openreach

Openreach's response to Ofcom's consultation

"Further consultation on proposed quality of service remedies"

NON-CONFIDENTIAL VERSION

31 October 2017

Foreword

On 14 September 2017, Ofcom published a further consultation which sets out its revised proposals for regulating the quality of Openreach services that are used by telecommunications providers to provide broadband and telephone services to customers and businesses (the Consultation Document).

This response is provided by Openreach, a functionally separate line of business within British Telecommunications plc ("BT")[1] in response to proposals related to Openreach's business. This document should be read in conjunction with Openreach's other responses to consultations relating to the WLA Market Review.

Any comments on this response should be sent to Mark Shurmer, Managing Director Regulatory Affairs, Openreach, at mark.2.shurmer@openreach.co.uk.

[1] As part of BT's implementation of its formal notification dated 10 March 2017 under section 89C of the Communications Act 2003 ("the Act"), the Openreach business will be operated by Openreach Limited, which was incorporated as a separate legal entity on 24 March 2017, following the fulfilment of certain conditions set out in the notification.

1 Executive Summary

Introduction

1. We welcome the opportunity to continue to work with Ofcom and industry to agree how best to achieve the continued, sustainable improvement in quality of service (QoS) in a way that delivers value for money to the consumer.

2. In our response to Ofcom's initial QoS consultation, published in March 2017 (March QoS Consultation) we reaffirmed our support for continuing to improve the service that customers receive and recognised Openreach's role in achieving that. We highlighted our continued out-performance of the minimum service levels (MSLs) over the current regulatory review period as evidence of our commitment to go beyond the minimum service levels set by Ofcom.

3. However, we provided evidence to support our view that the proposed MSLs, and the glidepath to achieve these, represented aspirational targets rather than minimums and that the scale of change associated with achieving the level of improvement from the current levels would place the operational delivery teams under strain and presented a risk to the service customers would receive.

4. We also outlined our belief that any improvement in service needed to be fully funded within the charge control to ensure that it was sustainable and that industry could develop strategic plans confident in the higher level of service into the future. In this regard we provided evidence that the proposed resourcing uplift provided for in the March QoS Consultation proposals understated the additional resources needed to underpin the service performance, particularly as it approached the inherent 'glass ceiling' on repair in each regional patch. We also highlighted some specific costs of recruitment and training at the scale required, which we did not believe were reflected in the charge control and QoS modelling undertaken by Ofcom and their advisors.

5. In addition to these costs of improving and sustainably embedding the level of service performance that Openreach is aiming to exceed as a minimum level, we also outlined our position on the funding of fault volume reduction (FVR) investments. We highlighted what we believed was an overstatement by Ofcom of the benefits of FVR on the likely repair intake, but also our view that the approach taken by Ofcom in the charge control modelling did not fully fund the investment (both Capex and Opex) associated with delivering a higher level of FVR into the future.

6. Finally, in our initial response we also outlined our position in relation to other service remedies proposed by Ofcom, including the requirement to extend MBORC to more than two patches, the removal of the 60 day cap on Service Level Guarantees (SLGs) and the proposals in relation to repair tails.

7. We recognise that the revised proposals made by Ofcom in their further consultation[2] reflect much of the additional evidence we have provided on several of these issues. However, we do not feel that the proposals fully address some of the concerns we raised in our initial response and the evidence we provided to support our position. We would welcome the opportunity to continue to build the understanding in key areas.

[2] Ofcom: Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

Investments to sustainably improve Quality of Service should be fully funded

8. We believe that the proposed resource uplift in Ofcom's further consultation to underpin the service improvement does not fully fund the investments required to ensure that any performance uplift is sustainable. We believe that the level of resource uplift to achieve 88% in the final year of the charge control period should be 14.6%. This compares to the 11% uplift now proposed based on the current modelling done by Ofcom.

9. We would welcome the continued opportunity to work with Ofcom to ensure that there is an aligned understanding of the resource assumptions that are appropriate to use in their modelling. We feel that Ofcom's RPM modelling may have over-estimated the ability of the operational teams to loan resources across patches. Moreover, this flexibility is reduced further as service expectations rise closer to the 'glass ceiling' because of the potentially adverse impact on the patch that is loaning out resource. In addition, there are significant inefficiencies associated with loaning capacity; we believe these inefficiencies may have been under-estimated. It has not been possible to understand the granular assumptions made in the RPM model on loans to date, but we would like to work with Ofcom to close this gap in understanding and ensure any assumptions reflect operational reality as appropriately as possible.

10. As we highlighted in our response to the March QoS Consultation, we believe that the underlying level of required resource uplift required is underestimated and does not fully cover the funding gap within Ofcom's modelling. We believe that the cost model does not allow for the true incremental operational costs of upskilling and the impact in lost productivity of engineers developing their newly acquired skills over a period of time. These costs would have been part of the operational cost baseline in previous years. However, we believe that the levels of training and recruitment needed to sustain ever improving service to customers are higher than previously undertaken and are incremental to the baseline used in Ofcom's modelling

11. Taken together, these factors mean that the associated costs to underpin the QoS assumed in the overall Charge Control models are underfunded by ✂ over the period of the review. As outlined in Table 1 below, Ofcom currently is giving allowance for investment of circa £54m, compared to the true operational costs required to fully fund this improvement of circa ✂ .

Table 1: Investment to fund Quality of Service Improvement [3]

✂

[3] Recruit Shrinkage and Upskilling Shrinkage refer to the lost capacity whilst engineers are in training and subsequently on a learning curve to competence. Upskilling Costs refer to the additional training, kitting and pay costs.

12. In addition, we would also welcome the opportunity to continue to work with Ofcom to better understand the assumptions that have been made in setting the Service Maintenance Level (SML) differential. We are concerned Ofcom has chosen to retain the previous method from their March QoS Consultation but note that Ofcom highlights this as an area that may benefit from further discussion. We believe there is an opportunity to better align this through accurate modelling to ensure the approach is not over-simplified and that it is aligned to operational reality.

Proportionate and consistent

13. In our response to the March QoS Consultation we highlighted our belief that MSLs should be set by Ofcom consistently with its statutory obligations, including (i) promoting efficient investment[4], (ii) ensuring that it does not impose or maintain unnecessary burdens[5]; and (iii) ensuring remedies imposed are objectively justified and proportionate to what the condition is intended to achieve[6]. We continue to believe that the proposed MSLs should be amended in order to ensure they are consistent with the statutory obligations and with SLAs and SLGs (Service Level Agreements/Guarantees).

14. We welcome the new proposals on the level of repair on-time MSLs and the associated glidepath. However, we believe that the current approach to applying an allowance for MBORC, specifically the restriction of the high level MBORC to 2 patches for a defined period, is not aligned to the underlying reasons for applying an allowance for MBORC.

