
Further clarifications on the Ofcom Resource Performance Model

Response to stakeholder requests for transparency on resource sharing and a correction relating to fault rate forecasting

About this document

On 14th September 2017 Ofcom published a further consultation on our proposals for quality of service for WLR, MPF and GEA. This followed our original publication on 31st March 2017. We included in our analysis an assessment of the resources Openreach would need to achieve higher quality standards. This document provides further clarification on our methodology.

1. Introduction

- 1.1 On 31st March 2017 Ofcom published proposals for Quality of Service standards for Wholesale Line Rental (WLR), Metallic Path Facility (MPF) and Generic Ethernet Access (GEA)¹ (the ‘March consultation’) as part of our reviews of the narrowband and wholesale local access markets. In the light of new evidence, we revised these proposals and published a further consultation on 14th September 2017 (the ‘September consultation’).²
- 1.2 As part of our assessment of our proposals we developed, with our advisors Analysys Mason, a model to estimate the increased level of resources required to meet various quality standards (the ‘Resource Performance Model’ or ‘RPM’). We made this model available to stakeholders as part of our March consultation. We also used this model to set the range of resource uplifts we considered appropriate for our proposed standards in our September consultation.
- 1.3 In the September consultation we also explained that Openreach had submitted new evidence regarding its Fault Volume Reduction (‘FVR’) programme. We set out our methodology for determining the net impact of the FVR programme on our forecast of fault rates. This forecast has an impact on our proposals for regulated charges.
- 1.4 This document provides further clarity to stakeholders on the results of the Resource Performance Model, specifically on its handling of resource sharing across Openreach regions. It also sets out a correction to the equation that describes the methodology we used for calculating the net impact of FVR on our fault rate forecast.

The Ofcom Resource Performance Model

- 1.5 The RPM provides a high-level simulation of Openreach’s installation and repair activities. It simulates the execution of jobs in batches, specifically the daily arrivals of new installation orders and faults in each of Openreach’s 56 Senior Operations Manager (‘SOM’) areas in Great Britain. The RPM is implemented as a programme using the Python 3 programming language.
- 1.6 In generating results, the RPM takes account of the so called “glass ceiling”, the operational limit to service performance that Openreach can deliver. In our September consultation we set this operational limit at two levels to determine a range of potential resource uplifts.
- 1.7 The RPM produces outputs in the form of the quality of service standard that can be achieved for a given level of resource. This means we can derive the ratio of modelled resources to achieve today’s standard, and the modelled resources required to achieve a

¹ Ofcom, 2017. *Quality of Service for WLR, MPF and GEA: consultation on proposed quality of service remedies.* https://www.ofcom.org.uk/data/assets/pdf_file/0033/99645/QoS-WLR-MPF-GEA.pdf

² Ofcom, 2017. *Quality of Service for WLR, MPF and GEA – Further consultation on proposed quality of service remedies.* https://www.ofcom.org.uk/data/assets/pdf_file/0012/106311/consultation-quality-service-wlr-mpf-gea.pdf

higher standard. We refer to this as the “resource uplift” which is an input to our charge control modelling.

- 1.8 One of the key configurable modelling assumptions in the RPM is that SOM areas which can achieve the required quality of service standard on a given day are able to share their excess resources (Openreach technicians) with SOM patches that are falling short of those standards. There are two modes of resource sharing:
- a) ‘adjacent sharing’: the sharing of resources between neighbouring areas which can happen on a day to day basis, and
 - b) ‘non-adjacent sharing’: when one area is at risk of underperformance and resources are mobilised to assist nationwide for example in response to extreme weather events.
- 1.9 In our September consultation we set out our view that results from the RPM based on use of both forms of sharing may have a tendency to underestimate the resources needed to achieve a given quality of service standard. To address this we proposed a range based on model results with the ‘non-adjacent sharing’ functionality switched off.

