Department for Culture Media & Sport

David Hendon
Chair
4G/TV Coexistence Oversight Board

18 December 2013

Philip Marnick,
Group Director of Spectrum
Ofcom
By email

Dear Philip,

As you know, I have been chairing the 4G/TV Coexistence Oversight Board since October 2012. The Board was set up to monitor the performance of at800 in delivering assistance to consumers whose Digital Terrestrial Television (DTT) reception is affected by interference caused by the rollout of fourth generation (4G) mobile broadband in the 800 MHz band of the radio spectrum. The requirements of the assistance scheme are set out by Ofcom in its *Notice of DTT interference mitigation required under spectrum access licences for the 800 MHz band*.

I am writing to inform you of changes that the Board would like to trial to the Key Performance Indicator (KPI) and Operational Condition regime that underpins the assistance scheme and to seek Ofcom's approval to forebear from enforcing the existing KPIs and Operational Conditions whilst that trial is taking place.

When the Board started its work, the expectation was that up to 2.3 million households could experience interference to their Digital Terrestrial Television (DTT) caused by the rollout of 4G mobile broadband in the 800 MHz band. Of these households, it was expected by Ofcom that 900,000 would rely on DTT, as opposed to cable or satellite, for their primary television viewing. After at800's pilot trials in the West Midlands, London and Brighton in spring 2013, at800's view was that the number of households experiencing 4G interference and reliant on DTT for their primary viewing was likely to be in the region of 90,000.

The operational rollout of 4G masts in the 800 MHz frequency band began in August. Since then, we have seen lower numbers of 4G interference cases than might have been expected, even under at800's revised estimate of 90,000 households. By the end of November, there had been 547 cases of 4G interference (excluding the 35 cases during the pilot trials). A number of these cases are subject to auditing by at800 which is likely to reduce the figure. If the original modelling had proved to be correct, at800 would have expected to have handled approximately 50,000 cases by now, based on currently active 4G masts using the 800 MHz band. If the current scale of interference continues, at800 is likely to be dealing with between 8,000 and 15,000 cases of interference. The experience in the UK appears to reflect the experience elsewhere in Europe; that interference is not as significant an issue as first thought.

Of course, the rollout of 4G services in the 800 MHz band is still at an early stage. There are thousands more masts to be deployed over the next few years. At800 has also sent out proactively almost a million filters. To date, its consumer research suggests that around 25% of households immediately fit their filter, despite at800 advice to wait until interference occurs. A proportion of these filters may have solved some interference cases without the households having to contact at800, and the company is undertaking research to understand to what extent this may have occurred.

But, despite these caveats, it is clear the scale of potential interference is going to be much less than originally predicted. It is the view of the Board that the requirements of the assistance scheme, in terms of volume of mailings and proactive filters for example, are becoming disproportionate to the size of the problem. It also means that at800's resources are not being as well deployed as they might and that a more flexible and targeted assistance scheme would enable it to deploy its resources in a way which could improve the assistance provided to affected consumers.

As a result, in September, I asked a small sub-group of the Board, chaired by our Consumer Non-Executive member, Roger Darlington, to review the assistance scheme, and propose changes, whilst bearing in mind the need for at800 to retain a capability to upscale its operations quickly in the event that interference grows substantially. I also asked the sub-group to consider the Key Performance Indicators (KPIs) and Operational Conditions that would be necessary to support any revised scheme, using the current KPIs as a guide but not being limited by them.

This sub-group first met on 24th September and has been meeting regularly since then to develop its proposals. The Oversight Board considered their interim recommendations at its Board meetings in October and November, and their final recommendations in December. Below is a summary of the Board's final proposals. These include changes to the KPIs and Operational Conditions in Annex 2 of the *Notice of DTT interference mitigation required under spectrum access licences for the 800 MHz band.*

In proposing changes to the KPIs and Operational Conditions, the Board was conscious of two issues. Firstly, the need to ensure that the new framework better balances the objectives of the Oversight Board in the light of the reduced risk that 4G mobile broadband presents to DTT. This suggested to us a streamlined KPI and Operational Condition regime. Second, the need to provide at800 and the Oversight Board with greater operational flexibility to adjust the operation as our understanding of the issues develops. These issues suggest a more flexible and less prescriptive KPI and Operational Condition regime. As a result, we are proposing a single overarching KPI focussed on timely service restoration, supported by a number of sub-KPIs which will provide at800 and the Oversight Board with an indication of how at800's operation is performing in this area, and whether the overarching KPI is likely to be breached.

