openreach

Openreach response to Ofcom's Business Connectivity Review Consultation published on 2 November 2018 and revised on 18 December 2018

"Business connectivity market review – Volume 1: Market analysis, proposed SMP findings and remedies"

Response to consultation question 15.1: *"Do you agree with our proposals regarding the application of QoS Standards, KPIs, SLAs and SLGs over the period of this review? Please provide evidence to support your views."*

18 January 2019

Non-confidential version

Contents

1. Foreword

1. This part of the response sets out Openreach's comments on Ofcom's Quality of Service (QoS) proposals, for both active and passive products, as set out in the Business Connectivity Market Review (BCMR) Consultation. This response builds on the comments that Openreach provided in its pre-consultation submission to Ofcom dated 20 July 2018[1].

2. This part of the response is made up of the following elements:

    - An **executive summary** setting out Openreach's headline views on Ofcom's QoS proposals;
    - A section setting out the **market context**, which describes a number of important items that Ofcom should take account of when specifying the QoS remedies. The items covered are: the changes that are apparent in customer behaviour and demand for BCMR services, the increase in operational complexity associated with delivering Ethernet services, the service improvements that Openreach has delivered in recent years, an update on the Re-imagining Ethernet Provision (REP) Industry consultation; plus an introduction to the independent Ethernet benchmarking conducted by WIK-Consult;
    - Three sections covering **Ofcom's specific proposals for QoS obligations** setting out Openreach's comments in relation to the specific remedies proposed by Ofcom, comprising QoS Standards, Key Performance Indicators (KPIs), and Service Level Agreement / Service Level Guarantee (SLA/SLG) schemes;
    - A section setting out Openreach's comments on **QoS costs**;
    - A section covering Openreach's comments on the **QoS SMP condition**;
    - A section setting out Openreach's initial comments on what **QoS regulation could look like in 2021/22 and beyond**;
    - A section covering **customer feedback,** which describes the feedback that we have been getting from customers in relation to Ethernet service, and shows that this feedback is now at good levels; and
    - A section setting out **Openreach's proposed next steps.**

3. The following Annexes are also provided in support of this part of the response:

    - Annex 1 is an expert paper providing additional detailed analysis that Ofcom should consider when specifying the levels of the QoS Standards (the "Technical Report");
    - Annex 2 is a report by WIK-Consult benchmarking the QoS remedies applied to Openreach against a set of European comparators;
    - Annex 3 is a further report by WIK-Consult that discusses different approaches to the regulation of QoS across different utilities in the UK;
    - Annex 4 is a summary of Openreach's comments to date on the draft QoS Legal Instrument section of the Ofcom Consultation;
    - Annex 5 is an overview and update of the REP industry consultation, which includes a summary of the Communication Provider (CP) responses received; and
    - Annex 6 provides further detail on the Openreach Customer Satisfaction Survey.

[1] Except where otherwise specified, all figures and tables included in this part of the response are sourced from Openreach data.

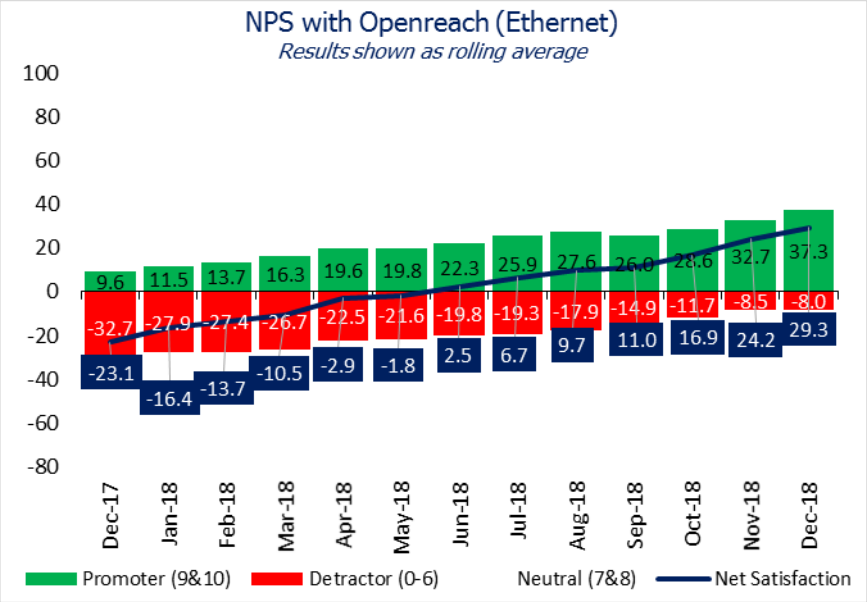
2. Executive summary

4. Openreach is pleased to note the recognition by Ofcom in the Consultation of the significant improvement in Ethernet provisioning performance,[2] the feedback from Openreach customers to Ofcom itself that performance "*has improved significantly and QoS is no longer in crisis,*"[3] and that that the elimination of the backlog has contributed to improvement "*against each of the QoS Standards.*"[4]

5. Figures 15.3 to Figures 15.9 of the BCMR Consultation all demonstrate evidence of a substantial improvement in Openreach's performance across the board and more generally the positive comments by stakeholders[5] are very much in alignment with Openreach's own appreciation of our customers' views.

6. Figure 1 below provides a snapshot of the broad trend in customer views to the Ethernet service standards offered by Openreach[6].

Figure 1 - Openreach Net Promoter Score for Ethernet



7. As shown in Figure 1 above, the last year has seen a sustained improvement in customer satisfaction, with a 50 point increase in net satisfaction.

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[2] BCMR Consultation, 2 November 2018, paragraph 15.24.
[3] BCMR Consultation, 2 November 2018, paragraphs 15.25.
[4] BCMR Consultation, 2 November 2018, paragraph 15.26.
[5] BCMR Consultation, 2 November 2018, paragraphs 15.32-15.34.
[6] This graph represents the overall Net Promoter Score (NPS) for Openreach Ethernet service. NPS is the percentage difference between the Promoters and Detractors of a company. Promoters are those customers who gave a rating of 9 or 10, and detractors are those who gave a rating of 0-6. A rating of 7-8 is classified as neutral and does not count towards the NPS calculation.

8. Independent research by WIK-Consult indicates that UK now has the tightest regulatory regime for QoS in Europe (see Annex 2). Whilst Openreach acknowledges the historic need for the current regime, we do however caution that it will be practically impossible simply to continuously tighten targets[7] on the presumption that marginal improvements from what are generally very high levels of performance will always be possible, or indeed even desirable, given the likely trade-off between marginal benefits and marginal costs.

9. In this context Openreach has highlighted to Ofcom that there are some particularly complex factors to take into account when assessing what the right levels for the Upper Percentile and Certainty QoS Standards should be.

10. Openreach recognises that for the comparatively short duration of this market review, there will be strong pressures on Ofcom to continue with the current structure of controls. In the main we are comfortable with this approach although looking further ahead we see a greater role for a more flexible regime in which CPs can acquire the highest levels of service which truly reflect their needs and which are not entirely driven by the system of centrally imposed targets as at present.

11. Openreach is supportive of the following specific proposals:

    - Given that this BCMR is to an extent a transitional (2 year) bridge to the Integrated Market Review that is expected to come into effect from April 2021, it is pragmatic to largely maintain the current framework that was created in 2016;
    - The proposals for the Mean Time to Provide (MTTP) and Certainty-Crosslink QoS Standards are, in the main, proportionate and reasonable;
    - The removal of the Lower Percentile QoS Standard is appropriate as it is now effectively redundant given the improvements in underlying Openreach performance;
    - The proposal to remove the 2008 SLG Direction and replace it with obligations within the Openreach Reference Offer (RO) is sensible and provides the necessary flexibility to deliver further process improvements;
    - Where possible, maintaining national and annual compliance assessments for the QoS Standards is sensible; and
    - We are generally supportive of Ofcom's desire to have strong transparency obligations.

12. However, Openreach does consider that Ofcom needs to fully recognise the vastly different context that exists now in comparison with 2016, when the QoS framework was first set. The following issues in Ofcom's proposals raise concerns for Openreach:

    - The impact of the proposed dark fibre and unrestricted duct and pole access (uDPA) remedies could have quite unpredictable effects on Openreach delivery performance for all of the QoS Standards. These factors add a degree of uncertainty to our performance which is intrinsically difficult to model or forecast;
    - Openreach has specific concerns about the proposed imposition of QoS Standards for the proposed dark fibre remedy;

[7] BCMR Consultation, 2 November 2018, paragraph 15.25.

- We consider that in relation to the Upper Percentile QoS Standard, Openreach is already operating at efficient levels and that Ofcom's year 2 proposal is not reasonable. First, the target is likely to exceed what can be reasonably delivered by an efficient operator. Second, based on customer feedback the additional cost required to improve further would not be justifiable from a customer needs perspective i.e. the marginal costs would exceed the likely marginal benefits;
- Our ability to achieve the year 2 Certainty QoS Standard is likely to rely on implementation of the REP programme where timing of delivery is currently uncertain. Ofcom should not "bank" future benefits from REP in this speculative way; and
- Although the set of KPI measures is broadly reasonable, Openreach is concerned that the number of sub-splits now being proposed by Ofcom is too complex, and will lead to the creation of a number of measures that are not likely to be helpful for Ofcom or stakeholders.

13. Ofcom should make the following amendments to their proposals:

    - For the Upper Percentile QoS Standard we consider that Ofcom should keep the year 1 proposal flat for both years, i.e. no more than 3% of orders to be completed in more than 138 working days;
    - We also consider that it would be proportionate to maintain the Certainty standard at 85% for both years of the control; and
    - Ofcom should remove the QoS Standard obligations for the proposed dark fibre remedy.

14. Openreach has every intention of continuing to raise performance levels and customer satisfaction where possible. However it is also important to recognise that improvements may come at a cost and there is a balance to be struck here.

15. Openreach notes that, because the underlying complexity of delivering Ethernet circuits has been increasing, delivery of "flat" performance against the QoS Standards will in reality require Openreach to make further operational improvements.

16. Looking further ahead and desiring to move to a regime which focusses less on headline numbers and more on other equally important features of customer service, Openreach requests that Ofcom does not simply assume that continuation of the current framework and arrangements is necessarily appropriate in the longer term.

3. Market context

17. This section highlights the dynamic characteristics of the Ethernet market which Ofcom should take into consideration when setting QoS regulation. The industry is facing changes where the full extent of the impact is not yet known by Ofcom or Openreach; for example, the proposed introduction of uDPA and dark fibre remedies could lead to significant shifts in customer behaviour (for example changes in demand for active services). Further, increases to the complexity of delivery conditions means that Ethernet circuits are becoming more challenging to deliver. When combined with the other characteristics of the market, including low volumes, high volatility and difficult forecasting, this creates a very demanding set of delivery conditions.

18. We also believe that Openreach is now operating at an efficient level of service, in the sense that there is an optimal balance between incurring resource / cost in delivering service and customer valuation of the resulting service levels. This is demonstrated by the fact that CP customers do not want to pay more for an increase in service, i.e. they are getting value for money, and we consider that this shows that service is being delivered at a level which is consistent with that of a competitive market.

19. Ofcom should take due consideration of these factors when setting QoS obligations. Targeted performance levels should be proportionate and based on the nature of the problem identified. The volatile nature of the market, in combination with the uncertainty of the consequences of Ofcom's other remedies (for example uDPA), suggests that Ofcom should avoid setting QoS Standards at the upper bounds of possible performance.

20. Below we set out a number of aspects that should influence Ofcom's decisions on service regulation:

    - The service improvements that have been made to date on business connectivity products, where customers are now, in the main, telling us that they are satisfied with the service levels being provided;
    - Observed changes in customer behaviour and demand;
    - Increasing complexity in delivering Ethernet services; and
    - How UK service regulation compares with other telecommunications incumbents across Europe.

21. Openreach wants Ofcom to take all of these elements into account. By doing this, Ofcom will be able to avoid setting performance targets which may be unnecessary or over-inflated.

Overview of the Ethernet market

22. The Ethernet communications market in the UK as a whole is vibrant, innovative and fast paced, and can also be unpredictable and subject to change. Ofcom is also proposing wide-ranging remedies such as uDPA which may further amplify the changes to the market and bring consequential impacts across the Openreach portfolio as a result.

23. Delivery of Ethernet services by Openreach is now at best ever levels and our CP customers are confirming this. However, in the Ethernet market volumes are significantly lower than in other Openreach product markets. This means that Ethernet services are more subject to fluctuations / volatility based on changes in customer demand.

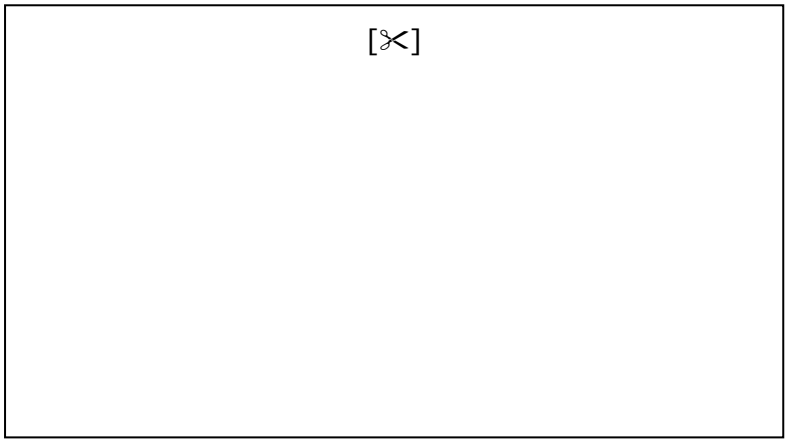
The patterns in customer behaviour can change on a frequent basis, which directly impacts the calculation of performance (given the QoS Standards and KPIs assess both the proportion and volume of orders that have completed in a particular period). In this context, we believe it is right that QoS Standards incentivise continuation of the already good service that is being provided, but do not seek to automatically tighten target levels where it is not clear that these will either be achievable or required by the market.

24. QoS Standards should not be aspirational targets which may not actually be achievable, but which are associated with a high risk of failure and result in a potential failure against an SMP condition. Imposing such disproportionate targets would not be compliant with Ofcom's regulatory duties[8]. In this regard, Openreach requests that Ofcom considers the wider context and whether there is now a market need for tighter performance levels over and above what is being delivered today.

Complexity

25. As demand for Ethernet services has increased, the complexity of delivering Ethernet circuits has also risen as end-customer requirements spread beyond metropolitan areas and into more "rural" areas, i.e. outside of the more built up areas (where there is a higher density of existing network infrastructure), as can be seen in Figure 2 below. There is often less existing network in these rural areas, and where network exists there is a higher propensity for network access issues (such as blocked or damaged duct) which can lead to a requirement for traffic management. These all contribute to potentially significant delays.

Figure 2 – [✂]



26. Due in part to these changes in the type and pattern of demand, Openreach has seen an increasing level of complexity in the delivery of Ethernet circuits. By this we mean that the conditions to physically install Ethernet connections has become more challenging with longer associated timescales to deliver. This is primarily related to the need to build new infrastructure combined with the increase of traffic management and wayleave requirements. Openreach has articulated these issues several times to Ofcom via various formal submissions[9].

[8] See in particular Section 3 (3) of the Communications Act.
[9] [✂] and most recently the paper which provides a statistical analysis of the feasibility of meeting the Upper Percentile metric, referred to as the "Technical Report" in this consultation response (which has also been provided in Annex 1).

27. In terms of performance against a QoS standard, where circuits that are being measured are becoming more complicated to deliver, flat performance actually indicates improving performance, i.e. if complexity increases but it takes the same amount of time to deliver a circuit, this shows that Openreach is becoming more operationally efficient and therefore in reality delivering better performance on a like-for-like basis. Therefore when setting targets for performance, Ofcom must be mindful of the operational delivery conditions and the factors that are influencing the levels of complexity present.

28. Compared to the original 2016 BCMR benchmark year of 2011[10], Openreach continues to experience a higher level of complexity in delivering Ethernet circuits. Although Openreach has implemented a number of significant transformational operational changes (for example, De-silting technology) to reduce the impact of complexity factors, it has only reduced the impact and has not reduced the propensity.

29. Openreach's Technical Report submitted to Ofcom on 12 December 2018 (and provided at Annex 1 to this response) outlines the increasing propensity of several of these complexity factors, highlighting Openreach's concern that complexity will increase again in comparison to any historic benchmark period (i.e. if comparing against 2011 performance or another more recent year). Ofcom should therefore ensure that any SMP condition set does not depend on a particular set of market conditions remaining constant.

30. Openreach acknowledges that it has been difficult previously to separate out the impact of increasing complexity from the impact of the "tail" (the aged orders within the workstack which had built up over a period of time). However, Openreach believes that the current tail level has flattened out to one which is at a level equivalent to that of an efficient operator. By this we mean that the number of orders which become "tails" and the average age of those tails has reached a steady state after the benefits of the various Openreach transformation initiatives have been realised. Openreach has monitored performance for both the volume of orders closed over 118 working days (as per the existing Upper Percentile QoS Standard) – which is flat, as well as the volume of open orders in the workstack which are over 118 working days old – which has also remained broadly flat (subject to pending customer delay). Openreach therefore considers that the latest analysis of complexity, as presented in the Technical Report, is unbiased by the tail. We provide more detail on the conclusions of this paper, in relation to the Upper Percentile QoS Standard, later in this response.

Changes to customer behaviour and demand

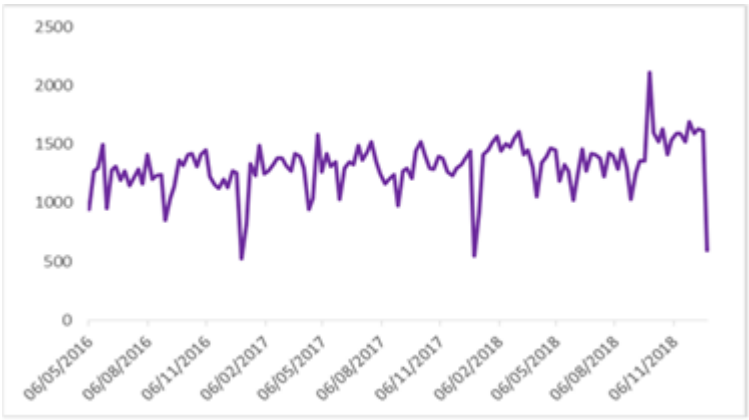
31. Demand in the Ethernet market can be volatile for a number of reasons. Order volumes are relatively low (compared, for example, with those present in other regulated markets), so a small change in demand can have a disproportionately large impact on service levels – which are based on averages. In addition, Ethernet orders can be placed in large "batches" by CPs as a result of a wider project (for example, a project to deliver Ethernet services to a number of schools in a particular region), which can result in a sudden and significant spike in demand. Further, a number of CPs can often bid for the same project, meaning that forecasts received can often be inaccurate (sometimes unavoidably so).

