all workstreams have progressed to the revised closure plan

- 1.10 We have reviewed progress since our March review. This report summarises our conclusions. There are several contributing workstreams and sources of information that we have considered in our review. The main areas are:
- development of the frequency plan and progress towards international coordination agreements;
 - infrastructure build programme progress;

- knowledge gained from clearance events⁵ carried out during 2019 and 2020, including viewer support; and
 - PMSE grant scheme.
- 1.11 All workstreams have now completed with the exception of the modifications of broadcast transmission infrastructure to put the network back in its steady-state configuration and the implementation of these final changes. The Emley Moor transmitter tower has further infrastructure works to be undertaken prior to services being transferred from the temporary tower erected for 700 MHz clearance back to the permanent concrete structure.
- 1.12 The remaining risks to the programme are as in our March 2020 update, though these risks are considerably less significant given that all 700 MHz clearance events have now occurred. These risks are:
- Unplanned occurrences that could cease infrastructure works (such as national emergencies or events of significant media interest) could jeopardise the overall timetable if they prevent work being carried out on the broadcast network during periods of intensive activity.
 - Prolonged periods of poor weather that delay work carried out outdoors, particularly the installation of antennas at the larger transmitters.
- 1.13 Since our last review, the national Covid-19 emergency did cause a slippage to the plan for clearance events from April to August. However, the clearance programme has delivered, despite the Covid-19 delay, and successfully cleared the 700MHz Spectrum on 19 August 2020.

The overview section in this document is a simplified high-level summary only.

⁵ We use the term 'clearance event' to describe when frequency changes are made at a DTT transmitter and viewers need to take action to retune their TV equipment.

2. Our review

Commentary on main programme workstreams

- 2.1 Our closure report concentrates on reviewing progress and the Covid-19 impact for the key workstreams contributing to delivery of 700 MHz clearance. These are set out under the headings below. We don't plan to issue any further updates beyond this closure report now that the DTT transmitter clearance events have finished, the consumer-facing aspects of the programme have completed, and the 700 MHz spectrum is available for mobile services. Any further work on assuring the completion of infrastructure changes to restore the DTT transmitter network to its steady state, or closure of the grant funded schemes for DTT and PMSE will be covered under our business as usual activities.

Frequency planning and coordination is completed

- 2.2 Frequency planning for all regions of the UK is completed. There have been occasional 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 required 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. We notified neighbouring countries of the delays to the last two clearance dates caused by Covid-19.
- 2.4 Overall, the frequency planning and international coordination workstreams have delivered to target and there are no remaining risks.

Infrastructure planning for clearance events has completed

- 2.5 Ofcom, Arqiva and the Multiplex Licensees finalised the scope of infrastructure works required to deliver 700 MHz clearance and to implement the infrastructure changes.
- 2.6 A stable sequence for the planned frequency changes was developed and the interactions and timings when changes were made in the UK and for continental transmitters has been successfully completed.
- 2.7 The January 2020 rollout plan was disrupted due to Covid-19, delaying the original forecast completion date of 29 April 2020. Digital UK issued a revised plan in July that set out the plan to safely remobilise and complete the clearance events in August 2020 and satisfied the obligations of the Multiplex Operators to communicate an agreed plan to Ofcom. The technical and rollout plans were well-developed and understood and were not a significant risk to successful delivery of the two paused clearance events.

Covid-19 impacted infrastructure build works, requiring significant re-planning and re-mobilisation to deliver the remaining two August clearance events

- 2.8 Progress on the infrastructure changes entering into 2020 had been good. While some residual risks remained, we judged that progress in 2019 has been sufficient to enable clearance events in early 2020 to complete as planned. The airworks programme in 2020 became less critical than in previous years and we therefore expected fewer opportunities for significant delay to arise.⁶ During 2020, the programme focused on clearance of high power transmitter sites with associated large numbers of smaller relay transmitter sites which presented a tough logistical challenge.
- 2.9 The majority of infrastructure work on the main transmitter antennas was completed prior to the March 2020 lockdown in preparation for the original planned April clearance events. The pause to clearance events was agreed by consensus in mid-March.