We intend Operational Conditions to apply automatically to a breach of the overarching KPI, unless the Oversight Board agrees that their imposition – which would stop mast activation within the affected geographical area and/or require deactivation of masts within the affected geographical area – would be disproportionate in the circumstances. We believe strongly that this power to set aside Operational Conditions is an important mechanism by which the Board can ensure that the regime remains proportionate to the scale of the issue. It also allows us to set a 100% target for 10 working day service

restoration - which signals our collective determination to ensure the speedy resolution of 4G interference issues for all consumers - with confidence, as it recognises that the imposition of Operational Conditions for a failure to meet the KPI is unlikely to be a proportionate response in every circumstance, for example when a single consumer triggers the breach. We have experience of this in the context of the current KPI6, which allows the Oversight Board to exercise its discretion in this way. At the Oversight Board's meeting in November, for example, we chose to suspend Operational Conditions in response to a breach of KPI6 caused by a single complaint about a delay in sending a reactive filter that resulted in at800 exceeding the 6 working day target. When the interference was investigated, it was identified that the issue was not related to 4G. In addition, at800 resolved the aerial issue that was causing the non-4G related reception problem, and also took steps to ensure that the operational causes of the original delay to the sending of the reactive filter were rectified for the future.

Operational Conditions would not automatically apply to the sub-KPIs below. Instead, at800 would have a period of three months to bring their performance back into line before an Operational Condition was imposed. Again, it is intended that the Oversight Board would have the power to remove the Operational Conditions if, in the circumstances, they agreed that its imposition would be disproportionate.

Finally, the KPIs related to service restoration would be supported by a number of other Service Level Agreements, with agreed performance targets between at800 and the Oversight Board. It is intended that these will provide the Oversight Board with a good understanding of how at800's wider operation is performing and allow the Board to make recommendations to at800 for operational changes. Looking forward, a key focus of the Oversight Board will be on helping at800 to ensure that the new operational regime does improve the targeting and information of assistance to consumers, with the ability to react quickly if issues arise. But, to be clear, we do not propose that these SLAs are subject to Operational Conditions.

On the basis of the Policy Sub-Group's work, the Oversight Board would like Ofcom to approve a trial of the new KPI and Operational Condition regime from 1st February 2014 for a period of six months. As part of that trial, we are seeking Ofcom's agreement to forebear from enforcing the existing regime for the trial period and perhaps until 1st October, to allow the Oversight Board time to refine its proposals, if necessary, and make a final recommendation to Ofcom. Then Ofcom will need to consider the recommendation and, if it agrees, to make any necessary changes to the 800 MHz licences and the accompanying Notice.

If you have any questions or queries, please do not hesitate to get in touch. I look forward to hearing from you.

David Hendon

Cc:
Ed Vaizey, Minister for Culture, Communications and the Creative Industries, DCMS
Ed Richards, Chief Executive, Ofcom

4G/TV COEXISTENCE SCHEME: OVERSIGHT BOARD RECOMMENDATIONS FOR CHANGE

Government Policy

1. The Government policy on the 4G/TV coexistence scheme is set out in Ed Vaizey's letters of 8th February 2012 and 10th July 2012 to Ed Richards. The Board is not proposing to ask the Government to alter its underlying policy. Instead, the 800 MHz licence holders have agreed to go beyond the minimum requirements of the Government policy in three key ways to enhance the assistance scheme for the smaller number of consumers likely to be affected.

2. First, at800 will provide more than one free filter per household if this is necessary to restore television reception to other television sets beyond the primary set within the household. Interestingly, at800's experience suggests that 4G interference is more often confined to a single set within the household than was assumed under the original modelling. at800 will also provide free filters to households who rely on cable or satellite for their primary viewing but whose DTT reception on non-primary sets is affected by 4G interference. Second, at800 will continue to provide installation support to a wider variety of households than required under the original policy, which limited support to the vulnerable – those aged 75 and over and the disabled – and households that required a filter fitted to a masthead amplifier on the roof. Third, at800 will now offer installation support to communal landlords.