15. We also retain our view that Ofcom should look at the inter-relationship between the MSLs and SLAs/SLGs, for example:

- **Removal of the 60-day SLG compensation cap:** Openreach does not agree with the proposed removal of the 60-day SLG compensation cap. It is normal commercial practice to include a cap on compensation payments in any SLA contained within a commercial contract so that liability is not open ended or unlimited.

- **Introduction of an "SLA+5 working days Repair Tails MSL":** Openreach does not believe that it is necessary for Ofcom to introduce further MSLs to cover repair tails. This is an area where: (i) Openreach has demonstrated real commitment and focus; (ii) Performance is strong – and continuing to improve; and (iii) there is already sufficient financial incentive (via SLG payments) to ensure that Openreach will maintain its performance. Accordingly, the introduction of a "SLA+5 working days Repair Tails MSL" is an unnecessary and a disproportionate regulatory burden to impose

16. In summary, we believe that the new proposals made by Ofcom in their further consultation on Quality of Service reflect much of the evidence that we have shared and discussions that have taken place to develop an aligned understanding of the key issues that impact Quality of Service. However, we do not feel that the proposals fully address some of the concerns we raised in our initial response and the evidence we provided to support our position. We would welcome the opportunity to continue to build the understanding in key areas.

[4] The Communications Act 2003 (the Act), sections 3(4)(d) and 4(8)(aa).
[5] The Act, section 6(1).
[6] The Act section 47

2 Revised proposals for the level of on-time repair

Question 3.1: Do you agree with our revised position on Openreach's operational capabilities for on-time repair? Please provide reasons and evidence in support of your views

17. We acknowledge Ofcom's recognition of the analysis provided by Openreach since the March QoS Consultation, in particular the evidence on all contributory events associated with failure scenarios which has added to the granularity and accuracy of the analysis. We believe that the multiple criteria and hierarchy approach to identifying primary causality as set out in our evidence effectively details the intractable barriers to on-time repair success (i.e. "on the day" success). This analysis is further augmented by multi year results.

18. The limits of our operational capabilities are defined by factors both within and outside of Openreach control. Therefore we are pleased that Ofcom has recognised our designation of aspects we can influence and those that are not addressable or very unlikely to reduce. Issues such as Civil Engineering, Safety / Hazards, Damage and Obstruction represent a material barrier to "on the day" success where Openreach has very limited ability to predict or influence. However we recognise that a section of failure categories (designated 'Amber') can be mitigated in part, and we are committed to improving these as part of a wider set of service improvement initiatives.

19. We believe that it is also important to consider the range of service remedies proposed by Ofcom in totality. In this context, the proposals for improvements in on-time repair performance should be considered alongside the increasingly challenging provision performance remedies. We believe it is important to continue to improve customer service in all areas, but note the crucial role that provision demand forecast accuracy will increasingly play in our ability to maintain more challenging performance.

20. We also believe that Ofcom's acceptance of regional variance by General Manager area provides a fair assessment of operational scale, and recognises the inherent challenges in providing service across a national geography. Where specific regions are subject to impacts such as adverse weather or unexpected provision volumes, there is no flexibility to over-deliver due to the inherent limitations highlighted by the glass ceiling analysis. As such this precludes other regions from compensating the overall MSL delivery as all are subject to the same ultimate limitations. Notwithstanding our comments above regarding the application of MBORC (in response to Q6.1), and whilst the proposed level of the repair standards represents a significant delivery challenge to Openreach and industry as a whole, we believe it is a balanced proposal and reflects the practical operational limit for delivering service without contributory action from telecoms providers.

21. We therefore welcome Ofcom's proposal to refine their proposed repair standards in light of this new analysis on the upper limit of what is operationally achievable.

22. With respect to the customer caused failure of Non Appointed No Access and Clear Reject, we recognise Ofcom's contention that improvement can be leveraged through better inter-working between Openreach and its customers. As these are matters that are not fully in Openreach's control, we agree with Ofcom that industry would need to discuss and agree upon a resolution.

23. However, we would also highlight that both issues have been raised in discussion with the OTA and worked through with industry previously without conclusion (notwithstanding that improvements would directly benefit end customers by reducing the time to resolve issues). As such, we would seek the continued support of the OTA in facilitating industry discussion to explore options and

reach agreement on mutually beneficial solutions.

Question 3.2: Do you agree with the proposed level of the repair standards? Please provide reasons and evidence in support of your views

24. We believe that the proposed level of the repair standards are part of a wider package of improvements that contribute to a significant improvement in the level of service that customers will receive. When taken together with Ofcom's other proposed improvements in provision standards, our ambition to exceed the minimum service levels across all metrics will require fundamental re-engineering of the Openreach operational delivery structures and significant investment in resources, training, processes and systems.

25. We have provided evidence of the inherent performance 'glass ceiling' and the extent to which this is impacted by factors that are both within *and outside of* Openreach control. We are committed to addressing these factors, but welcome the recognition in Ofcom's further consultation that there are some factors that will require industry wide collaboration or may be outside of Openreach's ability to directly influence (e.g. jobs requiring civils activity).

26. We also note that the nature of the standards are that they are a *minimum* that must be met in every patch across all measures. The volatility that we experience in both repair and even provision intake across the year at a local patch level means that the absolute level of the jobs that sit within the 'glass ceiling' will change over time and geographically, making it essential that any standards are set at a challenging minimum level, rather than at the level of an aspirational target, if they are to remain objectively justifiable and cost effective.

27. As such, we believe that the revised proposed level of repair standards do represent a significant delivery challenge to Openreach and industry as a whole. On the basis of the analysis we have undertaken to date, we believe that Ofcom's proposal is appropriate. However we would have concerns if Ofcom changed its analysis such that the MSLs in each patch became more onerous. In such circumstances, we would clearly have serious concerns about the achievability, and therefore the proportionality, of the proposals.

Question 3.3: Do you agree with our proposed glidepath? Please provide reasons and evidence in support of your views

28. As part of our response to Ofcom's March QoS Consultation, we highlighted the importance of setting a glidepath that was challenging, but was operationally deliverable. In particular, we highlighted that the initial proposals would have required a level of recruitment and skilling that would have been more stretching than anything previously undertaken by Openreach and could negatively impact customer service levels.

29. We also outlined our belief that the costs associated with the level of investment in resourcing and skilling to underpin the proposed service improvement were disproportionate when compared to the feedback from customers on the importance of this issue. We highlighted that the existing proposals did not fully capture the costs incurred by Openreach to manage the operational uncertainty as the engineering workforce develop and embed their new skills

30. We believe that the revised glidepath proposed in Ofcom's further consultation helps to mitigate these risks and underpins the continued sustainable improvement in service that is our collective objective. It enables a more operationally balanced and cost effective investment in our engineering resources that will underpin improvements over a number of years.