Infrastructure clearance postponement and restart

- 2.10 A major incident management team was created by Digital UK with the intent to monitor the Covid-19 impact on the clearance events and agree a revised plan to safely complete the remaining works. There was ongoing evaluation considering the adherence to Government guidelines, providing safety for Arqiva engineers and being able to provide support to consumers affected by the frequency changes through a Freeview helpline and in-home support.
- 2.11 During the early stages of lockdown there was an expectation that the Covid-19 situation would ease within a few weeks to allow the clearance events to complete with only a short term impact on the programme. However, it became apparent that Government restrictions could be in place for many months and that those restrictions could impact completing the infrastructure work and providing home support for impacted consumers.
- 2.12 Towards the end of the lockdown period in June, programme partners agreed that Government easing of restrictions allowed a recommencement of the clearance events with safe systems of working for Arqiva engineers and that a sufficient level of home support could deliver in a safe way to impacted consumers. In readiness for the August clearance restart, Arqiva undertook status checks on their engineer resources, extensive activity logistics replanning and infrastructure technical checks to ensure that the transmitter equipment had not been impacted during the lockdown pause and that no risks of faults were evident.
- 2.13 The first August clearance event required work on the Winter Hill, Saddleworth and Storeton transmitters that serve large residential areas. All infrastructure preparatory works were given additional scrutiny to ensure readiness after the five-month Covid-19

⁶ Airworks involve 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.

pause. Each main transmitter had numerous dependency relay sites that also needed engineering changes and a comprehensive logistical exercise which was challenging given the ongoing Covid-19 concerns, i.e. access permits to buildings, social distancing in confined spaces.

- 2.14 The second August clearance event involved a transmitter site in Douglas, Isle of Man, with stronger localised restrictions in place allowing only exceptional circumstance travel to the island. Strong collaboration among the Isle of Man Government, DCMS and Arqiva enabled them to agree acceptable working methods for the Arqiva engineers to enter the island and work in a quarantine environment to safely complete their clearance activities during August. This event also included relays in the Kendal area.
- 2.15 The two August clearance events were completed successfully to plan.

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

- 2.16 As the infrastructure works progressed, TV sets and set top boxes in viewers homes needed to be retuned to the new frequencies. Not all transmitters in the UK needed to change frequencies and therefore not all DTT viewers would be affected by clearance, and cable and satellite viewers were not affected at all.
- 2.17 For those that did need to take some action, the vast majority of households only needed to retune their television sets. This required them to press a few buttons on their TV remote controls.
- 2.18 Viewers were alerted to the forthcoming changes by on-screen captions that provide a number to call and a website where they can find further information and targeted publicity through local advertising. Digital UK provided advice to viewers by emails, web chats and social media interactions. During the programme the Freeview support helpline successfully delivered viewer support to circa 300,000 callers. This number of requests for support was within the programme forecast. The call numbers were met by continuous improvement to the working of the call centres to ensure demand was met and lessons learnt.
- 2.19 In addition, in-home support has been provided for those that required 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, and this estimate has not been exceeded) may have needed to replace their TV aerials if they are of an old type that does not work sufficiently well when the TV services moved to their new frequencies. In these cases, there was help available for DTT-only viewers, including free installer visits and aerial replacements where required.
- 2.21 DMSL has provided over the entire programme to date 45,545 visits booked against a forecast of 42,305 which equates to 108% of their forecast. The home visit forecast has

been adjusted throughout the programme when lessons from previous events have been applied to the forecast.

- 2.22 In 2020, there were 18,005 home support visits booked against a forecast of 17,391 which equates to 104% of the forecast. The main impact on home support has been Covid-19, which resulted in those viewers whose visits were paused in March having to wait until June for an engineer visit to investigate the issue.
- 2.23 For the August Winter Hill transmitter event, the demand was always forecast to be high since this was the largest and most technically complicated clearance of the entire programme. DMSL's actual number of visits booked was 149% of forecast with 8,077 visits against a forecast of 5,438.
- 2.24 For the last clearance event of the programme, the home support numbers were forecast to be lower, given the main transmitter sites Kendal and Douglas covered a lower population density than previous events. DMSL's actual demand was 86 against a forecast of 87 (99%) homes visited. Additionally, the DMSL home support was handled differently on the Isle of Man given the further Isle of Man Government restrictions not allowing home support engineers a permit to visit the island. Therefore, eligible viewers were offered a reimbursement if they arranged a visit by a local installer.