3. The 800 MHz licence holders are going beyond the Government's policy at their own financial risk. In other words, if these enhancements cause at800 to spend more than the £180 million that the licence holders were required to provide at800, then the licence holders will be responsible for the excess expenditure. The Government remains responsible for any expenditure beyond £180 million if this is as a result of delivering the original policy.

Awareness (KPI1)

4. One of the key objectives of the assistance scheme is to ensure that households potentially affected by DTT interference are supplied with information by at800 in good time before any 4G interference occurs. KPI1 gives effect to that objective by requiring the licensee to:

   "…ensure that 99.9% of households forecast to experience interference to their reception of DTT services within a 2 km radius of a base station have information delivered to them at least four weeks, and no earlier than twelve weeks in advance of that base station being activated."

5. As at the 30th November, at800 had sent nearly 8.5 million postcards. According to at800's consumer research in London, Birmingham and Manchester, the proportion of

consumers who believe that they are likely to experience 4G interference, having received a postcard, is between 12%-19% (equating to 1 – 1.6 million people. If the consumer has received a proactive filter as well, the range increases to between 17%-23%. In reality, using the current figures on interference cases, there is roughly a 1 in 20,000 chance of a recipient of a postcard experiencing 4G interference, whether or not they received a filter. This is a mailing cost of £6,600 per confirmed case. In addition, there is anecdotal evidence from calls to the at800 contact centre that the receipt of a postcard, particularly if this is followed by a proactive filter, can cause considerable annoyance and distress to some consumers, particularly the vulnerable.

6. The Oversight Board does not wish the assistance programme to cause unnecessary annoyance and distress to DTT viewers, and so at800 and technical representatives of the broadcasters have been working on a more targeted mailing model, which seeks to better balance volumes of mailings with likely 4G interference cases. This is challenging as the causes of interference are affected by a variety of 'in home' factors. Nevertheless, at800 has developed a risk based model, which defines areas according to their risk profile and then scales the mailing operation accordingly. Further detail on the risk based model is available in Annex 2. This model will be trialled early next year and continue to be refined by at800 with support from the Technical Sub-Group as rollout continues.

7. On this basis, we propose that KPI 1 is removed from Annex 2 of the Notice to allow at800 and the Oversight Board to implement a more targeted approach to mailing. This will enable us to develop mailing strategies tailored to the characteristics of the area and refine these as our understanding develops during rollout. In its place, we propose a variety of SLAs relating to awareness, which are set out in Annex 3. However, we are clear that the requirement in the main body of the Notice for the licensees to communicate with householders before interference occurs is retained, although the wording will need to be amended by Ofcom to reflect the revised approach.

8. At800's direct mailing strategy will be supplemented and reinforced by above the line advertising, PR, and social media activity.

Service Restoration (KPIs 2, 3, 4 & 5)

9. The other key objective of the scheme is to ensure that at800 provides timely assistance to households who experience interference (or who are likely to experience interference). This objective is given effect by KPIs 2, 3 & 5 which require at800 to send proactive and reactive filters to households, and to consider the case for platform changes where filters are ineffective. There is no specific KPI related to installation support for households with a masthead amplifier on the roof.

10. The Notice defines the Standards required for each of these KPIs as follows:

KPI2 (Proactive Filter Provision)*:*

"Where a licensee activates a base station, it must ensure that no more than 10% of households (not including communal households) forecast to experience interference to their reception of DTT services within a 1.5 km radius of that base station request that a filter be delivered to them within four weeks following the activation of the base station."

***KPI3 (Reactive Filter Provision)**:*
"The Licensee must ensure that where households contact Licensees or the Entity reporting interference to their DTT services:

a) At least 86% of filters are delivered to the households within the relevant reporting region within three working days of households notifying the Licensee or the Entity of the interference;
b) At least 94% of filters are delivered to the households within the relevant reporting region within four working days of households notifying the Licensee or the Entity of the interference; and
c) At least 99% of filters are delivered to the households within the relevant reporting region within six working days of households notifying the Licensee or the Entity of the interference…"

***KPI5 (Platform Change Provision**:*
"The Licensee must ensure that, where a household reports that a filter does not work effectively to mitigate interference caused to its DTT services and, consequently, it is arranging for households to have a platform change in accordance with paragraph 3.15 of this Notice:

a) 99% of such platform changes, within the relevant reporting region, are completed within fifteen working days from the working date on which the household reported its filter was not working."