31. As such we believe the proposed glidepath is appropriate. However we would have concerns if Ofcom changed its analysis such that the glidepath in the early years would become steeper. In such circumstances, we would have serious concerns about the achievability, and therefore the proportionality, of the proposals.

Question 3.4: Do you have any further comments on our proposals for regulating BT's service performance for repairs? Please provide reasons and evidence in support of your views

32. As outlined in our response to March QoS Consultation, we believe that it is essential that the proposals to regulate service performance on repairs should be based on the fact that they are *Minimum* Service Levels rather than aspirational targets.

33. Furthermore, we believe that any proposals must be fully funded within the overall charge control review to ensure that the investment needed underpins a sustainable improvement, at a cost that is proportionate to the level of importance that consumers have placed on this matter.

34. We believe that Ofcom's proposals within the further consultation must be considered in the context of Ofcom's wider proposals to regulate service. The inherent uncertainty in both provision and repair intake and geographic volatility means that it is essential that proposals are challenging, but operationally achievable within the shared ambition to improve all elements of customer service.

35. Openreach remains of the view that it is not appropriate for Ofcom to introduce further MSLs to cover repair tails. This is an area where: (i) Openreach has demonstrated real commitment and focus; (ii) performance is strong – and continuing to improve; and (iii) there is already sufficient financial incentive (via SLG payments) to ensure that Openreach will maintain its performance.

36. In this context we welcome these revised proposals and believe that they address a number of the significant concerns we raised in our response to the March QoS Consultation and, in this respect, are appropriate. We continue to believe, however, that it is essential that any proposals are fully funded to ensure that the investments needed are sustainable to support all of industry and consumers.

3 Revised resource uplifts for proposed quality standards

Question 4.1: Do you agree with our resource uplift estimates as modified from our March proposals? Please provide reasons and evidence in support of your views

37. We agree with Ofcom that any improvement to service should represent value for money and welcome the fact that Ofcom has reviewed the March proposals in light of the Allocation Model results submitted by Openreach and the further evidence Openreach provided, proposing the year three repair MSL at a point that will be challenging yet operationally achievable and represent value for money.

38. We welcome the audit of our Allocation Model by Analysys Mason, who also developed the Resource Performance Model (RPM) for Ofcom. However, we believe it is appropriate to address some concerns raised in their audit. In Annex 1 we respond specifically to this audit and cover the following points in detail:

    - Model complexity;
    - Input parameters;
    - Counter-intuitive results; and
    - Loans.

39. We are disappointed that Analysys Mason concluded the Allocation Model should not be used by Ofcom to predict the QoS uplift. Indeed, in light of our observations in Annex 1 addressing the specific concerns raised by Analysys Mason, we continue to believe that the Allocation Model is the more sophisticated, accurate and appropriate basis on which to quantify the necessary resource uplift.

40. Notwithstanding, if Ofcom continues to have reservations about the Allocation Model and decides not to adopt it in full, we are pleased that Ofcom is at least proposing to consider the outputs of the Allocation Model alongside the RPM and have chosen to use the Allocation Model result for the base case scenario. However, we think there are important refinements which must be adopted in order to ensure Ofcom's proposed approach is fit for purpose.

41. In this regard, we are specifically pleased that Ofcom modified the RPM to consider some of the operational 'glass ceiling' limits highlighted in our response, but are concerned with the loan assumptions. It is not clear to what extent the RPM 'adjacent sharing' function is called upon and as such it is difficult to understand if the model understates the challenges and costs associated with resource loans. The output from the RPM in Table 4.5 of Ofcom's further consultation[7] shows that the use of 'adjacent sharing' can influence the upper range by 3.8 percentage points (from 14.1% up to 17.9%). We believe this is significant enough that we need to understand the way in which the RPM uses the 'adjacent sharing' functionality and if this is consistent with Openreach practice.

42. Following Ofcom's statement in paragraph 4.32 of the further consultation[8], Openreach have shared further detail with Ofcom[9] on the actual usage and cost of loans within our operation and we have tried to seek clarification on the extent to which the RPM has assumed loans. Unfortunately it would appear that this information is not available[10] as an output and it is therefore difficult to understand the extent and frequency of the loans within the RPM and how well this aligns with actual loans.

43. However, based on some high-level comparisons shown in Annex 1, we believe that Ofcom's RPM modelling may have over-estimated the ability of the operational teams to loan resources across SOMs which is, in part, due to the assumed travel distances possible between SOM patches.

44. We also believe that as service levels become more challenging across both provision and repair, copper and fibre, the ability to loan is increasingly constrained. Loans are used when Openreach experience unexpected events, which, by their nature are difficult to predict.

45. As the MSLs increase and with First Available Appointment (FAD) moving to 10 days by year three

[7] Ofcom: Page 37, Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

[8] Ofcom: Page 38, Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

[9] Openreach presentation to Ofcom: "Service Delivery Loans Overview"; 24th October 2017

[10] Ofcom report: Clarification on the Ofcom Resource Performance Model, 5th June 2017

it will be increasingly difficult to loan engineers across different patches and, in reality, a SOM will need to be far more 'self- sufficient' to react to the daily provision and repair demand volatility in an effective way. Some of the simplifications in the RPM, such as the pro-rata of provision input volumes, will result in a far smoother view of these demand and supply dynamics. We believe this over-simplification will result in a higher level of loans occurring in the RPM than are actually possible.

Resource Uplift Estimates

46. Openreach agrees that the revised proposed resource uplift estimates are closer to the expected outcome from the Allocation Model, although we believe the resource uplift shown in Table A5.4 of Annex 5 of the further consultation[11] still understates the necessary resource uplift.

47. We do not agree with Ofcom's statement that running a scenario in the Allocation Model at 90% with a glass ceiling of 92.2% will produce the correct uplift to compare against the proposed standard of 88% with a glass ceiling of 90.8%. This is due to the lower-level complexity of where the glass ceiling impacts occur across the year, the type of fault impacted and the variability of the SOM patches where these impacts are most prevalent.

48. Although the year one and year two resource uplifts appear to be in-line with our modelling, we do not believe that the year three resource uplift shown in Table A5.4 of the further consultation is correct, and we are concerned that at 90% the uplift is considerably lower than shown in our original response[12]. We believe this may be due to incorrect input parameters used for the Allocation Model scenario that has been run but understand that Analysys Mason may have found it difficult to use the inputs correctly due to the short period of time they had to understand the model.