[10] Ofcom Business Connectivity Market Review, Final Statement, 28 April 2016, paragraph 13.493.

32. These factors make accurate demand forecasting in the Ethernet market particularly difficult, and this is a problem that the whole industry faces. Forecasting at regional levels, and forecasting precisely when underlying demand will be received (both of which are ideally needed by the Openreach delivery teams), are particularly tough. Openreach is attempting to work with industry to improve the process, both in terms of the inputs CPs are able to provide to Openreach, and what can be done to ameliorate the impacts of inaccurate forecasting, but Ofcom needs to accept that because of these forecasting difficulties there are going to be inevitable impacts to reported service that are reasonably not in control of even the most efficient operator. Ofcom should also acknowledge that currently Openreach carries all of the risk in dealing with the consequences of inaccurate demand forecasting, including any impacts on performance against the QoS Standards.

33. For example, there has been a significant, and unpredictable increase in demand over the last six months, in particular from late Q2 2018/19 through into Q3 2018/19 – in terms of both the orders received and the forecast. This is particularly illustrated by the significantly higher demand that was received in September, which can be seen in Figure 3 below. This level of demand is extremely challenging for Openreach to resource to, particularly in the planning teams, and this has a knock on impact on internal KPIs (such as Excess Construction Charge (ECC) issue performance or initial contractual delivery date (CDD) issue performance), as well as for QoS Standards.

Figure 3 - Ethernet demand



34. These variations in demand can be amplified further at the regional level, where it is even more difficult to accurately forecast. This can often result in more complex resource challenges, where the workforce is not necessarily fully mobile between different areas and can lead to prolonged periods where we are attempting to rebalance supply to meet demand. This has knock-on operational impacts due to additional delays resulting from re-allocating resource.

35. As mentioned above, another change that Openreach has observed in customer behaviour is the volatility in how demand comes through in customer ordering patterns, where Openreach is starting to see "bulk" orders being placed that can have impacts on a weekly basis. For example, at the end of Q2 (week ending 30 September) the record weekly volume of orders received was broken, with around 2000 Ethernet orders received (25% higher than any other previous week in history). This particular spike was driven in part by a bulk order for [✂]. We are seeing similar ordering patterns with other customers, and foresee this also happening with the 5G mobile network orders which are now starting to come through. This trend towards "lumpy" demand presents particular challenges for the Openreach delivery teams.

36. The operational (and therefore service) impacts arise due to the bottlenecks in the delivery journey that are created by demand that is well-above forecast, or that arise in an unpredictable manner (for example, in terms of timing or quantity). This can not only have an immediate impact on open-order KPIs (such as those mentioned above) but also have a lag impact on completion timescales due to the time it takes to clear the surplus in orders.

37. Openreach considers that Ofcom need to acknowledge the difficulties that the industry in general faces with regard to forecasting Ethernet orders on a consistently accurate basis, given the nature of the market, and reflect this when setting the QoS Standards. Therefore it would not be proportionate for Ofcom to set QoS Standards which are (1) at the upper bounds of possible performance (2) do not allow for changes in customer behaviour and (3) do not take account of wider changes to the market. It will not be acceptable to Openreach that Ofcom only takes these elements into consideration at the compliance assessment stage, in the event that we were unable to meet the QoS Standards set for reasons largely outside of our control. Ofcom needs to assess these factors now.

Service improvements

38. Openreach service performance for Ethernet has improved massively over the last three years. Openreach has openly acknowledged that pre-2016, delivery of Ethernet service was inadequate in a number of areas. To address this, Openreach implemented a wide ranging transformation programme, ranging from the management team leading Ethernet delivery through to making changes to the individual operational processes. This programme of work has been very successful and has transformed Ethernet service. Openreach is now delivering good, and in some cases best ever, levels of service. To illustrate this and the scale of the improvements, Openreach has outlined some indicators of performance below, which reflect the improvements that have been made since May 2016:

    - MTTP for Ethernet circuits is at around 34 to 36 working days, compared to c. 60 to 70 working days in Q2 2016/17;
    - The volume of orders over 118 days old in the Ethernet workstack is c. 1000 circuits, compared to highs of over 4000 orders in May 2016 (see Figure 4);
    - The average age of the Ethernet workstack is c. 45 working days, compared to nearly 80 working days in May 2016 (see Figure 5);
    - Openreach has improved certainty of delivery to around 85%, its highest ever level (see Figure 13);
    - Openreach has increased weekly throughput to an average of over 1000 circuits, which is a greater than 10% uplift since 2015/16 (see Figure 6); and
    - Customer Satisfaction, as measured through Net Promoter Score, has risen significantly since 2017 and is currently at +29.3. (See Figure 1)

Figure 4 - Tails workstack

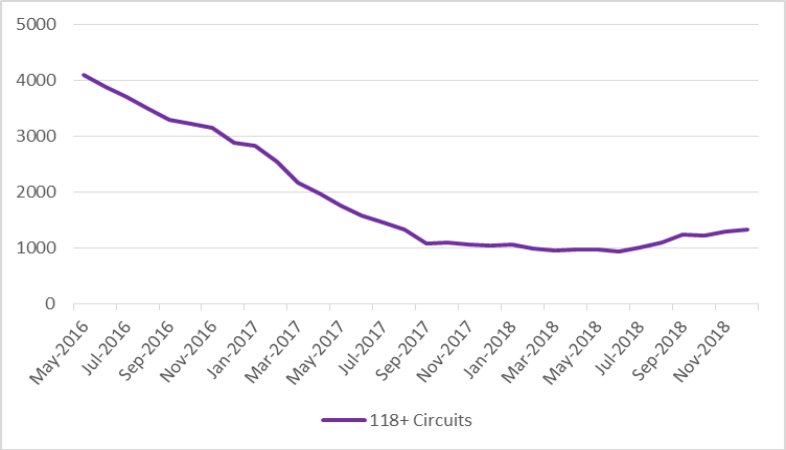


Figure 5 – Average age of the workstack

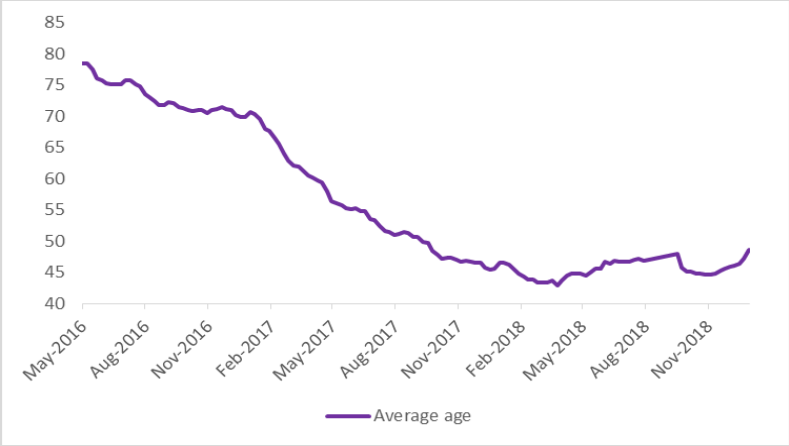
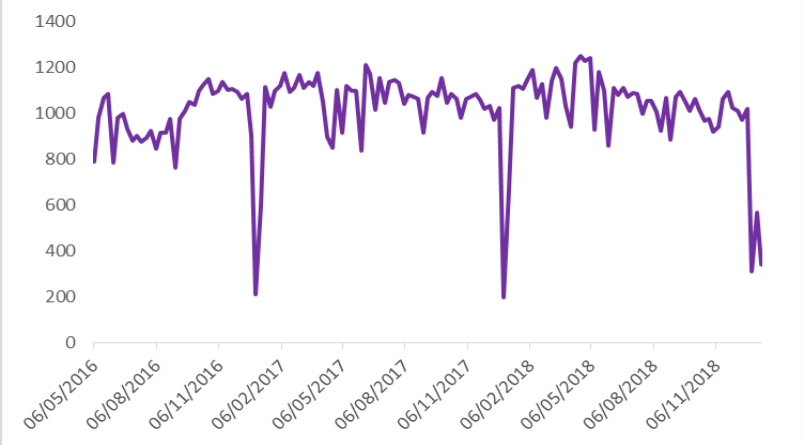


Figure 6 - Number of completions (throughput)



39. These improvements have transformed Ethernet service, and Openreach is in a significantly different place compared to 2016 (when Ofcom first reviewed Ethernet QoS in detail). CPs have frequently publically noted the improvement in Ethernet service (for example at the monthly Ethernet Service Forums), and also at Board to Board meetings and other bilateral CP engagement sessions. We provide more comments on customer feedback in section 10 of this response.

40. The wider communications industry has also recognised Openreach's improvement to and continued strong delivery of Ethernet service. For example, Openreach was recently a 2018 finalist at the World Communication Awards[11], where it had been shortlisted in the "*Best Network Transformation Initiative*". This nomination focussed on Openreach's complete transformation of Ethernet service.

41. Openreach believes that Ofcom can do more to recognise the improvements that have been made and that Ethernet service is in a very different place now, than it was in 2016. Given that this market review covers a shorter forward-looking time period and should be laying the foundations for a single-access (i.e. integrated) market review, regulation set in this BCMR should not be radical or create irreversible impacts. In this sense, it is important to consider whether Openreach Ethernet service is already at or beyond what an efficient operator may be able to achieve, or what service would be in a competitive market. Ofcom should not specify target levels beyond what would exist in such conditions.

42. Where possible, Openreach will continue to deliver improvements to service and maintain the already good standards of performance achieved regardless of any QoS Standards that are imposed. The way that our business is set up puts service at the forefront of our ambitions and there are a number of structures in place to enable this and to monitor progress, for example via the Openreach scorecard, customer satisfaction surveys and wider on-going transformational programmes.

43. To note, the previous Minimum Service Levels (now QoS Standards) have not defined Openreach's approach to service, although they have played an important role.

Re-imagining Ethernet Provision

44. Our CPs are receiving best ever levels of service on Ethernet in many respects, alongside an extremely competitive and low price. It is Openreach's belief that Openreach is performing at, or beyond, the level of an efficient operator. However, the REP programme is a set of proposals put forward by Openreach which aims to further enhance the Ethernet provision journey on the Equivalence Management Platform (EMP). Openreach is making the REP proposals as it considers that the proposed changes would further transform the customer experience and service performance (including for end-customers) and deliver end-to-end operational efficiencies for CPs and Openreach.

45. REP will require changes in the operating processes for both Openreach and CPs. The programme is in the early stages of industry negotiations [✂]. Therefore we cannot currently quantify with any certainty what impact any changes would have on the QoS Standards. Likewise, the implementation roadmap for REP is difficult to anticipate as it depends on the ongoing negotiations, and also CP consumption of any changes that are finally proposed.

[11] https://www.terrapinn.com/awards/world-communication-awards/index.stm

46. Following the launch of an industry consultation where responses were due in November, Openreach has now received feedback from 10 CPs. There was general agreement with the programme principles set out. However, there were differences of opinion in terms of which elements of the proposal different CPs supported, based on their own business models. Questions were also raised about the benefits versus costs, in particular given that Openreach service performance for Ethernet has already improved, and is now at good levels. There were also different views from CPs on implementation timescales. Openreach is currently in discussion with CPs with a view to establishing if there is a common business case for the proposed changes that can be made to work. We currently anticipate that these discussions may continue through Q4 (2018/19). Openreach is keeping industry updated via the appropriate industry forums.

47. Given the uncertainty of REP delivery and implementation due to factors outlined above, it would not be appropriate or proportionate for Ofcom to base any of its remedy proposals on an assumption that this programme will deliver further upside during the timescales covered by this consultation.

WIK-Consult research

48. During 2018 Openreach commissioned an independent party, WIK-Consult, to analyse the different approaches used by European National Regulatory Authorities (NRAs) in setting service obligations in comparison to those obligations in place in the UK. The research covered 10 European countries, including the UK.

49. The report (Annex 2) shows that the UK has the toughest QoS regulatory regime in Europe. For example, WIK-Consult's research found that the UK is the only country to have additional service regulation beyond the SLA/SLG regimes in the Ethernet market, and that the SLA/SLG regimes in the UK are also very string19ent in comparison to other countries.

50. In other comparable countries, KPIs are instead used to monitor performance against the reference offer (RO) obligations. Openreach considers that this is directionally where Ofcom should be heading for service regulation in 2021/22 and beyond. We provide further comments on this in section 9.

51. Separately, where KPIs are required to be provided, these obligations generally exclude the impact of third party delays, such as wayleaves and permit requirements. We note the different approach Ofcom has taken in relation to third party delays in comparison with other European NRAs.

52. As a separate exercise, Openreach also asked WIK-Consult to review the different regulatory approaches in the utility industries in the UK, namely the energy market (gas and electricity distribution) and water market, covering the provision and repair of services. This report is set out in Annex 3.

53. Unlike the approaches across Europe, most utility companies in the UK do have both regulated service obligations in addition to statutory SLA/SLG regime obligations, however the SLAs are typically less onerous than those that apply to Openreach.

54. More importantly, whilst there are defined service targets in the energy market, these operate on a reward basis only, i.e. there are no penalties for failure to meet a performance target. Co-regulatory and self-regulatory approaches are also in place in the electricity and water industries respectively.

55. We believe that there are helpful insights contained in the WIK-Consult reports that should be considered by Ofcom when imposing detailed service obligations and their relevance and appropriateness for the future. We discuss this further in section 9 of this response.

56. To summarise, the business connectivity market is not static, and the proposed introduction of uDPA and dark fibre remedies will add further uncertainty into an already dynamic environment with potential implications for QoS. For this reason Ofcom should not create conflicting obligations or set overly ambitious performance targets, but rather ones that are reasonable and proportionate given the complexity ambiguity present faced.

4. Ofcom's proposals for QoS Standards

57. In this section Openreach sets out its comments in relation to Ofcom's proposals for the QoS Standards. A summary of our position is set out below, with more detail provided in the remainder of the section:

    - Openreach agrees with a number of Ofcom's proposals, including on the Lower Percentile QoS Standard (which it is proposing to remove), the MTTP QoS Standard and the Certainty Cross-link QoS Standard[12];
    - However, Openreach has concerns with the proposals set out for the second year of the control period (i.e. 2020/21) in relation to the Upper Percentile and Certainty QoS Standards;
    - We also disagree with the proposals to introduce what are effectively "precautionary" QoS Standards for the proposed dark fibre remedy;
    - We have also provided a number of comments in relation to the Repair QoS Standard, and on some of the features of the framework, including how Ofcom's new market definition proposals impact performance; and
    - As discussed above, on a more general basis, Openreach considers that Ofcom needs to carefully consider its intentions for QoS Standards in the light of prevailing market conditions.

Overview

58. Openreach understands Ofcom's ambition in seeking to create regulatory certainty in the next market review period and thus helping to promote continued high standards of service throughout a period of change in the market. That said, we consider that Ofcom have not fully recognised the extent of the transformation of the organisation, the steps that Openreach has taken to enhance the service it provides to its customers, or the fact that Openreach itself has voluntarily offered to support harder performance targets where justified. In this sense, we consider that service would continue to remain at high levels, even in the absence of regulation.

59. We note that Ofcom have renamed the previous QoS measures from "Minimum Standards" to "QoS Standards," where Ofcom reference the alignment with the language of the service requirements set out in the 2018 Wholesale Local Access (WLA) market review.[13] It is important to Openreach that if the change in terminology has underlying meaning, that this is clearly set out by Ofcom.

60. We recognise that Ofcom wants to move away from the connotations of performance being at a "minimum" level (with its potentially negative connotations), as it might suggest that this minimum level is an acceptable level and that no more effort should be made by the incumbent provider to perform above this level.

61. However, Openreach would be concerned if the QoS Standards were set as "stretch" or ambitious targets, as opposed to being a backstop to prevent service falling below acceptable levels. Ofcom should not set targets which are seen as aspirational levels with the objective that Openreach will strive to meet those levels, even if it is not likely to meet them. It is right that Ofcom set reasonable QoS Standards on an *ex ante* basis and does not simply

[12] Subject to our comments on the potential impact of the proposed dark fibre remedy and uDPA.
[13] https://www.ofcom.org.uk/__data/assets/pdf_file/0007/112210/statement-qos-wlr-mpf-gea2.pdf

rely on future compliance assessments, which provides no certainty to Openreach as a means to address disproportionate targets.

62. Openreach is somewhat concerned that Ofcom feels a necessity to automatically dial up the levels of QoS Standards at each cyclic review. In this regard, Openreach considers that Ofcom should only tighten QoS Standards beyond the level of performance that is currently being delivered where it is clear that this is needed by the market and are capable of being delivered.

63. In the Ethernet market, where earlier in this document we have set out the volatile conditions that are faced, it is difficult to know what levels of performance can be achieved in the future – let alone what the backstop standard should be. Openreach has tried to emphasise historically that the QoS Standards need to take into account the range of possible performance outcomes and not simply on the most optimal, i.e. the highest or quickest. Experience since 2016 suggests that careful judgement needs to be used when determining what the levels the QoS Standards should be.

64. More importantly, we are concerned that in some instances Ofcom is proposing QoS Standards at levels beyond those that would be present in a competitive market. In a competitive market a service provider would provide a service level that enables them to compete in the market but would not be likely to improve service to a level where, due to the law of diminishing returns, further increases in service would be minimal and would require a significant increase in costs. They would maintain service at the level where the majority of their target customers would find the trade-off between quality and cost (or price) to be acceptable.

65. Specifically in relation to the Upper Percentile and Certainty QoS Standards, we urge Ofcom to take learning from the 2016 market review and not set target levels that cannot be achieved.

66. We set out our comments in relation to each of the QoS Standards below.

Upper Percentile QoS Standard

67. The Upper Percentile measure was designed to limit the volume of orders that became a "tail," i.e. those orders that take the longest time to deliver. Openreach has made significant improvements to this metric, both in reducing the historic tail workstack that built up in 2015 and also by ensuring that the present day workstack is managed efficiently to minimise the number of orders that become a tail in the first place.

68. As Figure 7 shows below, Openreach has dramatically improved performance in relation to this measure and is now operating at what we believe to be efficient levels of performance. Service levels have flattened since the beginning of 2018 and we consider that further improvements are likely to be very marginal.

69. Figure 8 Openreach has recut the same historic performance but rebased it against Ofcom's year 1 proposal for the Upper Percentile QoS Standard, i.e. orders completed with a time to provide of more than 138 working days. Again, flattening of performance is apparent this time at (or close to) the level of Ofcom's proposed year 1 QoS Standard.