11. The original conception was of an assistance scheme which resolved the vast majority of interference cases proactively through the delivery of free filters to households at risk of interference before any masts were activated. This was to be supplemented by the delivery of timely reactive filters to those households who experienced interference but had not received a proactive filter and, if necessary, platform changes if the filter did not resolve the interference.

12. Annex 6 of the *Assessment of future mobile competition and award of 800 MHz and 2.6 GHz* that Ofcom published in July 2012 recognised that this would lead to more filters being delivered to households than households experiencing interference:

"If interference forecasts were accurate to the level of individual households, it would be reasonable to require that 100% of affected households received filters proactively. However, in practice, this level of forecasting accuracy is very unlikely to be possible. The UK Planning Model (UKPM) which is used by broadcasters in planning the DTT network and the output of which is likely to be a key input to the interference model forecast, produces outputs at a granularity of 100m by 100m. The UKPM represents the best available data and no other model is likely to be able to provide a higher level of local granularity. This means that even if, for example, a 100m square contains 20

households of which only one household is predicted to be affected, the only way to ensure that the potentially affected household received a filter in advance would be to send filters to all 20 households within the square. This would equate to wasting 19 filters. There therefore needs to be a balance between the benefit to consumers of proactive filter provision and the potential costs incurred in sending unnecessary filters." (Annex 6, Page 286)

13. Getting this balance right has been even more challenging than expected in the light of the much lower levels of interference in practice than in theory. So at800, with Oversight Board agreement, has sought to better target the proactive filters that have been sent. By the end of November, at800 had sent out 977,400 proactive filters. Under the original operating model, this figure would have been in the region of 3.8 million.

14. Ofcom also recognised that there were limitations to the effectiveness of KPI2. On 23rd May, Ofcom notified the Oversight Board of its intention to adopt a "de minimis" threshold for KPI2 enforcement, in recognition of the fact that the KPI was calculated on a per mast basis and that a very small number of requests for filters in relation to certain masts could have the effect of triggering a breach of the KPIs and invoking Operational Conditions. This was initially for a three month trial period but has been extended to 22nd February 2014.

15. In addition, at800 has also sought to resolve suspected cases of 4G interference through an installer visit rather than through the delivery of a reactive filter. This gives them an opportunity to diagnose whether 4G really is the problem and, if it is, to gain a greater understanding of the issue. By the end of November, at800 had made 2,722 installer visits and sent 4,544 reactive filters.

16. Where there are cases of 4G interference that a filter has not solved, at800's installers have made every effort to restore DTT rather than implement a platform change. As at the end of November, there has not been a single platform change.

17. In considering at800's operation in this area and possible replacements for KPIs 2, 3 & 5, the Oversight Board's guiding principle has been to find the right balance between proactive filter provision and reactive support, and to improve the reactive assistance provided to consumers in the event of a 4G problem. In practice, that means a continuing presumption towards installer visits rather than reactive filters, and towards the restoration of the DTT service rather than platform changes. It also means timelier restoration of service, where possible.

18. Accordingly, the Oversight Board is proposing a single overarching KPI which will require at800 to resolve 100% of all confirmed 4G interference cases affecting primary DTT users within 10 working days of the cases being reported to at800, unless the consumer asks for a reactive filter rather than an installer visit. In the event that a consumer opts for a reactive filter in the first instance rather than an installer

visit, then the 10 working day period will start from the date that the consumer reports that the filter has not resolved the problem and requests an installer visit.

19. By contrast, the current regime potentially allows consumers to suffer 4G interference to their DTT reception for over 20 working days without a KPI being breached. The KPIs envisage 99% of reactive filters being delivered within at least six working days, and then platform changes being completed within 15 days of the household reporting that its filter was not working.

20. If this overarching KPI is breached, the Oversight Board propose that Operational Conditions (OCs) should apply automatically, unless the Board considers that the imposition of the OC would be disproportionate, for example in circumstances where there are clusters of breaches but these have subsequently been addressed or are likely to be addressed within the reporting period or there are limited breaches randomly spread in different areas

21. The Oversight Board also propose that the overarching KPI is supported by a number of sub-KPIs, as outlined in Annex 3, covering the timeliness of installer visits (Sub-KPIs A1.1 – A1.3) and the issuing of reactive filters (Sub-KPIs A1.7 -A1.9) These KPIs would apply to all suspected 4G cases, whether reported by a primary DTT user or not (in contrast to the overarching KPI, which would apply to confirmed 4G cases affecting primary DTT users only). A breach of these sub-KPIs would not be subject to the automatic imposition of OCs. Instead, at800 would have a period of three months to resolve the issue before OCs were imposed.