DTT funding scheme

- 2.25 Government decided to fund a DTT grant scheme and asked Ofcom to design and to run the grant scheme for infrastructure changes. The grant scheme has a dedicated management board with delegated authority from Ofcom Board to approve grants subject to an assurance framework and final decisions on grants subject to HM Treasury approval.
- 2.26 So far, during the course of the programme, 162 grants for TV infrastructure works have been awarded at a value of approximately £270m. This meant work finished under budget and on schedule – a great achievement for such a large-scale programme of work.

PMSE funding scheme

- 2.27 Government decided to fund a grant scheme to support PMSE equipment owners that have to vacate the 700 MHz band earlier than expected due to 700 MHz clearance. Following a competitive tender, Equiniti Ltd were appointed the scheme administrator.
- 2.28 Claimants to the scheme ranged from schools and places of worship to theatres, large hire companies and broadcasters. The PMSE funding scheme processed 22,000 items and disbursed £26m to over 280 claimants.
- 2.29 The PMSE work was temporarily paused in March 2020 as a consequence of the COVID-19 situation in the UK with the programme approximately 95% complete. Covid-19 caused disruption to programme making and special events (PMSE) stakeholders, including forcing the closure of theatre venues and furloughing of staff. Ofcom worked with partners to replan the remaining PMSE funding claims. The final PMSE grant payments were made at the end of October and the scheme has now closed.

We published a statement 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

- 2.30 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 2017.⁷
- 2.31 We developed a proposal for helping people affected by coexistence. We set this out in the consultation on the award of frequencies in the 700 MHz and 3.6-3.8 GHz bands of 18 December 2018.⁸ Having taken account of stakeholder responses, in the subsequent Statement of 13 March 2020 we said that we had decided to adopt the approach to 700 MHz coexistence proposed in our consultation.⁹

Remaining programme closure activities

- 2.32 Programme partner organisations have started to gradually reduce their 700 MHz clearance programme personnel levels as their expertise becomes no longer required to support closure activities.
- 2.33 TV broadcasters will have a reduced role in programme closure, but will continue to provide ad-hoc technical expertise and prepare any further grant requests.
- 2.34 Following the August clearance events, Arqiva now need to operationally return their infrastructure from a 700MHz-enabling use to a business as usual broadcast transmission service. This includes dismantling ancillary steelwork infrastructure, removing temporary transportable trailers and site reinstatements.
- 2.35 The engineering complexity of the programme required a temporary freestanding mast at Emley Moor in Yorkshire. This will be dismantled and land reinstated during 2021. Additionally, Arqiva will need to account for all enabling equipment used on the programme, whereupon a third-party auction house will auction it in an independent commercial auction. Proceeds will be returned to the programme funding controlled by Ofcom.

⁷ *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.

⁸ *Award of the 700 MHz and 3.6-3.8 GHz spectrum bands*, 18 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. See section 8.

⁹ *Award of the 700 MHz and 3.6-3.8 GHz spectrum bands*, 13 March 2020, https://www.ofcom.org.uk/_data/assets/pdf_file/0020/192413/statement-award-700mhz-3.6-3.8ghz-spectrum.pdf. See section 7.

- 2.36 Digital UK, Freeview and DMSL who helped deliver viewer and home support are finalising records of programme changes. The three-month window for viewer and home support for the 700MHz Programme following the last frequency clearance event ended on 19 November. Assistance was available for viewers who could not restore their service, including a helpline and home support for some viewers. Viewers who continue to have problems with DTT reception can contact the Freeview advice line for assistance on <https://www.freeview.co.uk/help>
- 2.37 In 2021, Ofcom will continue to administer the DTT grant scheme for any remaining funding required to complete the programme and facilitate any further Arqiva infrastructure works. We will undertake assurance activities including financial reconciliation of all grant payments, due diligence of transmitter site works by Arqiva etc. Ultimately Ofcom will continue to ensure that all programme closure activities are effectively and efficiently delivered by partner organisations.
- 2.38 DCMS, which provided the budget for the programme, will retain an overview of the overall programme budget alongside the grant approvals of Ofcom.

Conclusion

- 2.39 Although the Covid-19 pandemic created a five-month pause of the frequency clearance changes, which in turn extended the overall duration of programme closure activities into 2021, there was no material impact on programme objectives. The final clearances were still broadly delivered to the original objectives, and within the budget and with the other programme objectives of protecting DTT viewers and the platform achieved. The successful completion of the programme means that we are now able to proceed with release of spectrum in this band.