Figure 7 - Percentage of orders completed over 118 working days

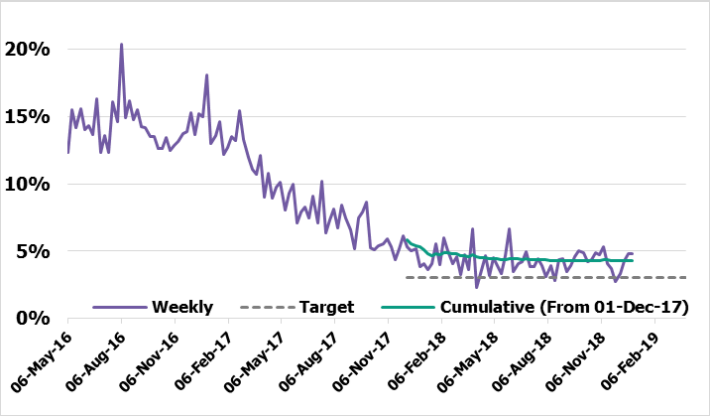
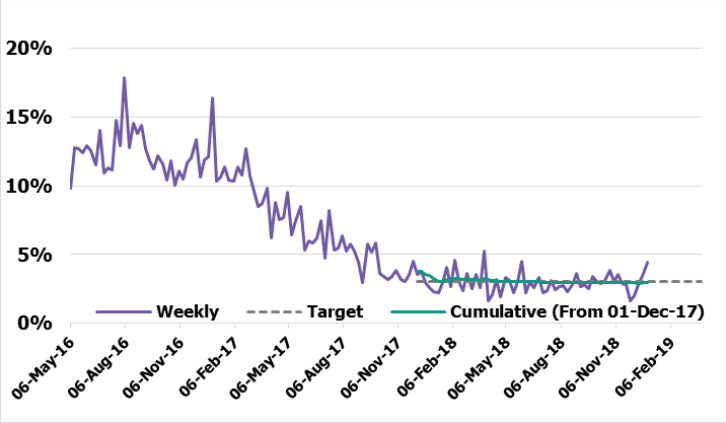


Figure 8 - Percentage of orders completed over 138 working days



70. Ofcom have proposed to set the Upper Percentile QoS Standard so that no more than 3% of orders should be completed in more than 138 working days in the first year of the market review period[14]. Ofcom have not provided their analysis on which this proposal was based, but Openreach understands, based on its own analysis, that 138 working days is the 97th percentile of the time to provide of orders[15] that were completed between December 2017 – October 2018, and therefore the suggestion for the first year of the new regime is to keep performance at or around current levels.[16]

71. Openreach does not necessarily fully agree with this approach, for reasons set out in more detail in our Technical Report (Annex 1). However, we acknowledge Ofcom's recognition of the fact that delays that can be largely outside of Openreach's control (such as wayleaves and traffic management) have increased, and this has led to a proposed

[14] Ofcom BCMR Consultation, 2 November 2018, paragraph 15.68.
[15] Excluding customer caused delay.
[16] It is assumed that Ofcom have used performance statistics which relate to the market definitions as set out in the November 2017 Temporary Conditions statement.

amendment of the measure (in comparison to the current level). We are supportive of this movement and are pleased that Ofcom have recognised that the previous (current) standard was not achievable. Overall we consider that the year 1 proposal, while challenging, is acceptable, and will represent a continuation of service performance at current (very good) levels.

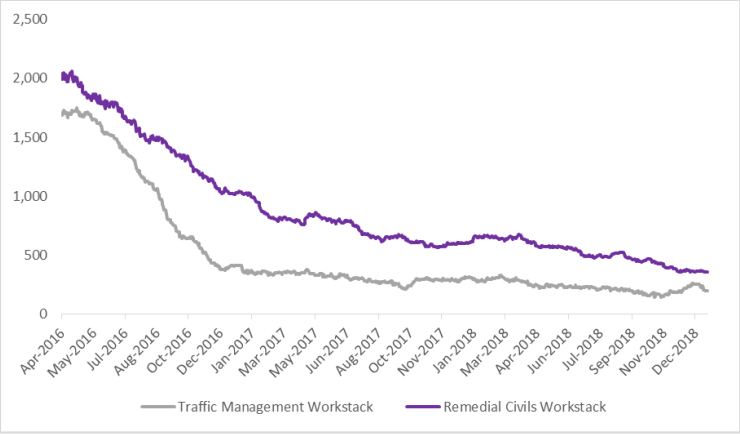
72. Ofcom have also proposed that in the second year of the market review period, the Upper Percentile QoS standard is tightened so that no more than 3% of orders should be completed in more than 130 working days[17]. Ofcom have not provided any analysis to support this proposal and Openreach strongly disagrees with it. Openreach considers that this proposal is not proportionate, goes beyond what is needed by the market, and that Ofcom should propose the same QoS Standard in year 2 as year 1 (which, as noted, is already at an efficient and very good level of performance in any case).

73. Ofcom have stated that Openreach can "*more effectively manage the process of obtaining wayleaves and arranging traffic management with the relevant councils and highways authorities*[18]." Indeed, Ofcom present this as justification for tightening the standard in year 2. However, Openreach believes that this lacks any basis in evidence, and ignores the very significant improvements that have been made to the elements of the processes that are under Openreach's control, for both traffic management and wayleaves over the last two years. [✂][19] Openreach explained how it had developed transformation initiatives that aimed to reduce the need for civils (thinner fibre cables, de-silting technology, etc). By reducing the civils requirement, this removed or reduced the need for traffic management on some Ethernet orders. This is shown in Figure 9 below.

74. There has also been significant investment in Openreach's own internal traffic management and wayleaves processes to ensure that they are made as efficient as possible. Openreach has previously provided information to Ofcom on how it invested in a wayleaves paralegal team to address the wayleaves workstack ([✂]). Openreach has also invested in the DAN (Dig, Auxiliary, and Noticing) team who deal with traffic management to progress its internal traffic management processes, and also to improve engagement with Local Authorities and Highways Authorities. This improvement in engagement has led to general performance improvements, which can be seen within the traffic management performance chart below (Figure 9) where the volume within Openreach's control has significantly reduced, and stayed consistently low.

[17] Ofcom BCMR Consultation, 2 November 2018, paragraph 15.71.
[18] Ofcom BCMR Consultation, 2 November 2018, paragraph 15.67.
[19] [✂]

Figure 9 - Traffic Management and Remedial Civils Workstack



75. We are concerned that Ofcom have made unfounded assumptions about the degree to which further improvements can be made by Openreach to third party processes. As noted, Openreach has already made improvements to the parts of these processes that are within its control. Ofcom should not assume or assert that further improvements can be made, either to the wayleave or traffic management processes, without conducting a proper assessment.

76. Openreach believes that it is therefore incorrect for Ofcom to casually assume the ability to do more to further improve the process for traffic management and wayleaves to the extent that a tighter QoS Standard is warranted. As noted, Openreach has significantly improved the parts of the traffic management and wayleaves processes within its control, and a significant proportion of the remaining dwell sits within third parties and outside Openreach's control.

77. Openreach have provided substantial information to Ofcom on the numerous improvement programmes that have been run in order to reduce the Upper Percentile QoS Standard.[20]

78. In view of the considerations set out above, Openreach disagrees that the QoS standard should be reduced to 130 working days in year 2. We are concerned that Ofcom has chosen this target arbitrarily and has not conducted analysis to establish whether it is possible to achieve or indeed required by the market.

Technical Report

79. On 12 December 2018, Openreach submitted to Ofcom a technical background report[21] (referred to as the "Technical Report"). The report set out a number of factors to be considered when setting a QoS Standard (or Minimum Service Level, as referred to in the paper) on a tail measure, where volumes are low and the length of delivery of an order can vary considerably.

[20] See Openreach responses to the 1st and 2nd s135s – BCMR quality of service measures for more detail.
[21] Openreach also met with Ofcom to present the paper and its findings in detail on 17 December 2018.

80. Ofcom have continued with the decision to keep third party delays such as wayleaves and traffic management on Openreach's measurement "clock." Whilst Openreach has always maintained that there are elements of these delays which are not within Openreach's control, for continuity of measurement we are agreeable to this approach in this truncated market review period, provided Ofcom continues to note the inherent risks of such an approach[22].

81. However, there is statistical evidence (that has been provided to Ofcom) that the types of Ethernet orders being placed are more complex to deliver than they were historically. Ofcom have acknowledged this to an extent in their consultation[23] but have appeared to disregard this in respect of setting the year 2 Upper Percentile QoS Standard.

82. The report sets out a number of other key conclusions that Ofcom should take account of:

    - The year 2011 is inappropriate as a baseline for Ethernet service performance. This year was untypical because of the demand profile, which led to an inflated view of achievable performance in subsequent years. See Figure 10 below. Order complexity was also lower than it is today, across a number of complexity factors. Consequently, Ofcom have been reluctant to move away from the 118 working day tail definition as imposed in the 2016 BCMR, despite repeated evidence to suggest that this was not the right starting point;

    - Service performance could never have met the original standards required in the 2016 BCMR (i.e. the former "Minimum Service Levels" for 2017/18 and 2018/19 under the compliance framework that was in place before the 2016 BCMR was quashed[24]). The report shows that this would have been the case, even in the absence of the backlog that had built up;

    - The QoS Standard measures have been built to measure orders that completed in a particular time frame, which means the "threshold" (i.e. minimum) performance is set on a forward looking basis. This does not take into account the forecast of complexity of the types of orders received within the compliance period, which is particularly important for Ethernet orders where volumes are low and complexity can vary significantly. The report observes the differences in performance when comparing performance based on order completion date against the date that the order was placed (the order validation date, or "OVD"). In setting forward-looking SMP targets, Ofcom should take proper consideration of this. See Figure 11 below;

    - A number of different scenario outcomes have been mapped out against the volume of order intake and complexity of order types. This matrix of demand and complexity scenarios will lead to a range of outturns against the Upper Percentile QoS Standard. The "standard" for Openreach to meet should not be based on the most optimal scenarios (for example against the outcome for low complexity and high demand, which is likely to show an overinflated high performance scenario). Instead, the standard should consider the range of possible outturns. See Figure 12 below; and

[22] For example, the risk of Openreach missing a QoS Standard due to an increase in delay factors that are outside of its control.
[23] Ofcom BCMR Consultation, 2 November 2018, paragraph 15.66.
[24] https://www.catribunal.org.uk/sites/default/files/1260_BT_Order_201117.pdf

- Linking these observations together, the analysis concludes that there will always be a degree of uncertainty and randomness in the end outcome, i.e. Openreach's performance against the QoS Standard for the relevant period. In this respect, Openreach's strong view is that an SMP condition should be based on a standard where Openreach has a fair chance of achieving it.

83. Figure 12 below demonstrates the ranges of expected outcomes for the Upper Percentile QoS Standard (measured at 118 days) for the first year of the new compliance period (April 2019 to March 2020), under the matrix of demand and complexity scenarios.

Figure 10 – [✂]

[✂]

Figure 11 – [✂]

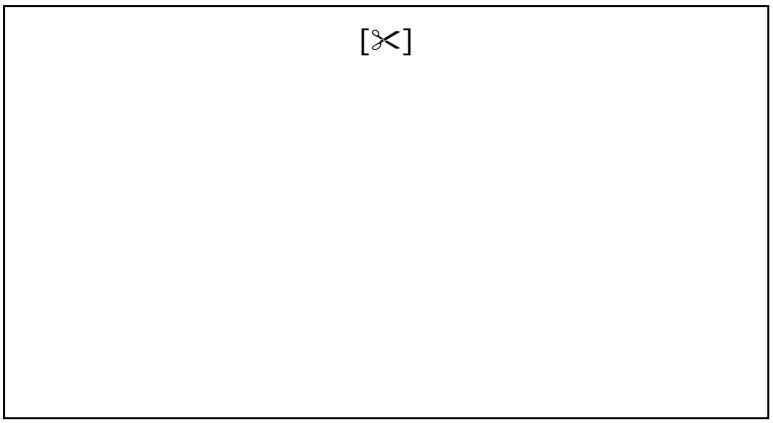
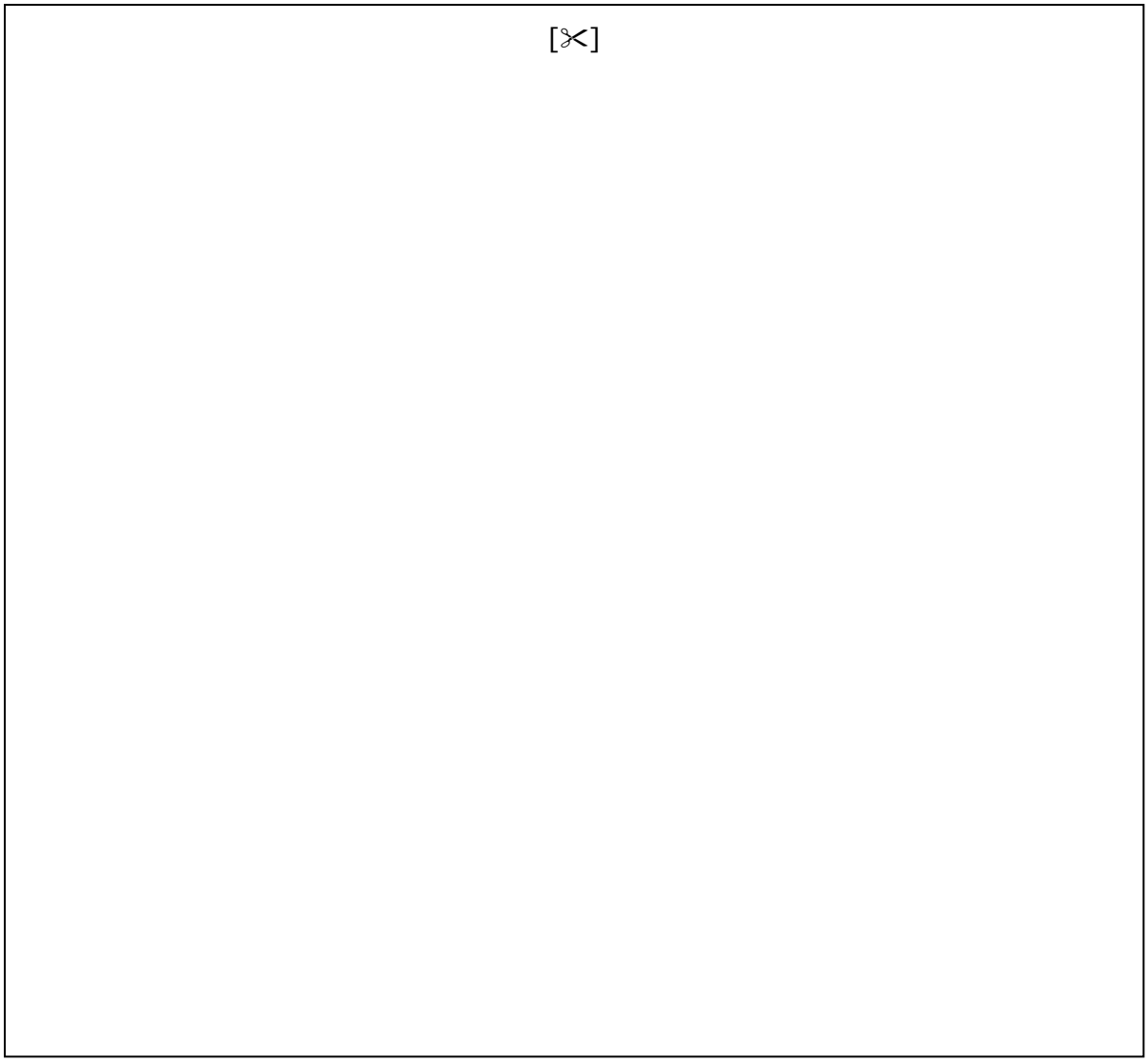


Figure 12 – [✂]



84. The analysis submitted also suggests that there needs to be a reconsideration whether 3% is the "right" or "fair" maximum for a tail.

85. We hope that Ofcom recognises that 118 working days as a minimum tail measure was unachievable historically, going back to when the former MSLs were introduced. This level has not been feasible for a number of years (noting that we have seen complexity rise over time)[25]. However, Openreach appreciates Ofcom's implicit recognition (through changing the proposed levels) in the Consultation that 118 working days as a tail measure is not going to be achievable on a forward looking basis.

86. In conclusion, Openreach considers that there is substantial evidence that orders are becoming, all factors considered, more complex to deliver and that the standard was not constructed fairly to begin with. We are supportive of 138 working days in year 1 of the new control but recommend that Ofcom set this as a flat measure (i.e. 138 working days in both years 1 and 2) to recognise the inherent uncertainty in future demand and complexity, and also that performance is still improving if it is being delivered at the same level but with a higher mix of complex orders. Ofcom should explicitly recognise this and set the Upper Percentile QoS Standard for year 2 accordingly.

87. Openreach believes that the Technical Report puts forward new and well considered evidence, and we would like Ofcom to fully consider this evidence as part of its process for deciding on what the appropriate levels for the Upper Percentile QoS Standard should be.

Certainty QoS Standard

88. The Certainty QoS Standard monitors the percentage of Ethernet orders delivered on (or before) the initial (i.e. the first) contractual date provided to the CP customer. There may be a number of reasons that delivery is delayed and therefore the initial date is missed, for example civils construction work taking longer than anticipated, additional interruptions to service delivery caused by third parties or if an issue is found in the network which requires remedial work (such as a duct collapsing).

89. We agree with Ofcom that certainty of delivery is an important factor for end-customers when placing Ethernet orders.

90. However, Ofcom need to be careful about setting a standard which could be (1) disproportionate and unachievable, (2) would require significant costs to deliver against or (3) may not be wanted or needed by customers.

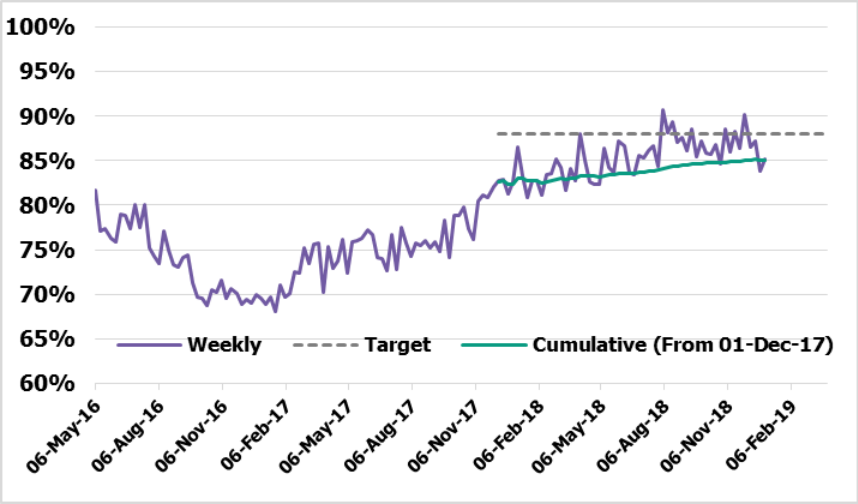
91. On this basis, we accept Ofcom's proposal to set the Certainty QoS Standard at 85% in the first year which means existing performance levels are at least maintained. However, we do not accept Ofcom's proposals to raise this to 88% in the second year.