22. We are not proposing, however, that OCs should be applied to sub-KPI A1.6, which relates to installation support to communal households. The 800 MHz licence holders have voluntarily agreed to go beyond the Government's policy in this area. In these circumstances, we believe that a sub-KPI measure without the threat of OCs is more appropriate.

23. Finally, the sub-KPI A1.10 (Proactive Filters) has been subject to much discussion amongst the Policy Sub-Group and the Board for the reasons outlined in Paragraphs 11-13, and because of the theoretical impact on interference of increasing numbers of Block A masts radiating in the 800 MHz band as rollout continues. The Oversight Board has agreed that at800 should start the six month trial period with a policy of not sending out any proactive filters. This policy will be reversed, and proactive filter mailing resumed, if it appears to the Oversight Board that there are areas at high risk of suffering 4G interference that would benefit from receiving filters in advance of that interference occurring. So, whilst the wording for sub-KPI A.1.10 has been drafted it will not be a live sub-KPI at the start of the six month trial. The Oversight Board will monitor the approach to filtering and take a final view on sub-KPI A1.10 at the end of the six month trial period.

Installation Support to Vulnerable Consumers (KPI4)

24. The objective of KPI4 is to ensure that vulnerable consumers receive timely installation support to restore their DTT service. Vulnerable consumers are consumers who are:

    - Aged 75 or over
    - Eligible for any of the following: Personal Independence Payment; Disability Living Allowance; Attendance Allowance; Constant Attendance Allowance; or Mobility Supplement
    - Registered blind or partially sighted; or
    - Have lived in a care home for six months or more

25. The Standard for KPI4 is set out below:

    "The Licensee must ensure that, where it is arranging for the installation of fitting for vulnerable households (where the vulnerable household is not a communal household):

    a) 50% of such installation within the relevant reporting region are completed within eight working days from the date on which the vulnerable household makes a request; and
    b) 99% of such installations within the relevant reporting region are completed within twelve working days from the date on which the vulnerable household makes a request…"

26. The Oversight Board is proposing that the vulnerable consumers are handled with greater urgency and therefore that they are brought into the scope of the overarching service restoration KPI outlined above, which requires the television service to be restored within 10 working days. The sub-KPIs that support this objective (A1.4 & A1.5) require 50% of installers visits to vulnerable consumers to be completed within three working days (instead of eight working days as under the current KPIs) and 99% of to be completed within seven working days (instead of 12 working days under the current KPI).

27. At800 has been working with Digital Outreach Limited (DOL) to raise awareness of 4G interference with vulnerable consumers proactively. However, in light of the much lower than expected levels of interference, this contract has been scaled back. At800 will continue to work with a wide range of third sector organisations and vulnerable viewer groups to ensure that they remain aware of the issue and can provide proactive support to vulnerable consumers, in addition to that available from at800.

Consumer Complaints (KPI6)

28. The objective of the current KPI6 is to "…minimise the occurrence of consumer complaints regarding their required service standards (defined in other KPIs) and

respond promptly to issues where they fail or risk failing to meet the requirements of the KPIs set out in this Notice". The Standard is defined as:

"The Licensee must ensure that it has put in place adequate arrangements with regards to the provision of filters and platform changes, such that, for each base station:
Over a twelve week period from the activation of a base station

a) No more than 5% of households within 1.5 km of the relevant base station, who have requested a filter under paragraph 3.11.2 ("Provision of filters") complain to the Licensee or the Entity that they have not received a filter within six working days of making their request; and
b) No more than 5% of vulnerable households within 1.5 km of the relevant base station who have requested the installation of a filter under paragraph 3.12 ("Installation support") complain that they have not received the installation within twelve working days of making their request."

29. The Oversight Board is proposing to remove Consumer Complaints from the KPI framework but to agree broader Service Levels Agreements (SLAs) with at800 covering the full range of complaints about their Quality of Service. We feel that this will prove to be a more useful indicator of at800's performance than the current KPI, which is focussed on whether consumers complain about at800's failure to meet the performance standards required under KPIs 3 & 4. Given the number of interference cases with which at800 are likely to be dealing, we do not consider it is necessary for an at800 failure to meet the performance targets relating to these SLAs to lead to the automatic imposition of an OC, providing the overarching Service Restoration KPI is still being met.