49. We have, therefore, carried out ten random runs in the Allocation Model, as shown in Table 2 and believe that, to achieve a year three MSL of 88%, the average resource uplift required is 14.6% with a prediction interval between 14.3% and 14.9%. This average uplift sits within the range produced by Ofcom's RPM if the use of 'adjacent sharing' is switched off.

Table 2: Allocation Model uplift model runs to achieve 88% (pre-MBORC)

RUN	0	1	2	3	4	5	6	7	8	9
88%	14.9%	14.5%	13.8%	13.8%	14.3%	15.1%	15.1%	14.7%	14.7%	15.2%

AVERAGE	MIN	MAX	STD ERROR	RANGE	MEDIAN	LOWER BOUND	UPPER BOUND
14.6%	13.8%	15.2%	0.2%	1.3%	14.7%	14.3%	14.9%

50. We believe that the gap between the proposed 11% resource uplift and the Allocation Model result of 14.6% represents a shortfall of ✂ in Year 3.

51. Furthermore, we outlined in our June response that, for service improvements to be sustainable and allow us to consistently deliver good outcomes for our customers, we should be fully funded to make the necessary investments in engineers, training and equipment. We are concerned that the revised proposals still do not recognise this principle.

52. We believe that Ofcom has still not adequately reflected the operational impact of the level of recruitment and upskilling that would be needed to achieve the service levels, with the cash costs

[11] Ofcom: Page 80, Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

[12] Openreach: Table 20, Response to Ofcom's Consultation on proposed quality of service remedies, 19 June 2017

associated with training and recruitment as well as the associated shrinkage impact which requires us to take our experienced engineers 'off the park' to support ('buddy') their new colleagues to ensure they can quickly embed their skills.

53. The upskilling investment required to support the improvements in service performance will require thousands of experienced engineers to spend time in the classroom away from supporting customer work. As stated in our June response, there is an inherent performance and efficiency drag from any recently recruited or upskilled engineer as they develop their new skills.

54. Applying the same approach as in our June response, we have calculated the additional cost we believe should be funded to achieve the service levels required, and this is summarised in Table 3. For this we have used the 14.6% uplift from our Allocation Model which we believe would equate to ✂ when applying through the charge control model used by Ofcom.

55. This will, however, still understate the recruitment costs from lost capacity and impact on productivity by a further ✂ against the base year of 2015/16 along with the additional cost of ✂ from the training required from upskilling the engineers (✂) and the lost capacity/productivity impact as the engineers learn and embed their new skills (✂). The impact of this is that we believe the QoS cost impact across the three year period is underfunded by c. ✂ .

56. We believe that the investments required are significant and would welcome the opportunity to discuss these with Ofcom as they form a key enabler to the higher levels of service we are aiming to achieve across the Charge Control period.

Table 3: Additional cost impact to reach 88% repair performance (pre MBORC allowance) by 2020/21 [13]

✂

Service Maintenance Level Differential

57. We are concerned that Ofcom has chosen to retain the previous method from their March QoS Consultation to determine the Service Maintenance Level (SML) mix factor when this was based on a previous version of the RPM prior to the amendments explained by Ofcom in their further consultation. Ofcom is no longer using the 'minor fails' of 3% and 5% in the RPM whereas the method in March used this approach to determine the resource uplift.

58. We believe Ofcom's approach is overly simplistic, assuming the incremental service cost of moving

[13] Recruit Shrinkage and Upskilling Shrinkage refer to the lost capacity whilst engineers are in training and subsequently on a learning curve to competence. Upskilling Costs refer to the additional training, kitting and pay costs.

from SML1 to SML2 can be calculated by modelling national scenarios and interpolating between them.

59. We dispute that the SML mix changes when run in the Allocation Model are counter-intuitive and believe that the SML1/SML2 differential needs to be determined through accurate modelling rather than an assumed linear calculation. As such we believe the uplift is understated in Table 4.7 of Ofcom's further consultation[14].

60. The genuine cost impact of any movement in SML/product is a complex function of geography, product mix, SML mix and resourcing levels – and hence any attempt to simplify the dynamics of the market in this way will result in unreliable results.

61. We have therefore carried out further runs in the Allocation Model to articulate the SML differential which will take into account these complex demand dynamics. In Table 4 below we provide a comparison of this differential, showing the uplift required in year three of the charge control when modelled in the Allocation Model and compare this with the resource uplift estimate provided by Ofcom in Table 4.7 of their further consultation[15].

Table 4: Resource impact based on SML mix (pre MBORC allowance)

Year 3 MSL	All SML1[16]	All SML2
Allocation Model Output	9.2%	15.9%
Ofcom Estimate (Table 4.7)	7.6%	14.4%

62. If Ofcom does not wish to use the Allocation Model to determine the SML differential, we believe they should re-run their analysis using their own revised version of the RPM. The new scenarios in the RPM should account for the 'glass ceiling' changes, the use of minor/major fails, loans and the assumption on Saturday working. It is not correct to assume Saturday working would remain in an all SML1 scenario. The SML1 product does not include a Saturday fix and our agreements with the unions on Saturday working are based on repair demand being due on that day (i.e. SML2).

Summary

63. In summary we believe that the revised minimum service level should be operationally achievable, however we have concerns about the proposed resource uplift in year three. In calculating that resource uplift, we have a strong preference for using the Allocation Model. However, if Ofcom continue to adopt their pragmatic approach to model the resource uplift, using output from both the RPM and the Allocation Model, we believe that certain adjustments need to be made in order to ensure that the proposed resource uplift estimates fully fund the new proposed MSLs.

64. In this regard, we believe that Ofcom's proposed year three uplift has still been understated and as a result the cost to deliver the final year consistently across all regions has not been fully assessed.

[14] Ofcom: Page 80, Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

[15] Ofcom: Page 80, Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

[16] Saturday working has been switched off in the model for the All SML1 scenario as our agreements with the unions are based on the demand due on a Saturday (i.e. SML2)

65. We are concerned that Ofcom has chosen to retain the previous method from their March QoS Consultation to determine the SML mix factor when this uses the previous version of the RPM.

66. We also believe that Ofcom has not taken account a number of relevant and material costs that Openreach will incur when recruiting and multi-skilling the workforce to deliver the uplift required. We submit as part of this response detail on those ignored costs and propose to continue to engage with Ofcom in order to refine the calculation of the resource uplift.

4 Revised proposals for network fault rates

Question 5.1: Do you agree with our forecast as modified from our March proposals? Please provide reasons and evidence in support of your views.

67. We agree with Ofcom that network fault rate forecasts should be based on the Openreach actual planned levels of investment in its FVR programme rather than an "aspirational" view, and welcome the fact that Ofcom has modified its outlook to take this into account.