92. Certainty performance has been rising steadily as shown in Figure 13 below, and has improved significantly since early 2017 to now be at very good levels. What is also evident, however, is that the gradient of improvement is

[25] [✂]

flattening considerably, as incremental improvements become far more challenging to deliver. Typical performance is now settling (on a rolling average basis) around / just above 85%.

Figure 13 – Performance against the Certainty QoS Standard



93. Wayleaves and traffic management issues are delays that Openreach has consistently argued are not fully within its control, and Ofcom has now accepted that the preponderance of these delays has increased[26]. However, we are concerned with Ofcom's (rather sweeping) statement that the "*proposed level allows more than one in ten orders to fail to meet the iCDD*[27]" as it appears to be a justification for setting the standard at the levels proposed. What this assertion does not consider is that a significant proportion of orders have factors which are already outside Openreach's control. These are factors which cannot be predicted when setting the initial contractual delivery date (CDD), and an allowance should be made for these elements.

94. [✂]

95. We are pleased that Ofcom have recognised all of the improvement initiatives that have been delivered to produce improvements against the Certainty QoS Standard, although we do not consider that Ofcom has a full understanding of all the relevant operational delivery processes and that it would be wrong to assume that Openreach can easily make further improvements to these processes. With demand and complexity scenarios varying significantly, it can be very difficult to raise performance levels by a small amount when we are already close to what we consider to be a "ceiling" of possible performance.

96. Notwithstanding this, Openreach remains committed to simplifying and enhancing delivery processes and have launched an industry consultation known as REP, as Ofcom is aware. This programme proposes to make the Ethernet order placement and customer journey streamlined and more straightforward, by proposing to make delivery even

[26] Ofcom BCMR Consultation, 2 November 2018, paragraph 15.66.
[27] Ofcom BCMR Consultation, 2 November 2018, paragraph 15.80.

better than today, and creating differentiated options for varied customer types and requirements. This would, in our view, help to optimise delivery outcomes for both CPs and end-customers.

97. An "upgrade" to the process such as the one proposed, requires changes to be made from all parties in the delivery chain, including our CP customers.[28] With multiple parties involved, if a step change is to be delivered for end-customers a collective contribution is needed, not solely from Openreach.

98. This being said, we are concerned that Ofcom have relied upon full delivery of REP when setting the QoS Standards for 2020/21. In its consultation, Ofcom have stated that "*there is potential for further improvement relative to current performance*" (based on initiatives which are "*subject to industry agreement*")[29] but that that these could "*facilitate further improvements in performance against the Certainty standard, particularly during the second year of the next market review period*[30]." This raises 3 serious issues:

    i. Ofcom setting an SMP QoS Standard based on an industry dependent ambition, where implementation hasn't even yet commenced;
    ii. Ofcom's assumption that all proposals will be agreed, delivered, and benefits to the QoS Standard underpinned; and
    iii. Implementation timescales - changes would need to be fully implemented well in advance of year 2.

99. We address each of these issues below.

100. Ofcom has previously set QoS Standards (then known as Minimum Standards or MSLs) based on an Openreach internal trial or ambition (Differentiated Order Journey). In the 2016 BCMR, Ofcom set the first year certainty MSL at 80%, raising to 85% in year 2 and 90% in year 3[31]. The first year MSL of 80% had been based on an early aspiration of the Differentiated Order Journey programme, and was not a robust basis for setting an MSL target level. Openreach considers that Ofcom was wrong to set an SMP condition based on this approach, and notes the subsequent difficulties associated with the Certainty targets that were set in 2016. Those problems arose, in our view, in part because the basis on which the targets had been set was not robust in that it lacked any proper evaluation of what could be delivered, given prevailing conditions. Ofcom has to an extent accepted this as it has proposed to lower the Certainty QoS standard to 85% in the first year of the new BCMR period (from 2019/20), which we believe is sensible in that it is based on evidence of what has actually been delivered. Openreach strongly recommends that Ofcom do not make the same error as in 2016, in setting an SMP target based on the intentions of the REP proposal. [✂]. We urge Ofcom to learn from history and reconsider its proposal for the year 2 Certainty QoS Standard.

101. [✂]

[28] To note, for CPs that operate complex channels to market, for example via third party resellers, those resellers may also need to adopt changes.
[29] BCMR consultation, 2 November 2018, paragraph 15.81.
[30] BCMR consultation, 2 November 2018, paragraph 15.82.
[31] Ofcom Business Connectivity Market Review, Final Statement, 28 April 2016, Table 13.19.

102. Openreach acknowledges Ofcom's ambition to have improvements to certainty delivered in the second year of the BCMR 2019 period. However, in order for this to be achievable, all of the elements of REP would need to be fully implemented well in advance of year 2. Our current view is that the new process would have to be implemented at least one quarter in advance of year 2 starting (i.e. by January 2020). This is due to the length of Ethernet order delivery times. We are concerned that Ofcom hasn't taken consideration of:

    a. the time it will take to implement the new process, even after it is agreed with industry (where completing system changes, training of people, process documentation, on boarding customers are just a few examples);
    b. the time it takes such changes to "bed" in before an improvement is seen - as the QoS Standards are based on closed orders there will be an inevitable lag before any performance impact is seen; and
    c. the nature of the metric means that Openreach would need to be achieving at least a performance level of 88% at the start of the year and over 88% for half of the year in order to compensate for those parts of the year where performance may fall below the level (which will be inevitable over a 12 month period). This is unlikely given the industry liaison and implementation required.

103. Openreach believes that REP is the right programme to deliver further industry-wide and end-customer benefits. However, we strongly urge Ofcom not to set a QoS Standard that is based on an improvement programme that remains under development, and where delivery is currently uncertain. [✂].

104. To note, we appreciate that Ofcom is keen for such programmes to be progressed, but Ofcom can show its support via other means, such as publicly signalling its support, rather than by placing additional risk solely on Openreach in the form of inflated QoS Standards.

105. By basing a year 2 QoS Standard on an assumption that the programme is delivered simply places all additional risk on Openreach in relation to a set of dependencies it is not fully in control of. This would be actually be counterproductive. Ofcom can signal its support for the programme without designing a policy that in some ways deters Openreach from pursuing further improvements, for fear that they will be used to "bank" higher targets, whether they are within its control to deliver or not. If Ofcom does persist with the 88% year 2 proposal (which it should not) at the very least it should also publicly state that, in circumstances where Openreach is not able to meet 88% levels of performance, and REP has not been delivered in full, Ofcom will fully consider this in compliance, and would not take further steps in such circumstances. Again, however, the right answer is not to create this problem in the first place – Ofcom can articulate its support for the programme, but do that in such a way that doesn't place additional risk solely on Openreach.

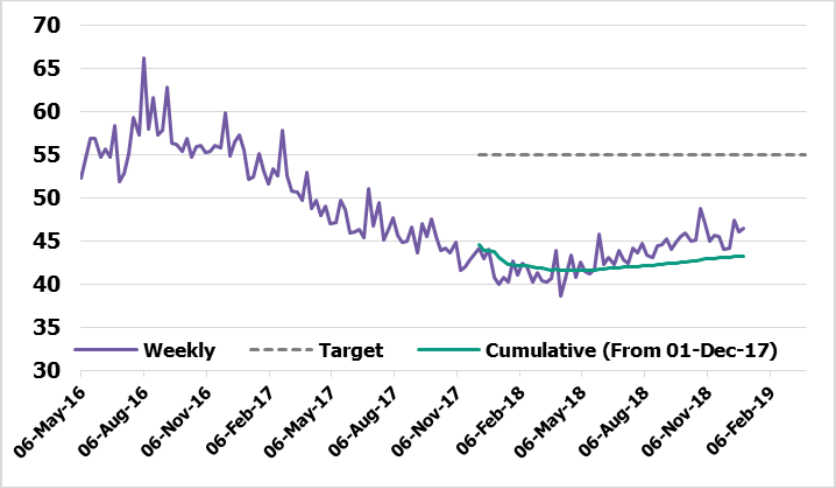
Certainty Cross-link QoS Standard

106. The Certainty Cross-link QoS Standard monitors the average lead time of Ethernet orders that are provided to CP customers, and is measured by calculating the time between the order validation date ("OVD") and the first/initial contractual date communicated[32].

[32] After any relevant customer delay is removed.

107. The Certainty cross-link QoS Standard was initially imposed to prevent Openreach setting overly conservative initial CDDs in order to "game" the certainty standard.[33] Openreach had advised Ofcom that this would not happen due to a number of operational and commercial constraints. This is apparent from performance against the standard over time, as demonstrated below in Figure 14.

Figure 14 - Performance against the Certainty Cross-link QoS Standard



108. However, Openreach understands the purpose of this particular standard, and is comfortable with the measure being re-imposed. For example, we consider that it could be a helpful indicator to industry that as part of the REP discussions, this will not result in a degradation of service performance, nor is it an opportunity to set overly and unnecessarily long delivery dates.

109. In the 2016 BCMR, Ofcom proposed that the Certainty-Cross link QoS Standard should be equal to the prevailing MTTP measure + 15 working days.

110. In its most recent Consultation, Ofcom have proposed the same measure construct, i.e. MTTP + 15 working days, making the requirement of the Certainty-cross link QoS Standard to be that the average initial CDD must be 53 working days or less.

111. Given that Openreach sees this standard as potentially being a useful indicator to industry and that meeting the standard has never been considered to be problematic, we are comfortable with this proposal.

Mean Time to Provide QoS Standard

112. In the BCMR Consultation, Ofcom have acknowledged several important points. We are pleased that Ofcom have noted the improvement in performance in the MTTP QoS Standard and that Openreach have been operating at a

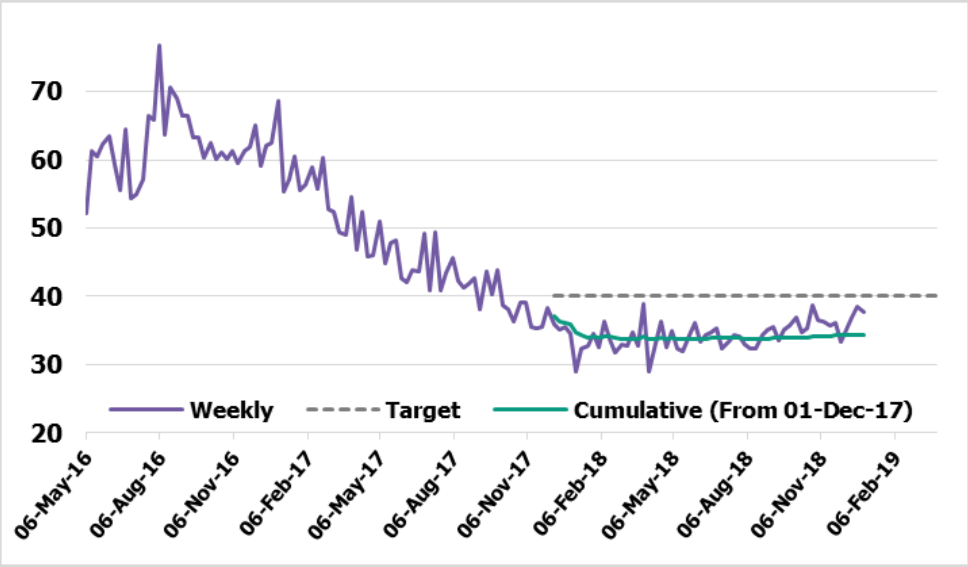
[33] Ofcom Business Connectivity Market Review, Final Statement, 28 April 2016, paragraphs 13.436 and 13.437.

level which is better than the standard required[34]. We are also pleased that Ofcom recognise that infrastructure related delays can contribute significantly towards overall lead times[35].

113. Ofcom have also referenced the fact that Openreach "*considers a lower MTTP could be appropriate*[36]" and therefore Ofcom are proposing to tighten the MTTP from 40 working days to 38 working days. Openreach is comfortable this proposal as in fact our pre-consultation submission in July stated that "*in order to demonstrate our commitment to improving lead times even further for customers, Openreach is prepared to voluntarily offer to tighten the MSL to become 38 working days or less.*"[37]

114. MTTP performance has been consistently good as shown in Figure 15 below, with performance now flattening out at around 35 working days, a very significant improvement since 2016.

Figure 15 - Average time to deliver (MTTP)



115. The average delivery timescale for Ethernet orders can be impacted by a number of factors. As Ofcom is aware, the volumes of Ethernet orders are relatively low which can lead to skewing of the results due to particular events or issues. This is compounded by the fact that Ethernet orders are not uniform in their delivery characteristics and their provision period can range between days and months. This is why a spike of unforecast orders can have severe knock-on consequences – not only to the mean and the subsequent recovery, but on related QoS Standards such as for Upper Percentile and Certainty.

116. In the upcoming market review period, i.e. 2019/20 and 2020/21, there are a variety of different aspects which could influence the MTTP for the relevant Ethernet services for this QoS Standard, for example, new regulated

[34] BCMR consultation, 2 November 2018, paragraph 15.55.
[35] BCMR consultation, 2 November 2018, paragraph 15.56.
[36] BCMR consultation, 2 November 2018, paragraph 15.58.
[37] Openreach pre-consultation submission "Summary of Openreach's current position on Ethernet Quality of Service", 20 July 2018, paragraph 33.

services such as the proposed dark fibre remedy and uDPA which may have an impact on averages due to substitutional impacts (having fewer active orders to calculate the mean) together with potential disruptions to usual provision processes. Given these considerations, it would be prudent for Ofcom not to set the QoS Standards below the level currently being proposed. We provide further comments on this below.

Lower Percentile QoS Standard

117. The Lower Percentile QoS standard was originally introduced to ensure maintenance of performance against the orders that are the easiest to deliver, i.e. so that they would not be deprioritised against orders that were more complex. As Ofcom has rightly acknowledged, Openreach has (again) consistently out-performed this standard. In any event, good performance on the more simple orders is necessary to maintain good outcomes for the MTTP QoS Standard, so Openreach would not be incentivised to sacrifice the performance of these orders from a service (or commercial) perspective.

118. Openreach is pleased with Ofcom's proposal to remove the QoS standard for the Lower Percentile. We note that monitoring of this measure will continue through the KPI obligations, and emphasise the statement made in our pre-consultation submission, that "*Openreach would continue to perform strongly against this measure regardless of whether it was an MSL or not, and would be required to perform well in this area in any event in order to meet our MTTP MSL*.[38]"

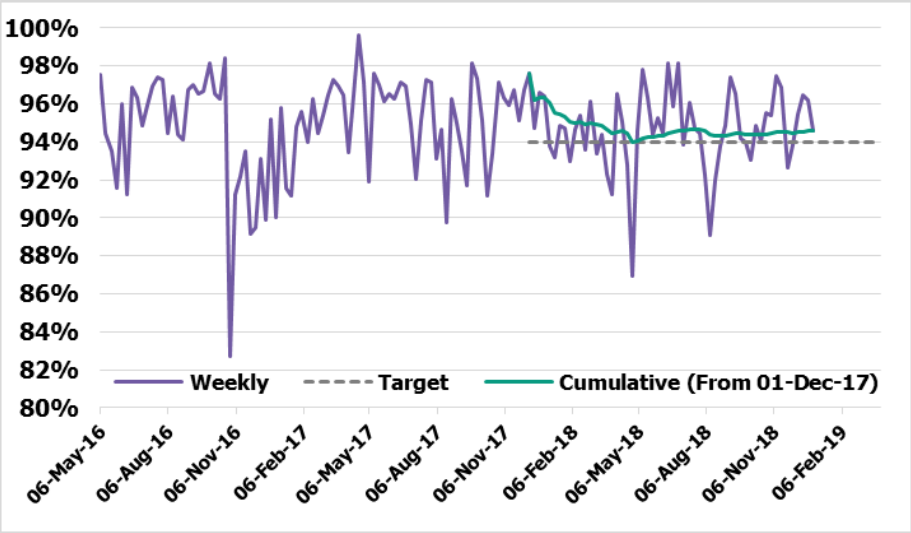
119. We consider that the removal of the Lower Percentile QoS Standard sends an important signal that detailed service regulation should only be applied where it is needed and should be removed where this is not the case.

Repair QoS Standard

120. As shown in Figure 16, Openreach has provided consistently good levels of repair performance for Ethernet services, with average performance since May 2016 consistently around 94%. The short term spikes in performance that are apparent are typically due to two factors: (1) the fact that the number of repairs for Ethernet services is relatively low and (2) the impact of "Matters Beyond Our Reasonable Control" (MBORC) incidents on repair.

[38] Openreach pre-consultation submission "Summary of Openreach's current position on Ethernet Quality of Service", 20 July 2018, paragraph 61.

Figure 16 - Repair performance against the SLA



121. For active products, there are three main types of faults which contribute to the repair measure:

- **Customer clears or "Right When Tested" (RWT) faults.** These are issues that customers give to Openreach to assess, and which following assessment prove to not be faults at all, and so are deemed to be RWT. Between December 2017 and November 2018[39] [✂].
- **Fibre faults.** These tend to be the most complex types of fault to diagnose and fix, and can involve multiple engineering visits. Between December 2017 and November 2018 [✂]. These are also the types of faults that are most subject to MBORC type incidents.
- **Electronic (a.k.a. Network Terminating Equipment (NTE) faults).** These are faults associated with the electronic equipment that is provided at the end of the active Ethernet services. Between December 2017 and November 2018 [✂].

122. This shows that Openreach's ability to meet the 94% QoS Standard being proposed by Ofcom (in essence a continuation of the arrangement that has been in place since 2016) relies in part on it continuing to receive a certain proportion of customer clear and electronic faults which, as noted above, have higher success than fibre faults because of their inherent characteristics.

123. This means that the current QoS Standard of 94% could become impossible to meet due purely to underlying "mix changes" in the types of faults received by Openreach rather than as a consequence of any deterioration in the actual repair QoS being provided by Openreach (which stakeholders, including Ofcom have consistently viewed as being at acceptable levels). This could include, for example, volume changes due to the imposition of the proposed dark fibre remedy or uDPA.

[39] December 2017 – November 2018 represents the recent analysis in relation to the current compliance period.