Other SLAs (Scale)

30. In addition to the KPIs and sub-KPIs on Service Restoration, and the SLAs on Awareness and Quality of Service, the Oversight Board is proposing three SLAs related to Scale. These SLAs are designed to provide at800 and the Oversight Board with a mechanism to check whether at800's operation is appropriately scaled for the size of the interference problem. In other words, they will provide at800 and the Oversight Board with a series of indicators that could potentially trigger another review of the scale of at800's operation, for example if there is a significant and continued spike in interference cases or if the numbers of interference cases falls below the range of 0.17 – 1.66 interference cases per mast (which equates to 5k- 50k interference cases over the lifetime of the programme).

THE RISK BASED APPROACH TO MAILING

31. The tool used by at800 to predict locations where viewers may be at risk of suffering from interference is known as Punch. Punch divides the country into 100 metre square areas (known as pixels) and provides a probability that DTT would be able to be received by households in that pixel. This probability is then compared with the probability of receiving DTT once information on the location of new 4G masts and their specific operating characteristics is included. The difference between these two figures is called degradation. The degradation is combined with the number of separate households within a pixel. at800 mails all households in pixels where degradation shows it is 'probable' that at least one household in a given pixel could lose DTT. For example, under the current awareness model, a change from 100% DTT coverage to 95% DTT coverage (5 percentage point degradation) in a pixel with 50 households would mean that 2.5 households are at risk of losing DTT and so all households would be mailed.

32. This leads to a significant over-mailing of households very unlikely to experience interference. at800 has consulted with technical experts in the broadcast industry and studied the data it now has on the locations of confirmed 4G cases caused by live masts that would have generated a mailing of 3.66 million postcards. The number of confirmed cases from these mailed properties was 182. However, 2 million of these postcards were sent to households in pixels where degradation was less than 5 percentage points and they captured just 39 cases – a figure of 51,282 postcards for each case. This is an approximate mailing cost of £16,900 per case. In London, degradation usually needed to be over 20 percentage points to cause interference.

33. Based on this work, at800, working with the broadcasters, has agreed to identify pixels as either low risk (≤5% degradation), medium risk (>5% ≤20% degradation) and high risk (>20% degradation). at800 proposes to send postcards to low and medium risk pixels in areas outside its London operational area, and to high risk pixels only within the London operational area.

Department for Culture Media & Sport

Annex 3

REVISED KPI & SLA FRAMEWORK

KPI	Sub-KPI Measure	Notes
KPI A: Service Restoration: 100% within 10 working days where household is a primary DTT user (communal households and households where cable or satellite services are received are excluded from this measure) Breach of the main KPI will invoke operational conditions as described on page 20. Breach of a sub-KPI will trigger	A1: 95% of installer visits completed as scheduled with viewer	Viewers that self-select themselves outside of this KPI will be excluded from the reporting. However, at800 will report data on the numbers of viewers falling outside of the overall KPI due to shifting appointment dates. Service restoration only applies to confirmed 4G cases. Sub-KPIs for installer visits are a measure regardless of confirmed 4G.
	A2: Installer visits completed within 3 working days: 50%	
	A3: Installer visits completed within 7 working days: 85%	
	A4: Vulnerable visits completed within 3 working days: 50%	
	A5: Vulnerable visits completed within 7 working days: 99%	

a monitoring and resolution in-line with KPI principles described on slide 10 e.g. month 1 – address the issue, month 2 – visible improvement, month 3 – impose condition, to delay roll-out in breach area	A6: 95% of communal installer visits completed as scheduled with landlord where access and liability is confirmed	This sub-KPI can never trigger OCs.
	A7: Reactive filters issued in 2 working days: 86%	Reactive filters are sent where the viewer requests one instead of installer. Meeting this measure ensures we are dispatching speedily. The overall KPI A clock will only start should the viewer subsequently call to arrange an installer visit.
	A8: Reactive filters issued in 4 working days: 94%	
	A9: Reactive filters issued in 5 working days: 99%	
	A10: 100% of identifiable addresses in very high risk pixels to be sent proactive filter (households with forecast degradation of higher than 80% or 90%)	Sub-KPI to be suspended in order to gather data about the efficacy of proactive filters.