68. As stated in previous representations, Openreach copper network investments are made where the network is most defective and therefore are 'agnostic' about which services are running over the copper bearer – all customers on all products benefit from any network uplift. Therefore our network fault rate forecasts are not disaggregated to product level. However, we do understand that for the purposes of calculating the charge control models Ofcom does have to find a way to disaggregate forecast fault rates by product. The problem with any method of disaggregation is that it cannot account for customer faults being reported through the "wrong" channel. However, we agree that the method adopted by Ofcom is reasonable in its approach.

69. Ofcom has helpfully described the difference in forecasting approaches between Ofcom and Openreach, and asserts that the key difference is that Openreach does not explicitly identify a reduction in faults as FTTC services mature. The Ofcom WLA CC QoS model (Table 5 below) provides Ofcom's assumption on the fault rate impact of a maturing GEA FTTC product for both FTTC on WLR and FTTC on MPF.

Table 5: OFCOM table showing impact of maturing FTTC on fault rate

Fault Rate Uplift for GEA FTTC	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21
This is the trend effect of a maturing product - i.e no investment from Openreach						
FTTC on WLR	5.0%	4.8%	4.7%	4.5%	4.4%	4.2%
FTTC on MPF	4.4%	3.9%	3.4%	2.9%	2.4%	1.9%
This is the after the benefits of the FVR programme have been realised						
WLR addition	5.0%	4.8%	4.4%	4.1%	3.9%	3.7%
MPF addition	4.4%	3.9%	3.2%	2.7%	2.2%	1.8%

70. It is unclear why Ofcom believes that fault rate uplift for FTTC on MPF will reduce so dramatically across the charge control period compared with FTTC on WLR. (A 16% reduction across the period for FTTC on WLR compared with a 57% reduction for FTTC on MPF). Our expectation is that any reduction over time would be more in line with the more gradual decline shown for FTTC on WLR.

71. Openreach agrees that there is fault rate reduction benefit as products mature, but the evidence shows that much of this benefit has already been achieved and is therefore accounted for in our run

rate and within the Openreach mix/volume forecast. Figure 1 below demonstrates that there was indeed a decrease in network fault rates for the FTTC products (both WLR and MPF) from 2013/14. However, network fault rates for both WLR and MPF + FTTC products have plateaued and are now rising.

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Figure 1: Annual Network Fault rates by line type

Summary

72. In summary, we welcome the change Ofcom has made to align assumed FVR investments with our committed plan. Whilst we agree that there is a fault rate benefit from maturing products, we believe that for the FTTC products much of this has already been achieved and is now in the fault history run rate. It is therefore also accounted for in our future mix/volume assumptions. However, we do accept that there will also be a future continued maturation benefit, but that this will be more in line with the gradual decline in fault rate premiums Ofcom has shown for the WLR FTTC product.

73. We have reviewed Ofcom's proposals in relation to the funding of FVR and have responded to this as part of our response to the further consultation on the proposed charge control for wholesale standard and superfast broadband.

5 Proposed quality of service remedies

Question 6.1: Do you agree with the package of quality of service remedies that we are proposing? Please provide reasons and evidence in support of your views.

74. Service is at the heart of the Openreach strategy, we have already developed and communicated a suite of service commitments to our customers early this year. We are now developing our new transformational plans to go further to increase our levels of customer satisfaction we deliver.

75. Ofcom's proposals for quality of service remedies are welcomed by Openreach. However, as we believe that the improvements need to offer value for money to the industry and should be valued by consumers and, for this reason, Openreach does not agree with all of the details behind Ofcom's proposed remedies.

76. We welcome the increasing service levels for installations, **t**his is an area where we have significantly out-performed the current MSLs. We believe, however, that achieving the proposed increased service levels will require a further level of CP collaboration and co-work to achieve (and indeed surpass) the desired uplift. We will need to relook at **CP forecasting accuracy** to help us resource and estimate our plans. Through August and September this year actual provision volumes exceeded forecast by over ✂ , one major CP was ✂ above forecast. The additional intake, above forecast levels, had a significant role to play in causing lead times to increase and thus the FAD to extend beyond target. The challenge is typically highest as we approach industry quarterly results reporting deadlines, as commercial activity is at its peak. As the service levels we aim to achieve across both repair and provision rise, the need to forecast demand accurately will become increasingly important to keep the inevitable uncertainty and volatility to a minimum to deliver effectively.

77. Openreach has no control over the demand for provision that it experiences: a typical business would adjust prices to regulate demand but we do not have this option due to regulatory pricing constraints. We believe that it is not reasonable to compel Openreach to deliver high QoS standards against a demand which we have no way of influencing. Whilst the SLG regime requires CPs to provide reasonably accurate forecasts for provision demand (and gives Openreach some degree of protection when this is not the case), there is no such safeguard within Ofcom's current MSL proposals. We propose that, as a minimum, Ofcom should re-use the current SLG forecast safeguards to trigger exemptions for provision MSLs (i.e. any provision QoS failures that are associated with out-of-limits forecasts would be excluded from the formal assessment of our performance against MSLs).

78. Removal of the 60-day SLG compensation cap: In addition, within our submission to the March QoS consultation we highlighted our concerns in relation to the removal of the 60-day SLG compensation cap[17]. We note that the further consultation[18] does not make reference to the issues raised in that submission, but we continue to believe that the removal of the 60 day SLG compensation cap is not appropriate. It is normal commercial practice to include a cap on compensation payments in any SLA contained within a commercial contract so that liability is not open ended or unlimited. We continue to believe that the removal of the cap is not objectively justifiable, not least because at 60 days Openreach would be liable for the equivalent of 5 years line rental, which in itself is sufficient to incentivise Openreach to undertake the installations and repairs as soon as possible.

79. Reducing Dead on Arrivals (DOAs) and Early Life Failures (ELFs) is a top priority for Openreach. As part of the Openreach 2017/18 roadmap, a comprehensive action plan has been established to firstly drive operational compliance within our Engineering workforce and secondly address the root causes of DOAs and ELFs through our processes and systems to generate a sustained reduction in the ELF and DOA rates. We therefore agree with Ofcom's further consultation, which does not set out any change in this respect, that further regulation is not needed in this area. Not only are these faults covered by all of the other regulation, but they are also an area of significant focus for us and form part of the service ambitions that we share with CPs. We continue to set ambitious goals in this area and will work closely with our CPs to deliver the improvements that we all want to see.

[17] Openreach: Paragraph 20, Response to Ofcom's Consultation on proposed quality of service remedies, 19 June 2017
[18] Ofcom: Quality of Service for WLR, MPF and GEA. Further consultation on proposed quality of service remedies, 14th September 2017

80. We understand the need for us to continue to provide open and transparent access to data and key KPIs and endorse the reporting requirements and KPI publishing outlined in the consultation (with a small number of proposed amendments). However, as mentioned above, in order to ensure that the industry collectively focuses on the issues that really make a difference to customers, we would like to work with CPs and the OTA2 to produce a common set of meaningful end-to-end service KPIs.