Level of loans in the RPM

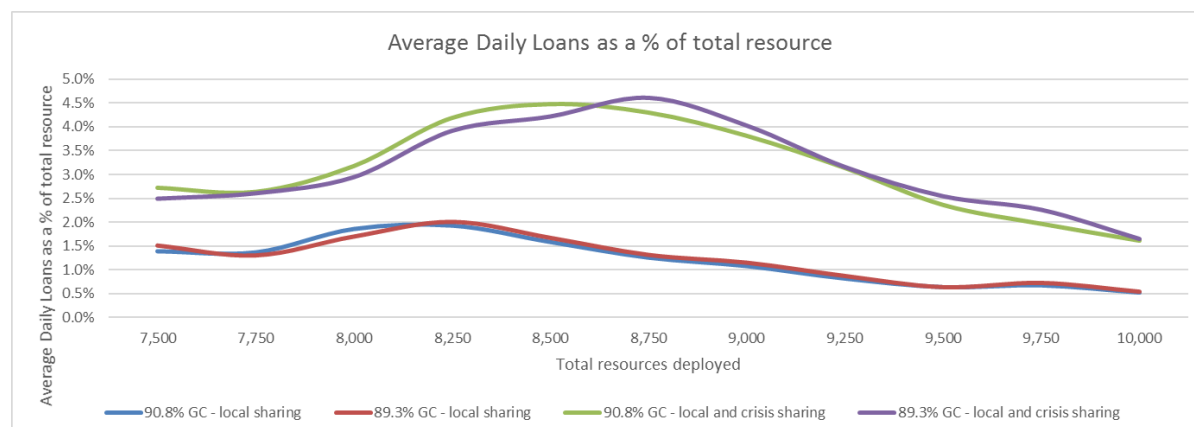
- 1.10 Openreach refers to the operational process of sharing resources between units as “loans”. In its response to the September consultation Openreach expressed concerns with the resource sharing functionality in the RPM.³ It observed that:

“(we) 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.”

- 1.11 In order to clarify this point we have conducted further analysis of the output files produced by the RPM and determined it is possible to identify the degree of loan activity that takes place.
- 1.12 Figure 1 below illustrates the average daily loans as a percentage of total resource, for various levels of resources. Each line on the chart shows the level of loan activity for a combination of glass ceiling (GC) and mode of resource sharing. We consulted on a range determined by the glass ceiling set at 90.8% (9.2% major fails in the RPM) and 89.3% (10.7% major fails), and with adjacent resource sharing only. These results are shown in the lower two lines. The level of resource sharing in our consultation position therefore reaches a maximum of 2.0% of total resources.
- 1.13 The level of loan activity with the same glass ceilings, but both modes of sharing switched on is shown in the upper two lines.

³ Openreach, 2017. Openreach’s response to Ofcom’s consultation “Further consultation on proposed quality of service remedies”. https://www.ofcom.org.uk/_data/assets/pdf_file/0023/108095/Openreach.pdf

Figure 1 – RPM loan utilization at various resource levels



Source: Ofcom

1.14 Table 2 shows our estimate of the level of resource sharing at the modelled resource level required to achieve the quality of service standards that we proposed.

Table 2 – Loan resource levels in relation September consultation resource uplift range

Glass ceiling	Resource Sharing mode	Resources uplift to meet standard	% of loan resources to total resources
90.8%	Adjacent only	11%	1.3%
89.3%	Adjacent only	14%	1.0%

Source: Ofcom

The net impact of Openreach’s FVR programme

1.15 In our March consultation, we set out our forecast for fault rates on relevant services. This took account of Openreach’s FVR programme, which is its investment in ongoing network reliability. In response to our March consultation Openreach said that our forecast was largely based on an aspirational plan for fault reduction (which Openreach shared with Ofcom in July 2016) but not its actual FVR plan. The actual FVR programme required a detailed assessment before it could be applied to the forecast fault rates for WLR, MPF and SMPF and separately GEA-FTTC. In setting out our methodology for doing this, we identified that a key difference between the Ofcom and Openreach methodologies is that Openreach does not identify a reduction in faults as their FTTC services mature. We proposed to assume that this effect had been incorporated into Openreach’s gross effects of FVR.

1.16 We then proposed to derive the implied net effect of FVR in Openreach’s plan through the following calculation:

$$\text{Net Effect of FVR (Openreach)} = \text{Deterioration without FVR} - \text{Gross impact of FVR} - \text{Benefits of maturing services (Ofcom)}$$

1.17 'Net Effect of FVR' is the reduction in the volume of faults that we expect Openreach's latest plan to deliver. We converted it to a percentage by dividing it by the fault volume in our base year (2015/16).

1.18 We have since recognised that this equation should have been expressed as:

$$\text{Net Effect of FVR (Openreach)} = \text{Gross impact of FVR} - \text{Benefits of maturing services (Ofcom)} - \text{Deterioration without FVR}$$

1.19 The corrected ordering of the terms reflects that the deterioration without FVR and the benefits of maturing services should both be netted off the gross effect of FVR.

1.20 The corrected equation above is consistent with the approach that we used to calculate the Net Effect of FVR in the September consultation.