SLA	SLA Measure	Notes
SLA B: Awareness Operational conditions would not apply to SLAs they are to act as a mechanism to monitor ongoing performance of DMSL. The obligation on the licensee is via the MOU and service agreement to provide services that meet agreed SLAs	B1: 100% of identifiable addresses within forecast medium and high risk pixels (high risk only for London) to be mailed at least once between 3 and 12 weeks ahead of scheduled mast activation.	
	B2: Report on households mailed and not mailed within forecast pixels (i.e. number of low risk households).	
	B3 Report on households reporting interference within un-mailed forecast pixels. More than 40% of total reports of interference – DMSL to address through operational adjustments (e.g. mailing low risk pixels in a certain area or adjusting the risk score for pixels), however, a de-minimis threshold to apply.	
	B4: 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.	No more than 1 reminder to be sent to a household.
	B5 Awareness to be maintained (reminder mailings) with those viewers at renewed risk of experiencing interference from infill masts where the addition of the mast increases the risk of interference in that pixel – low to medium, new mail; medium to high, reminder mail	This would generate a reminder mail if 6 months had passed since the household had received its original mailing
	B6 Report on households mailed and not mailed **reminders** within forecast pixels (i.e. number of low risk households)	

	B7 Report on above the line communications and research outcomes, including awareness in rollout areas.	

SLA	SLA Description	Notes
SLA C: Quality of Service Operational conditions would not apply to SLAs they are to act as a mechanism to monitor ongoing performance of DMSL. The obligation on the licensee is via the MOU and service agreement to provide services that meet agreed SLAs	C1: No more than 0.5% of households interacting with DMSL make a formal complaint about quality of interaction	
	C2 No more than 0.5% of households interacting with DMSL make a formal complaint about quality of problem resolution	
	C3 No more than 0.5% of households interacting with DMSL make a formal complaint about timeliness of problem resolution	
	C4 Report on total number and categories of complaints	Will also include additional quality data such as viewer satisfaction.

SLA	SLA Measure	Notes
SLA D: Scale Operational conditions would not apply to SLAs they are to act as a mechanism to monitor ongoing performance of DMSL. The obligation on the licensee is via the MOU and service agreement to provide services that meet agreed SLAs	D1 Measure of the numbers of mailings per report of / case of interference	Risk based approach reduces mailings per 4G case to 11,540 from 20,099 in the measured base case
	D2 Measure of the number of reported cases that occur outside of mailed area	25% shown as outside of mailed area using new risk based approach
	D3 Measure of number of cases of interference per mast remaining between 0.17 and 1.66 (5k to 50k cases of interference for rollout) exceeding or trending towards exceeding the range will be raised to the OB for review / action	

Operational Conditions: KPI A

- KPI A cases and their nearest active masts are placed on a national map

For any given monthly reporting period, this mapping would include cases from the previous two periods; those resolved within the reporting period; and those ongoing

- Operational Conditions to be imposed where there exist consistent clusters* of cases where service continues to take too long to be restored.
- The imposition of Operational Conditions would stop mast activation within the affected geographical area and/or require the deactivation of masts within the affected geographical area
- Escalation process for operational conditions:

Raise breach of KPI A to OB, operational conditions automatically imposed, but would be suspended where their imposition is disproportionate, for example:

where clusters of cases have occurred in certain areas but delays to restoration of service have been addressed within the reporting period, and therefore retrospective OCs would not be proportionate;

where violations are randomly spread in different areas meaning OCs would likely be disproportionate

Further monitoring of the breach will continue as follows:

Month 1: address issue/visible improvement in next reporting period

Month 2: where no improvement, impose condition to delay roll-out in breach area*

Month 3: where worsening of issue, impose condition to deactivate masts in breach area*

- Breach of sub-KPIs A1 to A5 and A7 to A10 would not automatically trigger operational conditions. Depending on the severity of the breach, at800 would be expected to:

Month 1 – Address the issue

Month 2 – Visible improvement

Month 3 – Impose condition, to delay roll-out in breach area

**it is believed that, via mapping, a cluster will be 'known' when it is seen. However, >5 cases in an area of 1.5km radius would seem appropriate.*