124. Openreach is conscious of this potential vulnerability (which is not fully within its control), and is starting to consider whether it would be sensible to try and move to a "purer" model based on dealing solely with "true" faults (for example, this could involve removing customer clears entirely). However, we also note that making such a change for active services should necessarily involve further discussion with CPs ahead of changes being made to the QoS Standard and other operational processes.

125. In the circumstances, we consider it is probably pragmatic to retain the existing structure of the repair QoS Standard insofar as it relates to the types of transactions that Openreach deals with for active products. Openreach does consider, however, that at a later date it may be advantageous to move (in co-ordination with CPs) to a model where the focus is on genuine faults. If and when that were to happen, whether caused by a co-ordinated move, [✂] the 94% level of the QoS Standard would need to be urgently reviewed and potentially changed, since such changes could make that standard impossible for Openreach to reach due to reasons that had nothing to do with the levels of QoS that Openreach was actually providing into the market (which, we expect Ofcom would agree, is the relevant consideration for the QoS Standards).

126. The following comments in the remainder of this section are made on the assumption that Openreach continues to deal with all three fault types identified during the period of the new control, with no significant underlying mix changes. Should the intake of faults change during the control period, Ofcom may need to intervene and re-specify the QoS Standard, based on the conditions faced.

127. Openreach agrees with Ofcom that the QoS Standard should remain national in nature – given the very low (relatively speaking) levels of faults that Openreach deals with for Ethernet services, results could become very skewed, and potentially based on insignificant sample sizes, were Ofcom to move to sub-national compliance geographies.

128. Openreach also agrees with Ofcom's proposal that that compliance period should continue to be measured on an annual basis. Given the relatively low fault volumes, this measure could be most subject to disruption caused by Ofcom's new regulatory period coming into effect after April 2019 (i.e. therefore making "year 1" less than a year in practice). This will need to be monitored but could lead to a distortion in the compliance measure that would unfairly penalise Openreach for example, in a shorter compliance period, if there were a large number of MBORC events during that period, this would have a bigger impact on Openreach than would be the case had the compliance measure been based on an annual assessment, where Openreach would have greater time to recover from MBORC "shocks". Given this, in circumstances where Ofcom is late, it should consider imposing a compliance period that covers the entire duration of the control. This would help mitigate potential seasonal / MBORC impacts whilst maintaining strong incentives on Openreach. Openreach notes that greater than 1 year compliance periods have been employed previously (including the current BCMR QoS Standard compliance period), without any negative impact on Openreach's continued focus in delivering high levels of service.

129. Openreach continues to believe that 94% is slightly too high as a QoS Standard for repair, and puts Openreach unfairly in jeopardy of failure due to factors that are outside of its control. This is further discussed below.

130. Firstly, when Ofcom first imposed the repair QoS Standard in 2016 (then referred to as a Minimum Standard), it set the Minimum Standard *at* the historic levels of performance (which it considered to be acceptable) that

Openreach had been providing. This meant that, in practice, Ofcom was incentivising Openreach to consistently deliver above levels that were already acceptable to the market, or face the uncertainty and potential consequences associated with breaching an SMP obligation. Openreach did not consider at the time that this was reasonable or proportionate on Ofcom's part[40], and that in fact Ofcom should set the level somewhat below 94%, and this would still have the effect of incentivising Openreach to deliver levels of QoS that were acceptable to the market. Ofcom did not respond at the time to this specific challenge by Openreach, and we invite Ofcom again to consider this question, which we believe remains valid in relation to the current Consultation.

131. Secondly, Ofcom is proposing to maintain the existing policy in relation to faults that are also subject to MBORC declarations, where there is no allowance made in the QoS Standard for failures associated with such declarations. Figure 17 below shows the proportion of faults over time that have been also subject to MBORC declarations.

Figure 17 – [✂]

[✂]

132. While the chart shows a slight underlying increase over time (perhaps associated with the growing size of Openreach's Ethernet footprint), the nature of MBORC incidents means that it is inherently difficult (if not impossible) to predict how many incidents there will be over time, or what the precise impact of those incidents is likely to be. That said, with Ethernet, MBORC is often attributable to third party action (e.g. utility contractors digging through Openreach network), and when such incidents occur, it is inevitable that there will be a very significant reduction in the percentage of faults that can be cleared within the 5 hour SLA. Nor is it clear what steps Openreach can reasonably take to reduce the likelihood for such incidents occurring (incentives in relation to such work are cited by Ofcom as a reason to maintain the current approach in relation to MBORC). As an example showing the impact of MBORC on repair performance, during the period December 2017 to November 2018, overall fault performance was around [✂]%, whereas performance for faults that were also subject to MBORC was less than [✂]%.

133. Openreach remains concerned, particularly given the very high level of the Repair QoS Standard already, that it is quite possible that it could miss that QoS Standard in circumstances where there was an increase in MBORC

[40] Ofcom Business Connectivity Market Review, Final Statement, 28 April 2016, paragraph 13.616.

incidents over which it would have minimal (if any) control. We remain of the view, as set out our earlier submission to Ofcom,[41] that it would be reasonable for Ofcom to provide an allowance for MBORC within the composition of the QoS Standard. This is an approach that Ofcom has taken in the setting of QoS Standards both in the 2014 Fixed Access Market Review (FAMR) and in the 2018 WLA review. In these reviews, Ofcom's concerns that including MBORC allowances within the QoS Standards would either diminish Openreach's incentives to improve service, or incentivise Openreach to "game" MBORC have never arisen in practice. There is also no evidence to suggest that these concerns would arise in business connectivity markets. Openreach therefore invites Ofcom to adopt the same approach to MBORC here (in terms of a fixed allowance within the QoS Standard).

134. If Ofcom does not adopt this approach, Openreach would like Ofcom to explain why it is taking a different approach here. As a minimum, in circumstances where Ofcom does not change the structure of the QoS Standard, we would like Ofcom to confirm that it would discount from any future compliance assessment, faults whose resolution within 5 hours was not possible due to factors that were outside of Openreach's control.

135. Thirdly, Openreach has reviewed the geographic and product changes proposed by Ofcom, and conducted an initial assessment of what this does to fault repair performance. This assessment shows that for faults in the period December 2017 to November 2018, with the new proposed product and geographic boundaries, relative performance declines [✂]. This may appear to be a relatively small amount, however, given that the QoS Standard is already very high, and (given intake mix and MBORC constraints) performance is already quite near to the maximum levels, this should be taken account of by Ofcom, and further suggests some caution is appropriate in selecting an appropriate level for the QoS Standard. We discuss the impact of market definition changes in more detail later in this section.

136. Finally, Openreach notes that the introduction of the uDPA and dark fibre remedies during the new control period could quite feasibly lead to an increase in fault rates for active services due to increased levels of network interventions that could be associated with the take up of these services. At this stage it isn't possible to forecast how this will play out, but Ofcom should stand ready to review matters, including the correct specification of the QoS Standard, in circumstances where the roll out of these services led to different conditions being introduced which affected our ability to meet the QoS Standard. The potential impacts of uDPA on QoS Standards is discussed in more detail later in this section.

137. In summary, Openreach will continue to offer high QoS for Ethernet repair into the market, as it has consistently done for a number of years already. We consider that it is sensible to start thinking now about moving to a "purer" fault measure for active services, albeit we also acknowledge that it may be pragmatic to change the regulation in this regard further down the line. We also consider that there are good reasons for Ofcom to re-specify the QoS Standard below the current level, to a range between 91.5% and 93%, and that this would be proportionate given the factors outlined above, and would not in practice lead to any deterioration in the high levels of service that Openreach has consistently offered in relation to this measure.

[41] Openreach pre-consultation submission "Summary of Openreach's current position on Ethernet Quality of Service", 20 July 2018, paragraph 89.

QoS Standard features

138. Openreach believes that if QoS Standards are to be imposed in 2019/20 to 2020/21 it is sensible and pragmatic to keep a similar structure in place as the one that currently exists.

139. We set out below our comments on each of the features of the proposed QoS Standard structure.

Customer and non-customer delay

140. Openreach agrees that customer delay should be excluded from all of the QoS Standards and relevant KPIs. CP and end-customer delay now accounts for over 60% of all delays, and should not count towards performance standards on Openreach.

141. There often can be additional processing time added to Openreach's clock as a result of the order going into delay for a customer reason, but it is difficult to quantify exactly how much additional time this contributes as a result, but there are several reasons why delay time could increase as a result, where it is not possible to remove the time from the "clock." For example:

- **Alternative allocation of resource:** an engineer visits a customer site but isn't granted access as arranged, so the customer delay is removed for that specific order. However that same engineer could have spent the time on a separate order which could have been delivered faster; and/or
- **Added processing time:** each time an order encounters a customer delay it adds processing time to the overall duration of the delivery timescales as the order has to be halted, then reallocated once the CP has confirmed the order is "fluid" again. When an order goes in and out of customer driven suspend in quick succession this is known colloquially across the industry as "suspend toggling." This adds customer delay that is not able to be measured or removed from each of the measures.

142. We note that Ofcom has proposed to continue to include all forms of third party delay in the assessment of the QoS Standards. As discussed above, Openreach does not agree that all of the delay associated with landowners and local authorities should be on Openreach's "clock" as ultimately a failure to meet a standard with a subsequent penalty could in fact be due to protracted negotiations on a wayleave which could be outside of Openreach's control. However, we understand for continuity of reporting and simplicity in this transitionary market review period that it would be pragmatic to continue to including non-customer delay in the measurement of QoS Standards.

143. Going forward though, and looking past this BCMR, we would expect Ofcom to reconsider this "heavy-touch" approach to dealing with wayleaves, which are an industry-wide issue and can be the joint responsibility of a number of different parties. Given that non-customer delay is not fully within Openreach's control, in circumstances where Openreach missed a QoS Standard due to changes in non-customer delay that were outside of its control, we would expect Ofcom to fully account for such evidence as part of any compliance assessment.

Geographic scope

144. Our comments in relation to Ofcom's proposals for business connectivity markets is set out in Openreach's main response to the BCMR consultation.

145. Given the changes in the geographic markets proposed and Ofcom's KPI proposals Ofcom should note that it may be difficult to compare performance standards between the current and new review periods.

146. In Annex 4 we set out our clarification questions relating to [✂]. Separately, we refer to our comments in our main BCMR Consultation response on the lack of clarity on the draft Legal Instruments with regards to the scope of market definitions.

147. In addition, we agree with Ofcom that QoS Standards should apply on a national basis. Applying QoS Standards on a regional basis would be distorted by spikes in localised demand.

148. Due to relatively low order volumes, regional QoS Standards could also lead to Openreach needing to resource to inefficiently high levels which would impact overall costs and ultimately the price of Ethernet products. Regional QoS Standards could also lead to statistically insignificant sample sizes.

149. A national model also allows for flexibility in the way that Openreach processes are run, in terms of the day-to-day operations of the company and how resource is organised.

150. We also note, and support Ofcom's proposal to require Openreach to continue providing performance data on a regional basis via the KPI obligations.

Product scope

151. Openreach is comfortable with Ofcom's proposals to apply QoS Standards to EAD, EBD and Cablelink and for provides and regrades. However we disagree that above 1 Gbit/s services should be regulated and therefore included in the QoS Standards. Openreach's comments on above 1 Gbit/s services are included in main response to the BCMR consultation.

152. [✂]

153. We also agree that there should not be QoS Standards for WDM and that it would be disproportionate to introduce such remedies, given that Ofcom have not identified issues associated with their delivery. Legacy services such as WES, BES and WEES should also continue to be excluded from QoS remedies.

Compliance period

154. We agree with Ofcom's proposals to measure QoS Standards on an annual basis and the reasons for doing so. We have referenced elsewhere in this response the impact of the low volumes in the Ethernet market and how a change to the market or a particularly problematic order can have disproportionate effects on the average

performance. Ofcom should also note the impact of the low order volumes in the market when considering whether to impose QoS Standards on any new products, such as if the proposed dark fibre remedy was to be introduced.

155. In the event that the publication of the BCMR 2019 is delayed, the compliance period of the first year will be truncated, and we are concerned that Ofcom has not taken proper consideration of the impact of this, should it be the case. The longer the delay, the more of the summer months (and arguably where there are less delays associated with bad weather) are removed, which can actually make the standard harder to achieve when averaged across the period. In addition to this, a shorter measurement period reduces the normalising impact of the averaging of the results over a longer period hence increasing the volatility and uncertainty of the results, and makes the target harder to achieve.

156. In circumstances where Ofcom is late publishing its statement, and in consequence the first compliance period is less than one year, it may be more appropriate to run a single compliance period, i.e. until the end of the regulatory period. This would help to reduce potential impacts arising, for example, from seasonal effects. There is some precedent for this, for example the existing temporary period that Openreach is currently subject to, and there is no evidence that this has in any way diminished the incentive properties of the QoS Standard.

QoS Standards for the proposed dark fibre remedy

157. In addition to proposing the introduction of a new dark fibre remedy, Ofcom is also proposing to impose all three main QoS remedies on the proposed dark fibre remedy in the form KPIs, SLAs and SLGs plus QoS Standards[42].

158. As set out our main response, Openreach's principal position, for a variety of well-founded reasons, is that it is not appropriate for Ofcom to impose a dark fibre remedy full stop. Ofcom should consider the further comments that are provided below, which relate solely to the QoS remedies that Ofcom is proposing to attach to the proposed dark fibre remedy, with that position in mind.

159. Openreach also notes, at time of writing, that there are ongoing concerns about what the scope of Ofcom's proposed dark fibre remedy actually is.[43] The nature of the remedy may have a bearing on what appropriate QoS remedies for it would be, and so Openreach reserves the right to provide further comments on this topic when clarification on this point is obtained.

160. In circumstances where the proposed dark fibre remedy were to be imposed, Openreach supports the imposition of KPI requirements as specified by Ofcom. The presence of performance reporting KPIs will provide Ofcom with useful insight, including whether there is cause for concern in relation to the levels of performance. That said, when reviewing the results, Ofcom should also be mindful that this would be a new, operationally untested service, where certain aspects of service performance (particularly in relation to repair) would rely on Openreach and CPs working effectively together, and where demand levels are uncertain. These factors could easily have a distorting influence on results produced, and this should be accounted for as part of any sensible future process of assessment.

[42] QoS Standards for dark fibre are proposed from year 2, the other remedies are proposed to start in year 1.
[43] See Openreach's main response to Volume 1 of Ofcom's November 2018 consultation.

161. In relation to Ofcom's SLA / SLG proposals for the dark fibre remedy, whilst we agree with Ofcom's proposals for Openreach to include SLAs and SLGs within its RO for provision and repair, these should only come into force after a suitable 'bedding-in' period. Openreach consider that a period of 6 months after launch of the proposed dark fibre remedy will provide a sufficient time period and the necessary volume of orders to enable Openreach and industry to monitor performance and agree suitable metrics.

162. However, Openreach does not support Ofcom's proposed introduction of QoS Standards for the proposed dark fibre remedy, notwithstanding it is proposing to introduce that remedy from year 2. In particular, Openreach is concerned that Ofcom is proposing to impose what are effectively a set of "precautionary" QoS Standards, an approach it has rightly eschewed in previous reviews, and is doing so not only where there is no evidence of historic poor performance, but against a product that is new and where there remains a degree of uncertainty in relation to operational performance and processes between Openreach and CPs.

163. Further, Ofcom is already proposing to introduce KPIs and SLA and SLG obligations, and will have ample ability to closely monitor performance. As discussed further below, Openreach is particularly concerned about the proposed repair QoS Standard, where processes for the proposed dark fibre remedy are radically different from the active products, and are to a large extent untested. In summary, Openreach does not consider that Ofcom's proposal to introduce QoS Standards for dark fibre is justified and proportionate.

164. In the 2014 Fixed Access Market Review (FAMR), Ofcom rightly concluded that on balance it was proportionate "*not to introduce 'precautionary' minimum standards for other services to address the risk that QoS for other services might suffer as a result of the imposition of minimum standards*."[44] Ofcom noted in making this decision that it was able to monitor Openreach's performance (i.e. the opportunity for further intervention remained if justified by circumstances). Openreach contends that the reasons that Ofcom decided not to introduce precautionary QoS Standards in 2014 exist today, and, as discussed below, there are further good reasons why Ofcom should not introduce QoS Standards for the proposed dark fibre remedy at this time.

Dark fibre provision QoS Standard

165. In the BMCR 2016, Ofcom also decided not to impose QoS Standards on the proposed dark fibre remedy as, at the time, it did not consider that it was appropriate to set such standards since the final specification of the product did not exist and would be subject to industry negotiations.[45] At that time, Ofcom recognised that QoS, for example in relation to faults, will be partly dependent on CPs and Openreach developing the necessary operational processes to allow Openreach to assess the likely source of the fault and respond in an appropriate manner. Moreover, Ofcom also underlined that there could be objectively justifiable differences between active and dark fibre products in terms of processes and systems.[46] Again, a number of the circumstances that Ofcom cited in 2016 as a reason not to introduce QoS Standards exist today. For example, and as set out in more detail in Openreach's main response to this Consultation, the current proposed dark fibre remedy is itself not a finalised product and will be subject to

[44] Fixed Access Market Review Statement 26 June 2014, paragraph 11.68.
[45] Ofcom Business Connectivity Market Review, Final Statement, 28 April 2016, paragraph 9.166.
[46] Ofcom Business Connectivity Market Review, Final Statement, 28 April 2016, paragraph 9.181.

further cross-industry discussions/negotiations both pre and post launch. This process will inevitably run beyond the start of the new regulatory period, and may lead to new insights arising as to what good QoS looks like for the proposed dark fibre remedy. In this context it is speculative on Ofcom's part to impose a set of *ex ante* QoS Standards at this stage.

166. The purpose of setting the QoS SMP condition is to enable Ofcom to address a problem identified[47]. These conditions do not exist for dark fibre, and have not been objectively justified by Ofcom. First, there is no track record of dark fibre performance, and so no evidence that Openreach has been offering sub-standard QoS for this product, to the detriment of the market. Further, details of the product itself remain subject to agreement with CPs, and there has been no operational learning at this stage as to how delivery and repair processes will work between Openreach and CPs in a live environment. Openreach also notes, that, unlike in 2016, it has developed a track record for delivering excellent QoS, as recognised by Ofcom and CPs. There is also evidence (for example in relation to WDM services) which also shows that Openreach has not solely improved service for products that are subject to QoS Standards, but also for those services that are not subject to QoS Standards.

167. Given all these factors, Openreach strongly believes that Ofcom's introduction of precautionary and speculative QoS Standards is neither necessary nor objectively justified. Ofcom should remove this obligation, and instead rely on the other remedies proposed, together with the improved focus on QoS that Openreach now has, to deliver consistently good levels of service for the proposed dark fibre remedy, should it be introduced.

