

4G/TV Co-existence Oversight Board Meeting

Chair's report to Ministers and Ofcom

Meeting date: 26 May 2016

Attendees

David Hendon, Chair	Mark Caines (Ofcom)
Paul Rosbotham (Vodafone)	Ian Dewhurst (DCMS)
Robin Vernon (O2)	Sue Ramroop (DCMS)
Robin Whitfield (EE)	Michelle Brownrigg (DUK)
Erol Hepsaydir (Three) – <i>via teleconference</i>	Andrew Dumbreck (Technical Advisor)
Dave Darlington (BBC)	<u>Apologies</u>
Alexandra McNair (ITV)	Inge Hansen (EE)
John Ballard (Arqiva)	Alan Boyle (BBC)
Roger Darlington (Non-Executive)	Philip Milton (Channel 4)
William Webb (Non-Executive)	Alberto Fernandes (Ofcom)
Ben Roome (DMSL)	Nick Munn (DCMS)

1. Executive Summary

- 1.1 There were 14,640 confirmed cases of 4G interference at 800MHz as of the end of April, excluding the 35 cases during the pilots. The position remains lower than expected.
- 1.2 All KPI targets were met in April; all 599 confirmed 4G interference cases were resolved within the 10 working day target, achieving a 100% pass rate.
- 1.3 Andrew Dumbreck, Technical Adviser to the Oversight Board, will consider the base station power level information provided by all the mobile network operators, with particular regard to the potential to use within the prediction model to improve mailing accuracy, and report his recommendations to the technical steering group who will consider next steps.
- 1.4 The Board agreed to put any further investigation into the number of cases of interference resolved through at800 providing reactive filters on hold.
- 1.5 The Board agreed at800's proposals to trial modifications to the mailing operation for both initial and reminder mailings, adjustments to the degradation threshold and amendments to the corresponding Service Level Agreements (SLA). at800 expect the trial to commence in July with two review points in September and December, reporting to the Board accordingly.

2. at800 update

Roll-out

- 2.1 As of the end of April, there were 14,640 confirmed cases of DTT interference caused by 4G at 800MHz, excluding the 35 cases found within the pilots.

Mast Analysis

- 2.2 There were no increases from February to March in the monthly and cumulative cases of interference per mast reported within 28 days of activation for 900m with 0.41 and 0.35 cases respectively. For 1.5km, the number of monthly cases per mast reported within 28 days rose by 0.02 from 0.47 (February) to 0.49 (March) with cumulative cases steady at 0.48 from February to March.
- 2.3 The average number of cumulative cases per active mast decreased from 1.27 (March) to 1.25 (April) and the rolling average of confirmed cases per activated mast across a 3-month period to April is 1.38; this is the lowest number since July 2015 (1.43).

Installer Scheme and Audit Summary

- 2.4 The number of engineer visits increased by 10% in April compared to March. This was partly due to a spike in calls in the latter half of the month from viewers in the Bridlington area reporting TV disruption. Whilst the issue was initially thought to be due to weather conditions and high pressure during that period as there have not been any 4G mast activations in the area since January 2016, 54 engineer appointments were booked to investigate further as the calls continued.
- 2.5 As no 4G related cause could be found, at800 liaised with Digital UK (DUK) for known DTT issues in the area who, in turn, contacted Arqiva. Arqiva confirmed that work was carried out on the local transmitter (at Belmont) but that this could not have impacted viewers and an engineer sent to Bridlington to investigate was unable to identify any underlying DTT issues.
- 2.6 at800 are working with DUK to understand other possible reasons for the increased contact and plan to undertake additional audit work in the area during May to help identify the root cause.
- 2.7 There have been 35,317 engineer appointments to unique addresses, of which 2,396 have been subject to audit. To date, there have been 234 audit overturns with 181 4G to non-4G cases and 53 non-4G to 4G.
- 2.8 There were 1,746 visits originally scheduled to take place in April; 1,637 were undertaken and closed as arranged; 6 visits were rearranged by at800 to meet

capacity restraints and the remaining 103 were cancelled by the viewer. 97.02% of the completed appointments took place within the three working day target.

- 2.9 There were 70 audits completed in April for engineer visits originally undertaken in March (38) and April (32) with a focus on areas and engineers that have not previously been audited.
- 2.10 There were seven overturns in total: three from non-4G to 4G and four from 4G to non-4G. Overall, the overturns were due to the engineers concerned not taking into account the DTT and/or LTE signals and failing to qualify their diagnoses (whether 4G or non-4G) by conducting mandatory post-work filter out/in tests. This has been flagged to the respective regional contractor managers.
- 2.11 There were also two overturns discounted owing to form completion errors: one changed from 4G to non-4G and one from non-4G to 4G. This brings the number of form errors to date to 84 for 4G to non-4G and 82 for non-4G to 4G.