81. We agree with Ofcom's proposal to continue to make an allowance for MBORC: it is essential that the MBORC allowances remain in place as these events are outside the control of Openreach. Any reduction in the allowance would change significantly our understanding of the cost in delivering the service levels, especially in Years 2 and 3. Indeed, as explained in our response to the March QoS consultation, we believe that a higher MBORC allowance would be more appropriate given historic data, which suggest that in particular years MBORCs can be as high as 5%. Failing that, at the very least, we believe that we need more flexibility around exemptions for high level events.

82. If Ofcom only makes a 3% allowance for MBORC, in order to take into account the risk of higher MBORCs in particular year, at the very least the current limitation on High Level MBORC declarations should be removed, i.e. this should no longer be constrained to just 2 GM patches, with additional declarations being considered on case-by-case basis, overseen by Ofcom to ensure that industry has confidence in the process.

Question 6.2: Do you agree that our proposed quality of service remedies (as revised) are objectively justifiable, not unduly discriminatory, proportionate and transparent? Please provide reasons and evidence in support of your views

83. Since our June response, Ofcom's has changed key aspects of its proposals in the following areas:

- The level of repair performance it is operationally feasible to achieve, with a revised proposal for a binding quality standard for 'on-time' repair;
- The extra resources associated with meeting Ofcom's proposed standards, with a revised estimate for the resource impact of the proposals; and
- Ofcom's plans for preventative maintenance on the copper access network, with a revised forecast of fault rates to take account of Openreach's investment plans aimed at reducing faults on the copper network

84. As a result of these changes, many of our concerns about the lack of objective justifications and/or proportionality of Ofcom's proposal have been addressed. In this regard, we would have concerns, however, if Ofcom changed its approach to any of the issues identified above such that the obligations became more onerous for Openreach. In such circumstances we might have serious concerns about the achievability, and therefore the proportionality, of the proposals.

85. For completeness, we note our concerns about the proportionality and the extent to which the proposals are objectively justified in relation to the follow specific proposals:

- MBORC allowance;
- Removal of the 60-day SLG compensation cap; and

- New quality standards at 5 working days over SLA.

We repeat the observations we made in the June consultation response on these specific proposals.

Annexes

Annex 1: Response to Allocation Model Audit

87. In this Annex we respond specifically to the audit carried out by Analysys Mason on the Allocation Model and cover the following points in detail:

- Model complexity;
- Input parameters;
- Counter-intuitive results; and
- Loans.

88. Although important to highlight in an audit, we do not believe any of the areas mentioned are material enough for Analysys Mason to conclude that the Allocation Model should not be used by Ofcom to predict the QoS uplift.

Model complexity

89. In this section we address Analysys Mason's concerns about the speed and level of complexity within the Allocation Model.

90. Openreach is focused on producing an accurate and sophisticated simulation. We therefore believe that the sacrifice of speed to provide an output that is more operationally accurate is the right sacrifice to make and would argue that highlighting the model is 'difficult to use' or 'slow to run'[19] is not relevant in determining the resource uplift required for this further consultation.

91. The Allocation Model is a sophisticated, highly detailed and complex model which is necessarily so to appropriately capture the complexity of our operations. We believe that a level of granularity and detail is necessary to provide an accurate simulation that accounts for both the supply and demand dynamics within the Service Delivery organisation. In this way, the complexity and richness of the Allocation Model should not be viewed as a concern but rather a strength.

92. In particular, Openreach believes that the level of granularity envisaged by the Allocation Model is justified and necessary when running at a SOM level with associated task, travel and visit parameters on a per product type basis. The Allocation Model runs at a low level, using real data to simulate thousands of engineers and jobs with varying parameters each week. The Service Delivery organisation is multifaceted and the model provides a good, but still simplified, representation of that operational unit. We believe that running the model at a SOM level provides a good level of granularity on the operational impacts that are experienced although we would have preferred to run the model at a lower (OM) level had time allowed.

93. We acknowledge the concern that enhanced complexity may result in the potential for errors when initially setting up the Allocation Model. However, to mitigate this risk, we have established a robust method to create and run scenarios and also received a detailed handover from EY on model delivery, inputs and model detail. As a result, we are experienced in running the Allocation Model and interpreting outputs such that the potential for errors is limited, and given the size and complexity of this type of advanced simulation model, we have therefore provided comprehensive support to Analysys Mason during the audit process. To alleviate any remaining concerns of this nature, we would be happy to further engage and work with both Ofcom and Analysys Mason to

[19] Analysys Mason report: WLR/LLU Charge Control 2017 Quality of Service model assessment, 13th September 2017

provide additional support and understanding.

94. Openreach is aware of the Allocation Model 'bug' identified by Analysys Mason and has found that in a full UK uplift run of 2,240 individual scenarios the bug will occur no more than once and often not at all (less than 0.05% of the time). When the bug does occur, changing the random seed will reset the error so is clearly a rare 'edge-case' which does not affect the model output.

95. Crucially and ultimately, the Allocation Model provides the ability to model the resource uplift for the Ofcom QoS Consultation and also allows Openreach to more optimally model and plan for the future in order to continue to enhance the service we provide to our customers. In this regard, we intend to use the Allocation Model for future business planning purposes.

Input parameters

96. In this section we describe the additional support we provided Analysys Mason and the work that we carried out alongside EY and Analysys Mason to clarify the input data. We also respond to concerns about Analysys Mason's ability to replicate results.

97. As part of the audit, Openreach provided detailed documentation on input setup including all Oracle SQL scripts used to generate the data tables and distributions for the scenarios that were run. The raw source data is extracted from many operational systems to produce the detailed provision/repair volume distributions and engineer data. The fact that the model uses this real data at a detailed engineer visit level enhances the operational accuracy of the output. As an example, task times are start/finish visit times recorded on the engineering platform by engineers in the field and these inputs are used in the model. Openreach also shared with Ofcom the extensive calibration the model went through using this detailed operational data to demonstrate the suitability of using the Allocation Model to model service improvements.[20]

98. In Analysys Mason's report there appears to be some confusion over the glass ceiling inputs and concerns about the link between 'actual' and 'raised' values in our response. We understand the reason for this confusion is primarily due to the way categories are handled in the glass ceiling analysis presented and how these translate into inputs in the Allocation Model. As an example, skilling and resource in the glass ceiling are not specifically set in the Allocation Model, they are instead a function when the simulation is run and will depend on the level of multi-skilling and resource that is configured in the input distributions.