168. Openreach notes that Ofcom is proposing to introduce QoS Standards in year 2 rather than year 1, and to include the measurement of the proposed dark fibre QoS Standard together with the other active products covered (e.g. EAD). As discussed above, we do not support the introduction of QoS Standards for dark fibre, however, Ofcom's proposals would become even more problematic in circumstances where the QoS Standards were introduced in year 1, or where dark fibre had its own specific QoS Standard measurement. Such a move would exacerbate the problems associated with this being a new, untested service where there are still a number of unknowns, many of which (for example how repair processes with CPs will be optimised) will not be fully within Openreach's control. Openreach also refers Ofcom to our further comments provided in our main response about how long it will reasonably take for Openreach to introduce the dark fibre service.

169. To note, as set out in the main body of Openreach's response, Openreach believes that October 2019 is the earliest date that we could fully launch the proposed dark fibre remedy (assuming the Final Statement will be published in April 2019). Therefore the introduction of a QoS Standard remedy in year 2 would not in practice give Openreach a full year to work through operational processes and issues with CPs, but in reality a far shorter period.

Dark fibre Repair QoS Standard

170. Openreach is particularly concerned about the introduction of a repair QoS Standard for dark fibre. This is because there are significant differences between how repair works for active products that are currently subject to QoS

[47] Section 3(3) of the Communications Act and 8(4) of the Access Directive.

Standards, and how they will work for the dark fibre remedy being proposed. These differences, together with some of the challenges faced in relation to repair for the proposed dark fibre remedy are set out below.

171. Firstly, and as described in our comments on the repair QoS Standards for active products above, Openreach currently deals with three main types of repair for Ethernet products:

    - "RWT" faults a.k.a. customer clears;
    - Electronic faults; and
    - Fibre faults.

172. For active products, Openreach currently manages all these faults, the results for which feed into the performance against the QoS Standard (whether or not they are subject to MBORC).

173. For the proposed dark fibre remedy, as a passive service, Openreach would only manage fibre faults. These faults, by their nature, have the most complex requirements, will always require engineering despatch[48], and take the longest time to fix. In addition, fibre faults are the ones that tend to be most vulnerable to MBORC events, particularly those caused by third party action. In fact, the majority of MBORC affected faults are also fibre faults.

174. Fibre faults take longer to clear. This is demonstrated within the repair statistics which show that, for example, in 2015/16 around [✂]% of fibre (including MBORC) faults were cleared within 5 hours for the active products, whereas the performance for non-fibre faults in the same period was around [✂]%.

175. There are also major operational differences that need to be considered. For dark fibre fault resolution, unlike for active services, Openreach will be reliant on CPs replicating our monitoring and fault diagnostic capabilities as the electronic equipment will no longer be within Openreach's domain. This means that CPs will need to provide management of active electronic kit, diagnostics of alarms and first line support of electronics and physical kit.

176. Accurate CP diagnostics will be critical in order for CPs to try and replicate EAD repair performance. Lack of accurate remote diagnostics from the CP would also lead to inefficient truck rolls, for example, for transactions that turn out to be RWT. This would have consequential impacts on the scarce Openreach resource responsible for fault diagnostics and repair across both active and passive portfolios.

177. The proposed dark fibre repair SLA of 18 hours attempts to take account of principal differences that exist between fault diagnosis for active and passive services. What Openreach could not do as part of this exercise, however, was accurately predict the impact on performance that CP diagnostics would have, nor have we yet been able to test the appropriateness of the SLA in a live environment.

178. In circumstances where Ofcom decided to impose QoS Standards for dark fibre, we agree that the QoS Standard should be set in relation to a specific SLA. However, Openreach remains of the view that imposing ex-ante QoS

[48] For dark fibre, Openreach will despatch an engineer in 100% of dark fibre faults to test and either identify / fix the fault or prove RWT.

Standards at this stage, even if they only came into effect in year 2 would be premature, and that Ofcom should avoid imposing QoS Standards at this stage, and rather allow the dark fibre service to develop via discussion / negotiation between Openreach and CPs, with Ofcom retaining oversight and maintaining the right and ability to intervene further, where justified.

Impact of unrestricted Duct and Pole Access and the proposed dark fibre remedy on QoS for active services

179. In the November 2018 Consultation Ofcom are proposing to re-impose a number of prescribed service standards on the relevant active Ethernet products (EAD, EBD and Cablelink). These are broadly the same requirements that were imposed between 2016 and 2019.[49] During this period, other than generally increasing engineering complexity, there were no significant interventions to the market.

180. In this consultation, Ofcom are also proposing to require Openreach to offer a dark fibre product. Separately, in the Physical Infrastructure Market Review (PIMR), an uDPA remedy has been proposed, which would mean that Openreach would be required to offer duct capacity within the network for rival infrastructure providers to build their own network, for both broadband and leased line purposes.

181. Openreach does not believe that Ofcom have properly considered how these two potential new remedies will impact the existing QoS remedies that Openreach has to comply with.

182. Openreach is concerned about the potential impact of uDPA and the proposed dark fibre remedy on our expected QoS performance for the active products, and the uncertainty that currently exists. The uncertainty is driven by a number of unknowns, including relating to order volumes, substitution impacts, as well as differing operational impacts. On this basis, Ofcom should not set QoS Standards at the upper bounds of possible performance.

Order volumes

183. In terms of order volumes, we do not have clear forecasts from our customers on the expected demand for uDPA and dark fibre, and where information does exist, there is no way of validating the veracity of such forecasts against historic data points. This makes forecasting the impact very difficult.

184. Despite efforts to accurately model the impact of the introduction of the proposed dark fibre remedy and uDPA on future performance, without a realistic view of volumes and customer behaviour it is challenging to produce a reliable view at this stage. Given the uncertainty about the impacts of uDPA and the proposed dark fibre remedy, we would urge Ofcom to adopt a cautious approach when specifying the QoS Standards.

Substitution impacts

185. It is not currently clear what proportion of the anticipated dark fibre or uDPA orders are substitutional for current Ethernet demand.

[49] Via the 2016 BCMR and the Temporary Conditions Statement in November 2017.

186. If uDPA and dark fibre orders are substitutional for active Ethernet orders, as we currently expect, then it is likely that the substitution will occur on circuits where performance is currently better than average. This could mean Openreach's apparent performance against the QoS Standards could fall due purely to circuit mix changes. This is particularly driven by uDPA where we expect the substitution to be of the most straightforward Ethernet circuits (i.e. Category 1.1 and Category 1.2 circuits). As these circuits have relatively quick delivery times and successful performance against the Certainty QoS standard, this will worsen Openreach's overall average provision performance across the majority of measures.

187. This means that Openreach's reported performance against its regulated QoS Standards could deteriorate as a result of other specific remedies being introduced, even if this is not actually the case, given the QoS Standards are based on averages and are sensitive to the characteristics of the product mix covered.

188. This means that in year 1, typically "easier" orders (i.e. category 1.1 and 1.2 circuits) could be substituted for dark fibre orders, meaning that there are fewer orders in the completions output which will contribute towards a lower overall mean and Certainty performance. Similarly, this could result in a higher proportion (but not absolute volumes) of orders becoming "tails" because there are fewer orders overall, which could skew the Upper Percentile measure.

189. We have already told Ofcom that the out turn of QoS Standards performance is highly dependent on the rate of demand and therefore the number of completions. If there is a significant difference in the volume of completions (for example due to substitutional effects) this is likely to impact average performance of closed active orders.

190. Combined with Ofcom's proposals to reduce the Upper Percentile QoS Standard to 130 working days in year 2 (which we disagree with), this could lead to a "worsening" of average reported performance as Openreach is left with a higher proportion of circuits that are more difficult to deliver, even if actual performance has not actually declined.

191. Openreach's view is that Ofcom need to explicitly recognise this risk and ensure that the QoS Standards it sets for the active products are not set at unachievable levels. Ofcom also needs to stand ready to intervene if necessary in circumstances the introduction of uDPA and / or the proposed dark fibre remedy changes conditions such that QoS Standards for active services are significantly impacted.

Potential Operational impacts of uDPA

192. In our pre-consultation submission, we raised a number of operational impacts arising as a result the introduction of a uDPA remedy. These impacts are likely to have knock on effects on service in the active product area, and Ofcom should take due consideration of these factors.

193. Openreach considers that uDPA brings a greater risk of Ethernet network faults as there is greater intervention in the Openreach network. Although third parties will have a requirement to be accredited to Openreach's standards, it is possible that given their relative inexperience in the Openreach network it could lead to a greater proportion of faults. Network faults will require a truck roll, and therefore there is a possibility that the mix of repair jobs will change, there will be a higher proportion of faults requiring a physical fix, and Openreach's performance against the Repair QoS Standard will reduce.

194. Openreach do not consider that Ofcom have taken enough consideration of the impact of other providers using up capacity on overall infrastructure build times. In our pre-consultation submission[50] we provided detail on how capacity in existing infrastructure is likely to be consumed faster than at present, which could lead to new capacity having to be built as a result. Moreover, it is likely to be more complex to identify whether capacity has been used up. This uncertainty is another reason to recommend that Ofcom do not set QoS Standards that are at the upper bounds of possible performance.

195. Similarly, it is our expectation that uDPA, if imposed, could lead to changes in the patterns of geographic demand. It is likely that uDPA users will opt for infrastructure routes in more urban areas where greater demand and existing available capacity has been identified. The impact of this will be that Openreach will have a higher proportion of more rural circuits to deliver, which will be subject to the QoS Standards that Ofcom are intending to propose. As above, Ofcom should therefore set standards which allow for this risk materialising so that Openreach has a fair chance of achieving the standard set.

Market definitions

Impact on QoS performance

196. Openreach notes the proposed changes to the market definitions as outlined within the 2019 BCMR consultation.[51] In order to understand whether these changes have an impact on reported QoS performance, we have conducted some initial analysis using the orders completed between 1 April 2018 to 31 October 2018 (which were reported under the market definitions as set out in the Temporary Conditions Statement), but using the proposed new BCMR market definitions to provide a performance comparison. The number of completed circuits that are excluded from the BCMR 2019 proposed market definitions is lower because of Ofcom's SMP assessment. Ofcom should also note the variance in guidance on categorising circuits that fall into the Central London Area (CLA) between the 2016 BCMR and this Consultation.

197. As shown in Table 1 below, by comparing results between the existing (Temporary Conditions) and new market definitions, performance against the QoS Standards slightly worsens for all measures, with the exception of the Upper Percentile measure, which remains flat.

198. Although the difference in performance is relatively small, for the Repair and Certainty QoS Standards in particular, small differences can be significant in terms of compliance performance. In consequence, Ofcom should note this effect when specifying the levels of the QoS Standards.

[50] Summary of Openreach's current position on Ethernet QoS, 20 July 2018, paragraph 180.
[51] BCMR Consultation, 2 November 2018, page 10, Table 1.1.

Table 1 – [✂]

	MTTP	Upper Percentile[52]	Certainty	Certainty-Crosslink	Repair
[✂][53]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂]	[✂]	[✂]	[✂]	[✂]	[✂]
[✂][54]	[✂]	[✂]	[✂]	[✂]	[✂]

Summary

199. Openreach is broadly supportive of Ofcom's proposals for QoS Standards, in the sense that their continuation will provide regulatory certainty in the period up until the Integrated Market Review comes into effect.

200. However, there are aspects of Ofcom's proposals that are not acceptable to Openreach, and go beyond what an efficient operator would be able to achieve or what are needed by the market. In particular, we do not agree with Ofcom's proposals for the year 2 QoS Standards for Upper Percentile and Certainty. We also disagree with the proposal to introduce QoS Standards for the proposed dark fibre remedy. Openreach requests that Ofcom reconsider its proposals in light of the evidence and information provided above.

[52] Based on orders that take more than 138 days to complete.
[53] [✂]
[54] [✂]

5. Ofcom's proposals for KPIs and transparency of QoS performance

201. In this section Openreach provides comments on the KPI obligations that Ofcom have proposed, both in terms of the measures themselves, the logic to calculate performance and the reporting criteria. We also provide some early feedback on the proposals for a quarterly report on tails performance, as well as some additional comments on public KPIs and system development timescales required as a result of Ofcom's proposals.

202. Openreach generally supports Ofcom's proposals on KPIs and shares Ofcom's views about the importance of transparency. That said, we consider that the proposals set out in the consultation may be onerous and we are not convinced that providing all of the proposed information in every case will be useful to Ofcom.

203. In its consultation, Ofcom cited three main areas for requiring Openreach to provide KPIs:

    i. To monitor delivery performance against the QoS Standards;
    ii. To monitor delivery performance in areas that are not linked to a QoS Standard; and
    iii. To monitor delivery performance between BT and non-BT customers with a view to understanding whether there are any discriminatory behaviours.[55]

204. Openreach considers that these objectives can be achieved without the unnecessary and disproportionate number of variations Ofcom has proposed in this consultation. In this regard, we have sought to engage with Ofcom on the topic of KPIs to encourage a set of measures which are simple, meaningful and useful without creating the requirement to send excessive volumes of data each month which will not be used.

KPI measures

205. We welcome Ofcom's proposals to make the KPIs measures (i.e. the list of individual metrics) more effective and pragmatic, and acknowledge that Ofcom have taken some of our proposals[56] on board. For example, the inclusion of "open order" metrics (where the KPI is based on a particular activity undertaken during the month, not on the month the order was closed) demonstrates current performance and helps to remove the time lag. We do not consider that there need to be any more measures included to the proposed list.

KPI calculation logic

206. The calculation logic behind each individual KPI measure is vital and needs to be carefully considered in order to prevent measures becoming outdated by new delivery processes and to ensure that Openreach is able to fully capture instances of CP or end-customer related delay.

207. We have provided to Ofcom separately two lists of detailed technical suggested amendments in relation to the KPI logic set out in the draft Legal Instruments, which have been combined and appended to this response in Annex 4. These proposals include, for example, a suggestion not to require the reporting of KPIs by reference to the

[55] BCMR consultation, 2 November 2018, paragraph 15.120.
[56] As set out in our pre-consultation submission, 20 July 2018, Table 5:1.

deemed consent mechanism as Openreach seeks, via REP, to agree an alternative mechanism for date setting and delay management with industry.

Scope and reporting criteria

208. In this consultation, Ofcom has proposed that each individual KPI measure (for example "mean time to provide") be split by:

- Geographic Market
  - UK as a whole (minus CLA and Hull)
  - UK QoS standard areas
  - High Network Reach areas
- Product Market
  - CI Access BT Only
  - CI Access BT+1
  - Inter-exchange Connectivity
- Operational region
  - Northern Ireland
  - Scotland
  - Wales
  - England North
  - England West
  - England East
  - Unknown[57]
- Product type
  - EAD
  - EBD
  - Cablelink
  - WDM
  - Dark fibre[58]
- Provision Category
  - 1, 1.1, 1.2, 2, 2.1, 2.2, 3, 4, 4.1, 4.2, unknown[59]
- Internal or external customer
  - Orders placed by BT CPs
  - Orders placed by non-BT CPs
- Top 7 CPs by order volume + a notional "other" for all other CPs

[57] Where a circuit is categorised as "unknown" when broken down by the various splits, this is because the post code is not known or the order did not have a provision category allocated.
[58] If the proposed dark fibre remedy were to be mandated.
[59] The proposed KPI obligation requires Openreach to report against the provision categories allocated against the completed circuits in a particular month. Because the provision category for circuits is attributed at order placement, this means that this KPI could include historic as well as current provision categories. This complicates meaningful comparison over time.

209. For each measure this will mean providing Ofcom around 39 different figures on a monthly basis, not including the numerator or denominator. We are concerned that this will produce a number of measures which may be onerous to produce and which may not, in practice, be useful to Ofcom. As discussed below, we consider that a simplified list may be merited here and still provide Ofcom with the information it needs.

210. As emphasised in our pre-consultation submission, the KPIs required to be provided under the QoS SMP condition should enable Ofcom to understand key trends "*without heavy manipulation of the measures and being overly burdensome on either Ofcom or Openreach to manage.*"[60]

211. Notwithstanding the amount of data provided, when splitting down the level that Ofcom have proposed, there will almost inevitably be distortive impacts from splitting the data in so many ways. For example, providing a certain KPI metric for orders that were delivered in the High Network Reach (HNR) areas will be impacted by a lower overall order volume to the rest of the UK, but Ofcom is also proposing to require Openreach to provide a figure which averages across several different markets in the UK (the HNR areas are made up of Birmingham, Bristol, Edinburgh, Glasgow, Leeds and Manchester). We do not consider that this is likely to provide particularly insightful information into true underlying Openreach service performance in these areas.

212. Openreach is keen to ensure that the scope of the KPI data provided to Ofcom is proportionate, relevant and necessary information. Whilst we understand Ofcom's desire to monitor service performance in the newly proposed product and geographic markets, we do not consider that providing a metric in so many different ways is necessary or will support Ofcom's objectives.

213. It may therefore be pragmatic to reduce the scope of the KPIs. We would suggest that Ofcom could remove the split by provision category given that the lower and upper percentile metrics already exist and this measure is subject to change in any event, making consistent comparison problematic. We also consider that Ofcom could remove the top 7 CPs by order volume split, given that information is already provided on services provided to BT and non-BT customers, which already deals with concerns in relation to discrimination. In any case, we note that both of these KPIs do not meet Ofcom's own tests as referred to in paragraph 203.

214. Alternatively Ofcom could propose to require Openreach to report against all or some of the proposed splits on a quarterly (as opposed to monthly) basis. This would still provide the information that Ofcom needs to carry out its duties from a monitoring perspective.

215. Openreach would be willing to discuss this in more detail and to make a further proposal to Ofcom in relation to the appropriate final set of KPIs if helpful.

Quarterly tails report

216. Openreach is supportive of Ofcom's proposals to provide a tails report. Given the timescales associated with Ethernet tails, we consider that a half-yearly (i.e. 6 monthly) report could also be considered. If well specified, this

[60] Openreach pre-consultation submission, 20 July 2018, paragraph 117.

should help Ofcom to understand the drivers behind the orders that are the most complex and take the longest time to deliver.

217. We are keen to ensure, as with the rest of the reporting and transparency obligations, that the report is designed to be relevant, useable and proportionate. The report should not be disproportionately onerous to produce and should be necessary for Ofcom to be able to carry out their duties as a regulator. To this effect, we want to ensure that the report is effectively designed.

218. We have some initial considerations on the content and structure of the quarterly report and will engage with Ofcom further on a detailed proposal. Our preliminary views are that the report should balance the need for statistical evidence with a detailed narrative. This is because it is important to understand the conditions in which circuits are becoming tails, for example, the rate of demand, volume of completions, product mix etc.