Communications

- 2.12 The new combined postcard was trialled during April alongside the other revised cards to enable comparisons on effectiveness through response rates. The results showed that there were no major differences in the number of interactions with the contact centre and as such, at800 will use the revised cards for all future mailings.

Public affairs

- 2.13 As part of the routine scrutiny of local media coverage for at800 related activities, it came to at800's attention that a local engineer in Exmouth had informed the local press that new 4G masts had meant "hundreds" of residents had lost their TV reception. Working with DUK and Arqiva to investigate the claims, a fault on the Budleigh Salterton relay transmitter was discovered and resolved; at800 kept the local press and councillors duly informed of the situation and outcome.
- 2.14 I believe this incident, as well as the continuing work with DUK into the issues at Bridlington (para 2.4-2.6), demonstrates the effective collaboration across the industry to ensure the DTT platform is well supported and the viewing experience is not adversely impacted, regardless of the cause of any disruption.

3. KPI Report

- 3.1 at800 reported passes against all KPIs in February. All 599 confirmed 4G interference cases were resolved within the ten working day target, achieving a 100% pass rate for KPIA1.

4. Base station power levels

- 4.1 In March, I reported that I would seek clarification from the mobile network operators on base station power levels at activation and the likelihood of these increasing in the future should the maximum licenced power not be in operation at the point of activation. This information would be sought in a bid to understand the current levels and address concerns that, should power levels rise in the future, there might be increases in reported interference, which may consequently impact the mitigation scheme, and potentially, dependent upon timing, the actual support available.
- 4.2 All mobile network operators have confirmed that they operate at full planned power levels at activation, taking into account system losses and antenna gains, and very few base stations are subsequently adjusted to increase their power level once fully operational. They also indicate that there are no current plans to increase power levels in the future, and it is more likely that network optimisation would occur through lowering power levels or changing antenna tilt. However two mobile network operators reported that their planned EIRP is some 5dB below the maximum permitted by the licence and this gives rise to the question as to whether at800 should use these planned power levels in their modelling rather than, as they do currently, the maximum permitted by the licences.
- 4.3 The responses will be shared with Andrew Dumbreck, the Board's independent Technical Advisor, to consider the information provided further with particular regard to the potential for use within the prediction model to help improve mailing accuracy. Findings and recommendations will be reported to me and the technical steering group with next steps to be considered once the initial report has been discussed.
- 4.4 In the meantime, at800 will continue to liaise with all the mobile network operators to ensure they are aware of any network optimisation and that, as a result of such adjustments, the mitigation scheme is prepared to deal with any increases in demand should they occur.
- 4.5 I am grateful to all the mobile network operators for their prompt responses to my request and recognise their transparency and willingness to share the information amongst the Oversight Board members.

5. Reactive filter research

- 5.1 The Secretariat provided the Oversight Board with further detail on phase two of the reactive filter research. Based on recommendations from the Coexistence Technical Working Group (CTWG) as to which properties were deemed relevant to the work,

at800 had provided updated numbers on the number of households within scope of this work.

- 5.2 The CTWG had recommended that phase two be focused on individual, non-communal households, without access to cable and satellite and who did not subsequently receive an at800 engineer visit.
- 5.3 at800's analysis showed that the number households meeting these criteria were between 9,000 and 16,000. As is to be expected, the majority of reactive filters were sent to households ineligible for additional in-home engineer support.
- 5.4 As a result of the relatively small pool of relevant households for research into whether reactive filters had resolved 4G interference, and the limited value of the additional information gleaned, the Board decided to put this second phase of research on hold.

6. at800 mailing proposal

- 6.1 Earlier this year in January, I reported that at800 had conducted rigorous analysis to test their proposal to narrow the time between postcard receipt and a nearby mast activating, reducing the risk that viewers will not retain postcards and be unaware of potential DTT interference issues and whom to contact for assistance. The results indicated that the majority of households would receive a postcard after mast activation and in some instances, more than 2 weeks afterwards.
- 6.2 After discussion, the Board agreed that, for the majority of identified households, receipt of postcards 1-2 days after mast activation would be acceptable and requested that at800 re-visit the issue. If this target were not achievable, at800 would provide confirmation of such and withdraw the proposal to amend the mailing operation to align postcard receipt with actual mast activation.
- 6.3 The Board advised that once this potential operational change had been resolved either way, at800 should focus on the relevant transition plan(s) to implement the model parameter modifications recommended by the CTWG, approved in November 2015, whose aim was to capture more cases of interference than the existing model without mailing a greater number of properties.
- 6.4 Following further testing and taking into account the predication model modifications at the same time, at800 presented its proposals to amend the mailing operation for both initial and reminder mailings, with a timeline for introduction and review points to assess effectiveness, adjustments to the degradation threshold recommended by the CTWG and amendments to the corresponding Service Level Agreements (SLA).