99. We were concerned when Analysys Mason highlighted during their audit that they were unable to reproduce our model results in detail and we therefore worked with Analysys Mason closely to resolve these issues. We are concerned that Analysys Mason have not explicitly mentioned the additional work that was carried out by Openreach to understand these differences and to demonstrate that when software versions are aligned the output can be replicated.

100. We re-engaged EY and carried out further analysis, providing evidence to Ofcom and Analysys Mason[21] that the Allocation Model was stable and the findings presented in our response to the Ofcom QoS March Consultation were robust and relevant. EY worked with Openreach to test across multiple environments – different operating systems, machines, databases and software versions.

[20] Openreach presentation to Ofcom: "Openreach Service Demand Modelling - Allocation Model"; 27th April 2017
[21] Openreach presentation to Ofcom: "Allocation Model update"; 21st July 2017

101. We discovered as a result of this investigation that in Python software versions prior to 3.6, the PYTHONHASHSEED must be specifically set to produce repeatable results. However when using Python version 3.6 or later, which was initially used by Analysys Mason, changing the PYTHONHASHSEED does not in fact change the random element. Version 3.6 included a 'fix' that no longer needed the PYTHONHASHSEED to be set, however many reports online have shown this 'fix' contained errors and as such will not produce reliable results. We determined that the Allocation Model should be run using Python versions prior to 3.6 and different PYTHONHASHSEEDs can then be set to calculate the range of potential outcomes.

102. In order to provide additional evidence, we have carried out a further 10 runs using 10 different PYTHONHASHSEEDs and the results in Table 6 demonstrate that the numbers published in our original QoS response (with 83% UG/BBUG skilling) are still within the expected range of outcomes.

Table 6: Allocation model run output using different PYTHONHASHSEEDs

% FTE Uplift	PYTHONHASHSEED									
Repair Performance	0	1	2	3	4	5	6	7	8	9
87%	10.5%	10.4%	9.6%	10.2%	10.9%	10.9%	10.8%	11.5%	10.6%	11.2%
90%	25.5%	26.1%	23.9%	25.7%	24.1%	25.1%	25.1%	26.4%	24.5%	25.8%
93%	45.8%	47.8%	46.6%	47.9%	48.5%	47.8%	49.0%	50.5%	47.0%	48.2%

Repair Performance	Average	Minimum	Maximum	Range	Median	95% Prediction Interval	Original
87%	10.7%	9.6%	11.5%	1.9%	10.7%	10.3% – 11.0%	10.9%
90%	25.2%	23.9%	26.4%	2.5%	25.3%	24.7% – 25.7%	24.9%
93%	47.9%	45.8%	50.5%	4.7%	47.9%	47.1% – 48.7%	47.6%

Counter-intuitive results

103. In this section we address the areas of concern raised in Analysys Mason's audit on the usage of the Allocation Model's 'stress factor', impact of SML mix changes and resource balancing. We also address the output of the scenarios run by Analysys Mason that were viewed as counter-intuitive.

104. As part of the calibration of the Allocation Model we demonstrated to Ofcom in April the model's 'stress factor' capability to closely align the model results to actual performance.[22] During this demonstration, we explained that the stress functionality would not be utilised for the QoS resource uplift for three main reasons:

- Applying the stress factor will deprioritise other non-regulated products such as Broadband Boost to improve SML1 and SML2 performance, however this would still fail customers – we must ensure the same level of service is offered to customers taking this service that they would receive on a regulated product;
- Reducing shrinkage (such as cancelling training or team meetings) is not conducive to improving service performance in the long term and would result in us being unable to upskill to the level required to meet the MSL at an achievable resource level; and
- Simulating the pushing out of customer appointment availability would impact on the FAD

[22] Openreach presentation to Ofcom: "Openreach Service Demand Modelling - Allocation Model"; 27th April 2017

measure when by year three this is a more challenging 10 days.

105. Openreach does not agree that the results of the SML mix changes produced in the Allocation Model are counter-intuitive. There are a number of factors to consider that can influence the outcome as a result of changing SMLs. The impact of any movement in SML is a complex mix of geography, product type and engineer intensity. Faults within more rural areas have increased task time, travel, visit rate and propensity for assists and as such will result in a higher resource requirement. This will impact on both SML1 and SML2 faults. Any adjustment to the SML mix within the Allocation Model will be influenced by the lower-level dynamics specific to the geography of the SOM patch and any attempt to simplify these dynamics will result in unreliable results.

106. Prioritisation of SMLs in the Allocation Model reflects the way in which Openreach operates, by ensuring due work is dispatched as a priority prior to any failed work and then finally future work. This operating mode ensures that customers do not remain out of service for longer than they should, ensuring tails remain within an acceptable limit. Although it is possible for SML2 jobs to be prioritised ahead of failed work as suggested by Analysys Mason in their report section 8.1.2,[23] we do not believe this would be the desired service outcome for customers.

107. Although the regulated products are the key driver volume within the Allocation Model, Openreach does not have a separate workforce assigned to just MSL products. Engineers will pick up the full breadth of the product portfolio which will include products without an MSL such as Broadband Boost ("BBB") or Special Fault Investigation ("SFI"). We believe this added complexity will impact on the expected SML mix sensitivity from the Allocation Model compared to the higher-level approach taken in the RPM which only accounts for provision, SML1 and SML2 volume and then adjusts the base FTE to achieve a calibrated output.

108. Due to agreements Openreach have with the unions, any Saturday engineer working would need to be removed in an all SML1 scenario as there would be no repair service with demand due on a Saturday. In a mixed SML1 and SML2 scenario engineers can work Saturday but would continue to follow the prioritisation rules explained above, resulting in both SML2 and SML1 jobs being completed.

109. In reality it is not easy for Openreach to perfectly balance performance across different job types as suggested. There are many other on-the-day factors to consider when trying to allocate engineers (e.g. travel implications) as well as many unknowns which will affect performance – some tasks will be more complex requiring more time and/or additional visits. The Allocation Model better simulates operational reality to reflect these factors.

110. Although the results have been questioned due to the variation from 'apparent small changes in inputs'[24], the changes across the high-level scenarios carried out by Analysys Mason should not be underestimated. When the glass ceiling adjustments are applied to the actual jobs in the actual SOM patches, with the actual demand volatility experienced Openreach believe the Allocation Model represents a far more accurate simulation than a top-level model and therefore more closely represents the resource impact of this change.