219. The report should not be a review and explanation of why each order over 138 working days has become a tail. We do not consider that this would be a good use of Openreach or Ofcom's time. Instead, we consider that we can demonstrate key trends and complement this analysis with case study examples of problematic orders so that Ofcom can understand better the drivers behind complex orders from both analytical and narrative perspectives.

220. We consider that it may be more appropriate for this report to be signed off by the Managing Director of the unit responsible for delivering business connectivity services. This will not detract from the importance of the report.

221. We would suggest that discussion of this report is integrated into the existing cycle of meetings that take place between Ofcom, Openreach and the OTA2 to discuss all matters relating to Openreach service.

222. Openreach plans to make a more detailed proposal on the format and design of the tails report in due course and ahead of the Final Statement, and will engage with Ofcom on this topic further.

Dark fibre KPIs

223. Openreach is supportive of Ofcom's proposals on the provision of dark fibre KPIs. If imposed, the proposed dark fibre remedy will be new and we acknowledge Ofcom's desire to monitor performance. Openreach considers that Ofcom can obtain the required information and monitor performance concerns via this KPI obligation.

Public KPIs

224. Openreach is currently required to report against the QoS Standards on a public website. We are happy to continue doing this, and in fact we already voluntarily publish a large amount of additional information online. On this basis, we are broadly comfortable with Ofcom's proposals including the proposal to continue reporting on a quarterly basis.

225. However, we are not convinced of the real benefit of providing all the required information, given the way in which it is required to be reported. For example, not only are the measures themselves potentially confusing to an end-user, but the information is split in several ways. For example, it doesn't include the impact of customer delays and it doesn't include the more competitive areas such as the HNR area or CLA. If helpful, we would be happy to further

discuss this with Ofcom in order to ensure that the information presented is likely to be intelligible to its intended audience.

226. We believe that the additional publication of the tails KPI would be more appropriately reported at one of the industry forums, if its intention is to be focussed at CPs.

227. Openreach notes that it is intending to conduct a review and refresh of the KPIs available on the Openreach website, to update the design and user experience. We will be engaging with Ofcom in relation to this in due course[61].

Communication Provider reports

228. Openreach agrees with Ofcom's proposals to remove the obligation to provide individual CP reports. CPs already receive a large amount of data and KPI information and this report will not contribute any significant additional value to individual CPs, given the differences in regulated markets that Openreach is required to report against (for example where non-SMP areas are removed).

Timescales needed to deliver the KPI proposals

229. Openreach would like to take the opportunity to remind Ofcom that it takes time to make the necessary changes to Openreach's IT systems to ensure that Openreach is able to accurately record and report performance. It will be necessary to build, code, set up and test the measures for the new QoS Standards and KPIs which have been specified. This also extends to the new geographical market definitions which need to be included within the system.

230. As previously articulated, this change is expected to take between [✂] to complete, although if Openreach has the opportunity to accelerate this build it will do so. On this basis, Openreach will need enough time to build the new requirements.

231. Openreach requests that Ofcom confirms, in advance of the Final Statement being published, the final set of measures so that build can begin promptly. As with the 2016 BCMR[62] and Temporary Conditions Statement[63], Openreach will need to delay the first report publication in order to complete the activities outlined above. To this end, Ofcom should take this into consideration when setting its KPI obligations, in particular the date of implementation. Openreach will engage with Ofcom on this matter separately.

[61] This review relates both to business connectivity and WLA review public KPI requirements.
[62] https://www.ofcom.org.uk/__data/assets/pdf_file/0029/74684/openreach-letter-bcmr.pdf and https://www.ofcom.org.uk/__data/assets/pdf_file/0026/69425/ofcom-letter-on-kpis-20160629.pdf
[63] https://www.ofcom.org.uk/__data/assets/pdf_file/0023/110696/letter-ofcom-openreach-bcmr.PDF and https://www.ofcom.org.uk/__data/assets/pdf_file/0024/110697/response-ofcom-openreach-bcmr.pdf

6. Ofcom's proposals for SLA and SLG arrangements

Summary

232. As set out by Ofcom in the Consultation, SLA and SLG schemes form an important part of the remedies that are in place to ensure that Openreach delivers appropriate QoS for Ethernet and other products.

233. Openreach notes that, according to recent independent benchmarking by WIK-Consult, the provision and repair SLA / SLG schemes that it already offers are the toughest in Europe.[64]

234. Openreach supports the continued SMP requirement for it to offer proactive SLA / SLG schemes covering Ethernet provision completion and fault repair for active products. Further, Openreach agrees that the SLA / SLG schemes that are subject to SMP obligations should be, in of themselves, set on fair and reasonable terms and conditions.

235. The main SLA / SLG schemes covering Ethernet provision and repair were set following regulatory intervention in 2008[65], and have remained in pretty much the same form ever since, in terms of both the structure of the SLA, and the quantum of the SLG.

236. Openreach considers that it is now time to review certain aspects of the SLA / SLG schemes in order to bring them up to date. Given this, Openreach supports Ofcom's proposal to remove the 2008 SLG Direction, and instead include elements of it in Openreach's RO conditions. This approach will help provide the flexibility needed to amend the existing schemes where necessary.

237. In particular, there is an urgent need to change certain aspects of the structure of the provision SLA in order to facilitate delivery process improvements / delivery of the REP programme that is being negotiated with industry.

238. Further, Openreach continues to believe that the quantum of the Provision SLG is punitively high, and is set well beyond any reasonable assessment of an average CP's pre-estimate of loss (PEOL). Openreach notes Ofcom's comments in relation to the earlier OTA2 facilitated negotiations on the Ethernet Provision SLA / SLG scheme, and welcomes its thoughts on certain costs (brand/reputational damage and delay management) that were claimed by certain CPs during the previous negotiation process.

239. Openreach is generally in agreement that the OTA2 facilitated process for making changes to SLA / SLG schemes has worked well, and should be rolled forward. That said, recent experience of using this scheme suggests that tweaks are needed to maintain its effectiveness. In particular, the scheme should not allow either Openreach or CPs to frustrate progress by unreasonably extending discussions beyond the normal 6 month period allowed, and further it should be explicitly recognised within the terms of the scheme that both CPs and Openreach are able to table amendments to SLAs / SLGs via the scheme.

[64] See Annex 2.
[65] See https://www.ofcom.org.uk/__data/assets/pdf_file/0020/33617/statement.pdf

240. Finally, in relation to Ofcom's SLA / SLG proposals for the potential dark fibre remedy, whilst we agree with Ofcom's proposals for Openreach to include SLAs and SLGs within its RO for provision and repair, these should only come into force after a suitable 'bedding-in' period. Openreach consider that a period of 6 months after the launch of the proposed dark fibre remedy will provide a sufficient time period and the necessary volume of orders to enable Openreach and industry to monitor performance and agree suitable metrics.

241. Openreach provides further commentary on each of these matters below.

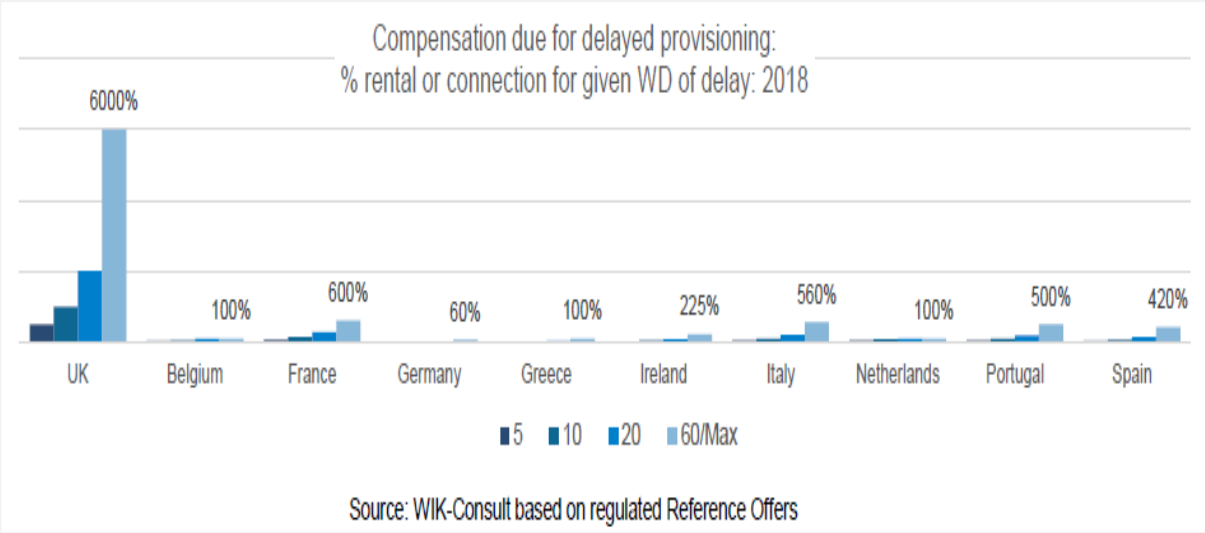
Recent QoS benchmarking analysis, including review of Openreach's SLA/SLG schemes

242. Openreach recently commissioned WIK-Consult to undertake a QoS benchmarking study which included analysis of Ethernet Provision and Repair SLA / SLG schemes across various European nations.

243. The WIK-Consult analysis, which is set out in full in Annex 2 to this response, demonstrates that Openreach is subject to the toughest QoS regime in Europe, and in particular:

- The quantum associated with the Fault Repair SLG for extended fault repairs is the highest within the sample;
- The quantum associated with the Provision SLG is by a very significant margin the highest within the sample;
- A common feature of the ROs across European comparators is the ability to distinguish or differentiate between lead times for circuits with differing degrees of delivery difficulty;
- The SLAs associated with the Fault Repair and Provision schemes are also very competitive; and
- Openreach is unique in being subject to onerous SLA / SLG schemes and significant additional regulatory remedies in the form of QoS Standards.

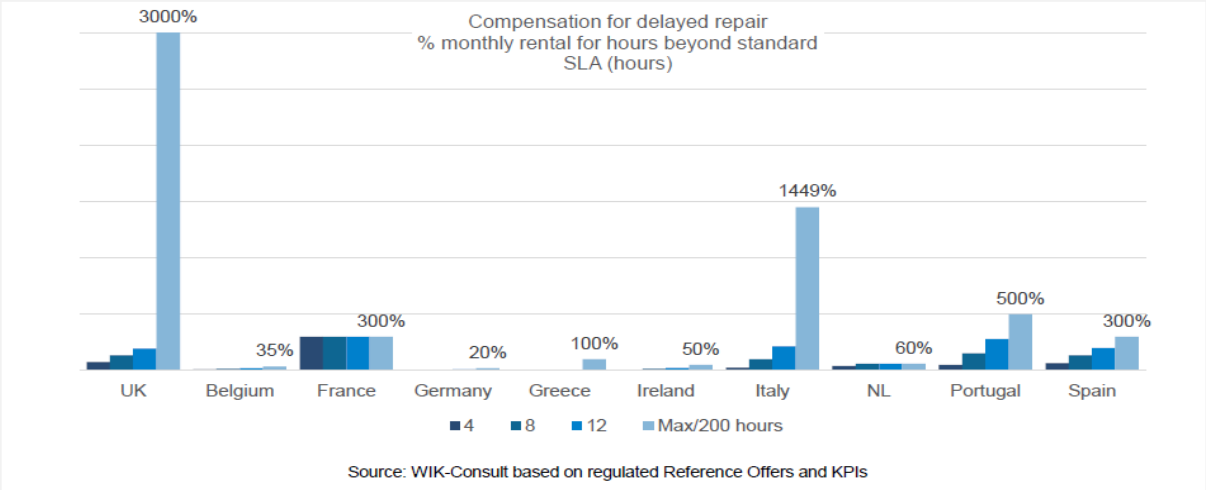
Figure 18 - Benchmark of the Provision SLG quantum



244. As shown in Figure 18, the amount of compensation due under the Openreach Ethernet Provision SLG scheme is the highest within the benchmark, irrespective of whether the service is delivered a few or many days late.

245. In fact, the level of the quantum required in the UK is so far away from any other proactive scheme as to suggest that this is a punitive arrangement that has not been based on any proper assessment of PEOL. Further comments on this are set out below.

Figure 19 - Benchmark of the Repair SLG quantum



246. As shown in Figure 19 the amount of compensation due under the Openreach Ethernet Repair SLG scheme is among the highest in the benchmark for services that are delivered a few hours over the SLA, and becomes, by some significant distance, the highest within the benchmark when significant delay is experienced.

247. As noted, the WIK-Consult study also sets out that the "*UK is unique amongst the countries benchmarked, in that it is subject to a detailed set of QoS regulatory remedies that go beyond SLA / G arrangements.*"[66]

248. The WIK-Consult study clearly shows that Openreach faces the toughest regulatory regime in Europe in relation to QoS remedies. Further, the study shows that certain features of the regulated SLA / SLG schemes, in particular the quantum for the Ethernet Provision SLG, are set at levels that are way beyond the arrangements offered elsewhere in Europe.

249. Openreach considers that this study offers useful context and should be taken into account as part of any review of the current SLA / SLG arrangements. In particular we consider that:

- The analysis shows that the existing SLA / SLG remedies that Openreach is subject to are already very tough, particularly when considering that they are uniquely combined with an additional set of regulatory remedies in the form of comprehensive QoS Standards and KPIs;

[66] See Annex 2.

- The sheer disparity apparent in the level of the Provision SLG quantum calls in question how reasonable the existing level really is; and
- The approach being taken by Openreach in the REP programme in relation to the setting of lead times (and in consequence the structure of the Provision SLA), where we are seeking to move away from the "30/57 working days unless subject to deemed consent" environment that we have today to a simpler, clearer model for setting and moving dates, is consistent with the approaches taken by other European incumbents, where there is universal recognition of the need (in both contract and regulation) to differentiate between circuits based on how difficult they are to deliver.

Re-imagining Ethernet Provision and the need to change the Provision SLA structure

250. As noted by Ofcom in its Consultation, since July 2018 Openreach has been engaged in discussions with industry about implementing a set of changes to the way that Ethernet delivered under the auspices of the REP programme.

251. Openreach discusses the REP programme in more detail in Annex 5, but in summary it is being proposed as a means to further improve the service that is offered to end customers who purchase Ethernet services by improving the delivery processes that are utilised by Openreach and CPs. As such we consider that this is an important programme, and that Ofcom should set up the regulatory framework in such a way as to (a) recognise its existence and (b) where appropriate, facilitate (or at the very least, not impede) its implementation.

252. One of the fundamental improvements proposed in REP is to move away from the current model, where the initial CDD is set, then moved when subsequent delays occur. This is clearly a very important consideration that is directly connected to certainty of delivery (in terms of both initial CDD and any subsequent date movement) which CPs and end customers cite as a major element of what they require in terms of Ethernet QoS.

253. As Ofcom is aware, the current contractual processes for managing the setting of the initial CDD, and then making any subsequent changes to the CDD set, is based on a contractual lead time of either 30 or 57 working days[67] combined with a deemed consent regime that permits Openreach to move the CDD in specified circumstances.

254. Openreach believes that this process for setting and changing provision dates is itself now out of date and should be replaced. In its place we are proposing, through REP, to deliver a process that moves away from a fixed 30/57 "subject to deemed consent" approach to a process that allows (a) Openreach to consistently set more realistic initial CDDs, combined with (b) moving away from deemed consent to a much cleaner and less complex rule set for date movement once the CDD has been set, thereby enabling more effective, predictable and clearer communication about date movement through the entire order journey.

255. As a precursor to their delivery, the REP proposals on date setting therefore require the removal of the current 30/57 days lead time and deemed consent provisions. Given that the 2008 SLG Direction currently includes the specific requirement on Openreach to obtain consent from the CP to set a CDD of greater than 57 days, this specific obligation needs to be removed in order to facilitate a central element of the REP improvement programme.

[67] For CPs that opted out of the Differentiated Order Journey Cat 2.1 legacy order process, only 30 days subject to deemed consent applies.

256. In this regard, Openreach fully supports Ofcom's proposal to remove the 2008 SLG Direction and instead require Openreach to include certain requirements in the RO condition for Ethernet services.[68] In particular Ofcom's proposal here:

- Will ensure that the regulatory aspects of the SLG obligations will not act as an impediment to the improvements, including in relation delivery certainty, associated with the REP programme;
- Will in no way dilute the strength of the SLA / SLG regime, noting that any new scheme that is put in place and subject to regulation would itself need to be agreed via due process, and would need to be implemented under fair and reasonable terms and conditions; and
- Is wholly consistent with the recent approaches taken by Ofcom to regulated SLA / SLG arrangements in the 2017 Narrowband Market Review (NBMR) and 2018 WLA, where Ofcom has maintained a strong regulatory remedy but provided more freedom for Openreach and CPs to make changes to the schemes via a process of facilitation which is itself subject to regulatory oversight. Openreach notes that the implementation of this approach in the NBMR and WLA markets has in no way led to a subsequent dilution of the strength / effectiveness of the SLA / SLG remedies in either of these markets.

257. It is important that Ofcom's proposals in relation to the 2008 SLG Direction and RO come into effect promptly, to remove further risk to timing of programme implementation. Of particular urgency is the ability for changes to be made to the SLA structure (i.e. the current 57 days subject to CP consent requirement).

The Provision SLG Quantum

258. As noted by Ofcom in the Consultation, between July 2016 and January 2018 Openreach and industry, under OTA2 facilitation, engaged in lengthy negotiations about making changes to the Ethernet Provision SLA/SLG scheme. Ultimately those negotiations foundered on the issue of SLG quantum.

259. Openreach remains of the view that the current Provision SLG quantum is set at punitively high levels. In particular we consider that the cost analysis that was conducted during the (ultimately failed) negotiations shows that the quantum is set well beyond any reasonable assessment of average PEOL.

260. The massive disparity in the level of the SLG provision quantum between the UK and all other European incumbents apparent in the WIK-Consult analysis also calls into question the accuracy of the basis on which the level of the quantum was first set in 2008.[69]

261. In Openreach's view, the Provision SLG quantum is so unjustifiably high that it risks introducing perverse incentives; [✂] even if those changes are progressive and likely to lead to better service outcomes for end customers.

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[68] See BCMR Consultation, 2 November 2018, paragraphs 15.142-15.146.
[69] In the 2008 Direction, Ofcom set the Ethernet SLG quantum of one month's line rental per day beyond by SLA partly by reference to the existing provision quantum that existed at the time for other Openreach products such as LLU and WLR. See paragraph 6.18 of https://www.ofcom.org.uk/__data/assets/pdf_file/0020/33617/statement.pdf

262. [✂]. Given this, we believe that changes to the quantum are likely to require some form of regulatory intervention by Ofcom. In this regard, we note the comments made by Ofcom on the previous negotiations, and the initial commentary laid out about the types of cost that proved to be key points of disagreement between Openreach and certain CPs.