6.5 In summary, at800 proposes the following:

(i) to reduce the initial mailing 'cycle' of intended mast activations provided from the mobile network operators from 12-13 weeks in advance to 8 weeks enabling a more accurate forecast, thereby increasing the likelihood that a mast will have been activated as planned and an household identified at-risk would receive a postcard nearer the date of activation.

(ii) to only use in its modelling, masts already active or those included in the current eight week forecast, rather than all previously submitted masts as at present.

(iii) to adjust the degradation threshold from the >1.2% recommended by the CTWG in November 2015 to >2% across the country as at800's analysis indicates that this baseline captures more interference cases without a steep increase in mailing volumes; the current thresholds are >20% for London only and >5% elsewhere.

(iv) to modify the reminder mailing approach to capture households within 1.5km of an active mast where the degradation risk from active masts increases by >2% from its risk calculated 20 weeks after that household was previously mailed. Currently, households receive a maximum of two mailings: one at initial notification and a reminder after 6 months if the scheduled mast has not been activated since with no further mailings after that point. This change would mean that only households within 1.5km of a mast activated where the active mast degradation risk had increased by more than 2% from the point 20 weeks after the initial mailing would receive a 'reminder'. In theory, a household could be mailed every 24 weeks where the active mast interference risk continually increases in 2% increments between 20 and 24 weeks after it was previously mailed. However, this scenario is very unlikely as the contributing factors, such as DTT signal strength and base station power levels from the point of the first reminder mailing, are not expected to drastically change.

(v) to introduce the proposals from 18 July 2016 on a trial basis for 24 weeks, conducting two reviews in September and December 2016, allowing three and six respective consecutive runs of the new operation to enable informed analysis, and

(vi) to amend the corresponding 'Awareness' SLA descriptions to reflect the changes (see SLA B1¹ and SLA B4² below for details). The amendments to the SLAs to be

¹ SLA B1: From *"Identifiable addresses within forecast medium, high and very high pixels (high and very high risk only for London) to be mailed at least once no more than 12 weeks ahead of scheduled mast activation. 99% amber, 100% green"* to *"Previously un-mailed properties in areas identified as at risk of interference above agreed thresholds from active and forecast masts, to be mailed at least once no more than 6 weeks ahead of forecast activation. 99% amber, 100% green"*

temporary during the trial period and then, if the revised mailing approach is adopted at the end of that time, these changes to be permanent. The first SLA report to show the changes will be provided by at800 in September.

- 6.6 at800 recognises that whilst it has an understanding of the operational impact should the proposals be agreed, there is potential for mailing, contact centre operations and engineer bookings to increase due to the unknown consequences of the new model and/or any improvement in the effectiveness of communication.
- 6.7 Both in preparation for the trial and during the 24-week period, at800 will monitor the operation and should there be any detrimental impacts upon the mitigation scheme, the Chair and Board will be alerted immediately with an outline of the issues and the planned action(s) to remedy the situation.
- 6.8 Further to clarification on some aspects of the proposals, some of which are outlined within para 6.5, the Board agreed them all. The Board meeting scheduled for (22) October will focus on the findings of the first review.

7. AOB & Next Meeting

- 7.1 The Board previously agreed to cancel the meetings scheduled for 25 February, 28 April and 23 June. At the May meeting, the Board also agreed to cancel those arranged for 24 August and 22 December. The next formal discussion will take place on Thursday 28 July 2016.
- 7.2 However should issues arise that require discussion or a member requests a meeting, arrangements will be made accordingly. Board reports will be provided as usual, regardless of whether a meeting has taken place or not.

David Hendon

Chair

4G/TV Co-existence Oversight Board

² SLA B4: From "Awareness to be maintained (reminder mailings) with those viewers at continued risk of experiencing interference from masts that were not activated as scheduled. Report on reminder mailing numbers to be provided" to "Raising awareness with properties where their risk of interference due to active masts has increased by more than the agreed threshold from a point 20 weeks after it was previously mailed"