111. Openreach believe that the results from Analysys Mason in Figure 8.1 of their report [25] are not, in fact, counter-intuitive, although we are concerned with the way in which the glass ceiling scenario

[23] Analysys Mason report: WLR/LLU Charge Control 2017 Quality of Service model assessment, 13th September 2017
[24] Analysys Mason report: WLR/LLU Charge Control 2017 Quality of Service model assessment, 13th September 2017
[25] Analysys Mason report: WLR/LLU Charge Control 2017 Quality of Service model assessment, 13th September 2017

HLS 203 may have been applied. However, HLS 77 clearly shows that with a lower glass ceiling than the target a larger uplift is required and the target is still not reached. HLS 200 produces results that would be expected, and crucially the target is not achieved in SML1 which would be expected due to the 1516 SML mix and geographical impacts of the glass ceiling. Openreach have previously stated that using the 1516 SML mix does not represent our current geographic and product mix and therefore results may well appear counter-intuitive.

Loans

112. In this section we explain more about our ability to loan and highlight our concerns with the use of loans and the assumptions within the RPM.

113. Due to the specific work mix and skill requirements within the Service Delivery organisation, loans are predominantly within the same business unit, and rarely will engineers be loaned across other business units within Openreach. Although loans within Service Delivery do occur, they are not an effective long-term method for increasing capacity when a SOM is experiencing higher than forecast levels of demand.

114. Loans are operationally expensive as they involve increased travel time, loss of working hours and increased task time (due to unfamiliarity of the area). Loans have an adverse impact on the patch that is loaning our resource, often requiring higher overtime to 'back-fill' the capacity and ensure we can continue to deliver consistently good service to our customers.

115. Loans are undesirable for engineers who may have to work a long way from home for an extended time period and therefore loans require a level of volunteering and good will from the engineering workforce. With the aim for largely autonomous SOM patches, loans are not relied upon as the normal or expected way of working and only used when we experience localised peaks in demand.

116. Openreach utilises both 'daily' and 'lodge' loans. Daily loans are when an engineer will move to an adjacent SOM to support the increased demand on that day, whereas with lodge loans an engineer will travel across the UK to support an area that has a sustained high level of demand. The average lodge loan is ✂ days and will include time spent travelling to and from the location which can take several days. Across 2015/16 approximately ✂ of total engineer days were from loans with half of these a result of lodge loans.

117. When an engineer is loaned, we lose up to ✂ of an engineer's capacity for daily loans and ✂ for lodge loans, as shown in Table 7. This is a combination of three factors: (i) 'familiarity' where the engineer is less accustomed to the geography and network and as such is less productive (ii) additional time spent travelling at start of day and end of day and (iii) additional travel for lodge loans at the start and end of the loan period where the engineer travels from their home SOM to the loaned patch and back again.

Table 7: Utilisation impact of daily and lodge loans

✂

118. Openreach welcomes that Ofcom has acknowledged that the RPM loans may overstate the influence of loans and therefore result in a lower resource delta. However we are concerned that Ofcom have continued to assume a level of loans in the RPM when the actual level used cannot be verified. As this is one of the significant factors in determining the size of the resource uplift we believe it is an area that requires further understanding.

119. Our understanding is that within the RPM 'adjacent' sharing is the equivalent of daily loans and that 'non-adjacent' sharing is the equivalent of lodge loans. We are pleased that Ofcom have chosen to turn off 'non-adjacent' sharing to establish the base case 9.1% to 14.1% range. We believe this is important as the RPM assumes these loans can occur daily which does not align with Openreach lodge loan practice.

120. We acknowledge that when loans are used within the RPM an 'efficiency' factor is used which assumes loaned in resource will only be 75% effective. Based on Table 7 above this factor will understate the true impact when 'non-adjacent' sharing is used but we appreciate it also slightly overstates the impact in 'adjacent' sharing mode by ✂ .

121. Openreach has tried to seek clarification from Ofcom on the extent to which the RPM 'adjacent sharing' function is called upon. Unfortunately it would appear that this information is not available[26] as an output and so it has not been possible to understand the extent and frequency of loans that have been modelled and how well this aligns with actual loans.

122. In order to provide an indicative understanding, we have compared the possible loan combinations in the RPM against actual Openreach daily loans in 2015/16. The RPM uses a matrix of distances and a measure of a SOM patch's "urban-ness". The thresholds are based on 50 / 80 / 120km distances for urban / sub-urban / rural SOM patches and are based on the SOM patch centre to SOM patch centre straight line distance. Calculating these distances, there are 264 possible combinations of SOM to SOM loans that the RPM may call on and when comparing these with actual Openreach daily loans, only 130 combinations actually occurred in 2015/16. This does, therefore, indicate that the extent to which the RPM simulates loans could be overstated but due to the limited output available we cannot conclusively determine this.

123. We believe that one of the reasons for the over-statement of loan combinations in the RPM is the use of SOM patch centre to SOM patch centre distances. The majority of daily loans occur when an engineer is on the boundary of a SOM patch and can travel into the neighbouring patch to complete work, as shown in Figure 2. Using 2015/16 actual loan movements, we observe that the actual distances travelled are significantly lower than the assumptions within the RPM. The use of SOM to

[26] Ofcom report: Clarification on the Ofcom Resource Performance Model, 5th June 2017

SOM distances assumes an engineer is able to travel across a far wider area on a daily basis.

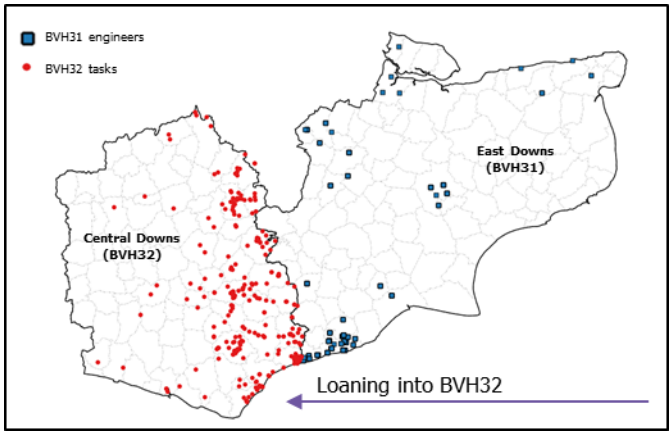

Figure 2: Map of actual daily loan engineers and tasks completed in receiving SOM

124. To illustrate this impact we have used actual sub-urban daily loans in 2015/16 and compared the SOM to SOM distance to the actual exchange to exchange distance travelled, illustrated in Figure 3 below.

✂

Figure 3: Comparison of Sub-urban SOM to SOM and Exchange to Exchange daily loan distances

125. The average SOM to SOM distance is ✂, much in line with the assumption within the RPM whereas the more accurate exchange to exchange average distance is ✂. We therefore believe the loan distance assumptions are too high which will therefore overstate the extent to which loans can be used in the RPM, underestimating on the final resource uplift.

126. We believe that if Ofcom choose to continue to use the loan functionality within the RPM despite our evidence above, they should revise the travel distances within the RPM to more accurately reflect the true level of loan combinations that are operationally achievable on a daily basis.