263. Notwithstanding our comments on the existing SLG quantum, Openreach recognises that the SLG quantum can be an emotive subject that is likely to meet significant resistance from a number of CPs. In an attempt to be pragmatic, Openreach therefore considers that in terms of sequencing, making changes to the structure of the SLA should come ahead of further discussions with industry / OTA2 and Ofcom on making changes to the quantum of the SLG (we consider that these two issues are separable).

264. Once issues relating to the structure have been dealt with, Openreach will want to move discussions onto the matter of the quantum.[70] In our view, such a discussion would need to be focussed in nature, for example on an updated review of the likely costs to form a sensible estimate of average PEOL, and need not automatically go via the normal 6 month process which, in our view, could be used by CPs to inappropriately frustrate progress being made. We also note that Openreach and CPs have already discussed the matters relating to the quantum for significantly longer than 6 months already, and so it should not be necessary, or efficient, to re-run that process again in full.

The SLA / SLG negotiation process

265. Ofcom is proposing to roll forward the current regulatory framework that is used for the negotiation of SLA / SLG schemes (new or existing). This framework was first introduced by Ofcom in the 2014 FAMR, and since then has been applied to BCMR and WLA markets, with some minor refinements being made along the way to reflect learning gained.

266. Overall, Openreach considers that the framework has been successful since its introduction. In particular, the OTA2 has been effective in its capacity as an independent arbitrator, while the wider structure that is set out in the framework has provided much needed clarity and, in general, has helped discussions proceed more rapidly and predictably than had been the case prior to the framework's establishment.

267. That said, Openreach considers that Ofcom should continue to take any learning from how the framework has been applied in practice, and through this make necessary refinements to ensure its continued effectiveness.

268. In this regard Openreach has three main comments about the existing framework:

- Firstly, as currently written, the framework could appear to be in place solely for the purposes of CPs making changes to existing SLA / SLG schemes, or requesting new SLA / SLG schemes. In fact the framework is there to facilitate changes proposed by either CPs or by Openreach. This is quite proper given that Openreach may, for example, wish to update existing SLA / SLG schemes to align them with improvement programmes it is

[70] Ofcom appears to erroneously suggest at paragraph 15.144 that Openreach is currently in discussion with CPs about the SLG quantum, this has not been the case since the OTA2 closed down discussions.

deploying, or to challenge the terms of existing schemes that may have been historically set, but that now need review (such as the provision SLG quantum, as discussed above). In light of this, Openreach considers that it should be made explicit within the terms of the framework that the framework itself can be adopted in circumstances where either a CP or Openreach tables the original change proposal for consideration. In line with this, in circumstances where agreement cannot be reached, Ofcom should consider the case for its intervention on the merits of the case presented to it, irrespective of whether the original driver of the change was Openreach or the CP.

- Secondly, Ofcom has correctly set within the existing framework, a requirement for negotiations to normally be concluded within a 6 month timeframe ("Principle 3"). Openreach notes that the original intention of this requirement was to prevent Openreach delaying the introduction of changes to SLA / SLG schemes. In practice, however, given that it is right and reasonable for Openreach as well as CPs to be the instigator of change, this Principle should also exist to prevent CPs from unreasonably delaying discussions on matters that they do not support. Openreach considers that learning needs to be taken from the recent, and very extended, negotiations on matters relating to the Ethernet SLG quantum. Specifically, its needs to be emphasised that extending negotiation discussions beyond the 6 month window should only be allowed in very specific circumstances.

- Thirdly, in circumstances where discussions haven't reached agreement having been through the negotiation framework (such as in relation to the SLG quantum), in circumstances where Ofcom sought to resolve matters through some form of intervention, that intervention should build on the learning taken from the previous discussions, and should not start from scratch.

269. In relation to the structural changes to the Provision SLA that are required to support delivery of the REP programme (as outlined above), Openreach considers that it is right for Ofcom to consider that those discussions commenced via Openreach's engagement with CPs, that started in the summer of 2018. Openreach does not consider that these specific changes need be subject to the negotiation framework since they meet Criterion 1 of that framework in that they are already subject to separate consideration via a process which is itself proper and subject to oversight.

7. QoS costs

270. Ofcom should not assume that the proposed QoS Standards will not incur significant additional costs.

271. Openreach has previously set out to Ofcom the many transformational initiatives that have led to substantial improvements across all of the QoS Standards, particularly the Upper Percentile and Certainty measures. However, we believe that the impact of those initiatives will have diminishing returns in the future due to the substantial improvements already observed. Due to the nature of the issues which cause an impact to Upper Percentile and Certainty (i.e. traffic management, unexpected civils and wayleaves), future improvements are relatively "inelastic" as majority of the higher impact improvements have already been implemented. Without additional significant costs, a further step change in performance is not likely to be possible, and customers may not feel that further improvements are necessary, particularly if they come with an additional cost, in any event.

272. The business connectivity market, and therefore the products to which these QoS Standards apply, are very different to the WLA market. This is in terms of the volume of orders, the provisioning process activities, the workforce, pre-existing network and homogeneity of the product itself.

273. This means that in the WLA review there was more scope to assess the direct impact of service and cost on a reliable basis. This is because the majority of provision orders are the same for each product, they are shorter and don't require network build or rely upon a variety of different third parties to complete the work. These factors are often the opposite in the business connectivity market and so analysing the relationship between an increase in performance and the associated cost is more difficult and not as consistent.

274. As noted throughout this response, Openreach have launched and delivered a significant amount of transformational activities to improve Ethernet service delivery, but the effects of these initiatives is slowing. This suggests that a more radical approach is required in order to deliver a step change in service delivery – if this is in fact what Ofcom and industry want. This is the reason for the development of the REP initiative detailed elsewhere in this response.

275. Openreach considers that it is operating at a more efficient level, which is demonstrated by performance beginning to flatten out. [✂].

276. Further, additional resource would ultimately lead to higher costs with a subsequent impact on price in the long term. This may not be in the interests of CPs or end-customers, and in any case, we are being told by CPs that service is good enough, [✂]. Evidence of CP views is provided in section 10 of this response.

8. QoS SMP condition

277. We support Ofcom's proposal to impose a QoS SMP condition, with QoS obligations imposed by the relevant directions. This provides Ofcom with the ability to make changes to *ex ante* remedies during the period of a control, should this be necessary. Given the level of unpredictability that is evident (for a variety of reasons) in this market, this arrangement is sensible and pragmatic.

278. Ofcom should be ready to make use of the flexibility afforded in circumstances where this is needed. We note that there is precedent for Ofcom making changes to a QoS direction in the FAMR.[71]

279. We have noted throughout this response the multiple factors that could lead to a necessary review of the *ex ante* remedies that Ofcom imposes. Openreach also recognises that Ofcom could use this facility in order to tighten or increase QoS remedies in circumstances where Openreach performance meant that this was objectively justifiable.

280. Notwithstanding these considerations, it is clearly preferable that Ofcom minimise the need for interventions down the line by specifying reasonable *ex ante* remedies at the outset. Taking due account of the wider environment that Ethernet is delivered in (as discussed in detail earlier in this document) will help in this regard.

[71] https://www.ofcom.org.uk/__data/assets/pdf_file/0016/94300/Further-QoS-Statement.pdf

9. QoS regulation in 2021/2022 and beyond

281. Openreach considers that it is right to start thinking now about what the right regulatory framework will be to regulate QoS from 2021/2022 and beyond i.e. after the period covered by this Consultation.

282. Although not strictly within the scope of the current BCMR Consultation, Openreach sets out below some early and high level considerations on this matter, and looks forward to discussing and developing this topic further with Ofcom and other stakeholders in due course.

283. The comments provided in this section relate to the forthcoming Integrated Market Review rather than just services covered by the current BCMR.

Background – the evolution of QoS remedies

284. Ofcom's approach to regulating the QoS offered by Openreach has evolved over time, and has become a very significant part of the regulatory remedies that are currently imposed in all the major markets in which Openreach operates (BCMR, WLA and NBMR).

285. When Openreach was first created in 2006, Ofcom relied on specified Service Level Agreement and SLA / SLG schemes combined with Equivalence of Inputs (EOI)[72] and transparency obligations including KPIs as the remedies that would incentivise Openreach to deliver acceptable QoS into the market.

286. In the 2014 FAMR, Ofcom concluded, following a period of time in which Openreach's QoS for Wholesale Line Rental (WLR) and Metallic Path Facility (MPF) had often been inadequate, that the existing QoS remedies (that were in existence at that time) were inadequate. Given that Ofcom also concluded that inadequate QoS was likely to lead to negative consequences for competition and consumers, they determined that the QoS remedies needed to be augmented.

287. The main changes that Ofcom made in 2014 were to:

- Introduce Minimum Service Levels (MSLs – now referred to by Ofcom as "QoS Standards") covering different aspects of provision and repair as a new SMP remedy targeted specifically at improving QoS on a sustainable basis;
- Introduce a process for negotiating new SLA / SLG arrangements, in which the OTA2 was given a significant independent facilitation role; and
- Expand the transparency obligations in place, to include a greater number of KPIs and, for the first time, introduce certain KPIs that were targeted at the public, rather than for the consumption of Ofcom or CPs.

[72] The theory of using EOI obligations to incentivise acceptable QoS was that Openreach would not want to negatively impact other BT Line of Business by offering them inadequate QoS.

288. The 2014 FAMR therefore represented a very significant expansion of the regulatory remedies that were put in place to ensure that Openreach was offering adequate levels of QoS on a sustainable basis.

289. Ofcom has since extended the approach to QoS taken in the 2014 FAMR in subsequent market reviews:

- In the 2016 BCMR Ofcom imposed a detailed set of MSLs for the first time in this market, together with adopting the SLA / SLG negotiating framework and a broader set of KPIs (including public KPIs) similar in intent to those first imposed in the 2014 FAMR. The QoS remedies imposed in the 2016 BCMR were then rolled forward in pretty much the same form in the Ofcom Temporary Conditions Statement of 2017.

- In the 2018 WLA Ofcom expanded the MSLs first imposed in the 2014 FAMR to also cover GEA-FTTC. In addition, Ofcom imposed additional MSLs to cover repair 'tail' performance, and dialled up the targets associated with some of the MSLs.

290. In other major reviews, for example the Strategic Review of Digital Communications in 2016, Ofcom also emphasised the importance of QoS as part of a well-functioning markets.

291. In the current BCMR Consultation, Ofcom is proposing a similar framework to that first imposed in BCMR markets in 2016 with some refinements such as increasing the target levels for the MTTP QoS Standard, revising the KPIs and removing the Lower Percentile QoS Standard.

292. In summary, there has been a very significant change in recent years in the regulatory landscape that relates to Openreach QoS. Specifically QoS has gone from being a relatively minor issue to "front and centre" of regulatory policy, and is now subject to very detailed regulatory remedies across all major markets in which Openreach is active.

293. In fact, as shown in the WIK-Consult benchmarking study 2018, set out in full in Annex 2 to this response, Openreach is now subject to the most detailed set of regulatory remedies for QoS in Europe.

Current situation, and different regulatory models for consideration

294. Ofcom's proposals mark a continuation of the very detailed QoS remedies that it has progressively introduced since 2014. Indeed, in this area, the UK is now the most heavily regulated nation in Europe.[73]

295. Openreach accepts that the massive rise in regulatory intervention in relation to QoS has in no small part been caused by periods of history when it has offered unacceptable levels of QoS in key markets, and that Ofcom intervened having concluded that earlier regulatory remedies were inadequate.

296. Openreach also accepts that QoS is of great importance to CPs and end-customers, and that the detailed remedies imposed by Ofcom in recent years have played an important role in helping to ensure that Openreach delivers consistently good levels of service, for the good of the market.

[73] See Annex 2.

297. In this context, and noting that the BCMR period that is the subject of this Consultation will only be in place for 2 years, Openreach considers that maintaining the existing QoS remedies framework, made up QoS Standards, SLAs / SLGs, plus transparency obligations, is pragmatic.

298. That said, Openreach also considers that, in addition, it is right to start thinking now about what the regulatory framework for QoS should look like in relation to the period beyond that covered by the next BCMR, i.e. covering the period where Ofcom is currently proposing a 5 year control known as the Integrated Market Review that will cover a number of existing markets including BCMR, WLA and NBMR.

299. Openreach would like to commence this discussion with Ofcom (and industry), and accepts that this is likely to be outside of the scope of this particular BCMR Consultation.

300. Our view is that automatically rolling forward the existing approach to QoS, which is in essence centrally controlled and relies on detailed remedies imposed by Ofcom, 2021/2022 and beyond, is not necessarily the right response, and that other regulatory models should be explored and may offer a better solution in the medium to long term.

301. In this regard, Openreach considers that the following factors merit further consideration and discussion:[74]

- Engagement between Openreach and CPs on matters relating to QoS is much improved and includes far more effective co-working to improve service for end customers (for example see the 'Garden of Eden'[75] work being undertaken) in addition to strong engagement on more day to day matters;
- Improved service and CP engagement are also reflected in significantly improved customer satisfaction results;
- Stronger industry processes are now in place to ensure effective oversight of QoS, including, but not limited to industry forums including the service forums and commercial groups;
- Regulatory processes such as the SLA / SLG negotiating framework that now exist in the BCMR and WLA markets, where Ofcom takes a "lighter-touch" approach, and allow Openreach and CPs to progress matters themselves in the first instance, with the prospect of regulatory intervention only when progress cannot be made, have proved flexible and effective;
- Openreach is now a more independent organisation, with an independent Board composed of a majority of independent non-executives, is operating processes per the Commitments, and is subject to high levels of ongoing regulatory scrutiny;

[74] Note, this list is provided for discussion purposes and is not intended to be exhaustive.
[75] Garden of Eden is a new approach to repair where we are focusing on fixing the customer reported issue (right time, on time, every time) and removing any blockers that may prevent us from doing that today.

- Openreach is delivering service improvements that are independent of the QoS remedies imposed by Ofcom. These include, for example, the approach to multi-skilling the field engineering force, imposing a regional structure to the Ethernet teams to enhance local accountability and proposing major service improvement programmes such REP. In a similar vein, delivering good QoS for its customers has become a key part of Openreach's strategy in the medium term, and is not limited to or constrained by exceeding regulatory targets;

- In recent years Openreach has been offering very good levels of service on a consistent basis across all main regulated markets; for example, to date we have exceeded all QoS Standards imposed in WLA markets (well over 100), and only narrowly missed one QoS Standard in BCMR markets (and even then there were strong mitigating circumstances for this). We are also currently offering in many respects best ever levels of service into both consumer and business markets, and this is broadly recognised by CPs;

- The market and regulatory landscapes are themselves undergoing significant change. In particular, over the term of the Integrated Market Review there is the prospect of far greater competition, including at an infrastructure level, facilitated in part by the introduction of uDPA from 2019. These conditions suggest that competition itself will provide powerful additional incentives on Openreach to deliver good QoS in order to remain commercially successful in an increasingly competitive environment; and

- The move to a longer-term regulatory control period that covers a broader and more complex set of markets makes it more challenging to set the "right" remedies on an *ex ante* basis, with an increased risk that the remedies become inappropriate over time as market changes (which may themselves be difficult to predict) occur.

302. With these considerations in mind, Openreach believes that it is right that Ofcom explores different approaches to regulating QoS such as to ensure that an optimised framework is put in place for 2021/22 and beyond.

303. Openreach considers that in future it may be appropriate to move away from a centralised "command and control" regulatory model that relies on Ofcom setting very detailed *ex ante* remedies such as QoS Standards ahead of the regulatory control period.

304. In particular, we consider that such an approach inherently lacks flexibility, and risks creating measures that become either inaccurate, disproportionate or irrelevant (or combinations thereof) over time, given underlying market changes. As noted above, the need for flexibility arguably becomes more pressing in circumstances where the regulatory control period is longer in duration, and where changes in the markets covered by that regulatory control are more difficult to predict, given their scope and complexity.

305. Openreach considers that the model for driving QoS Standards on a sustainable basis, for the good of the market, is likely to be most effective when it relies less on Ofcom trying to specify what good or acceptable QoS looks like via imposition of centrally imposed *ex ante* remedies, and more on a model of direct engagement between Openreach and CPs (as the stakeholders that are closest to the end customers, and most in tune with their requirements), against which Ofcom retains oversight and the ability to intervene where necessary.

306. There are different, well established, regulatory models that should be examined in further detail to inform this discussion. For example, in the energy industry there is a well-established co-regulatory model that includes the following features:

    - The "Incentives of Connection Engagement" (ICE) process whereby the regulated bodies (the Distribution Network Operators or DNOs) are required to set their own targets and objectives, and to do this through a process of effective engagement with their key customers. The regulator Ofgem maintains significant oversight of this process – for example they decide whether the DNOs are meeting specified requirements on an annual basis, and have significant powers to impose remedies, including fines, on the DNOs where the required standards are not being met. However, the framework is one where the detailed specification of QoS and other considerations is set via a process of direct engagement between the DNOs and their customers.

    - The "RIIO"[76] is the charge control model which includes much more specific links to outputs, and incentivises DNO to deliver desired outcomes (such as customer satisfaction, for example), by linking these with financial rewards (but not penalties).

307. Other features that should also be examined is the role of an independent third party or adjudicator as part of a framework for delivering good QoS. For example, in the water industry "Water UK" is an industry body with no official affiliation to Ofwat (the regulator) which nonetheless plays an important role in addressing concerns on QoS and producing standards that stakeholders can expect from water companies in certain types of infrastructure build. Additionally, since 2015, Water UK has been reporting on levels of service achieved.

308. Openreach recognises that many stakeholders will be nervous about moving away from a framework that has in large part overseen a period of significant improvement in the QoS offered by Openreach. In particular, stakeholders will rightly want to understand that whatever framework is put in place will contain the necessary incentives and structures to ensure that Openreach QoS does not degrade to unacceptable levels in future. Openreach believes these concerns can be addressed via a different framework that is less reliant on Ofcom specifying detailed remedies, whilst accepting that very strong incentive properties that will prevent and deter unacceptable outcomes, will be an essential feature of any new framework that is put in place.

309. Openreach also recognises that under current regulatory arrangements there is an established link between QoS and relevant charge controls, and that re-casting this important feature would need to be carefully considered as part of any move to a new model.

310. Further information on different regulatory models and approaches is provided in the WIK-Consult study, provided at Annex 3 to this response. To note, Openreach is not at this stage recommending that an "off the shelf" alternative model that is suitable to the communications markets currently exists.

[76] RIIO stands for: Revenue = Incentives + Innovation + Outputs, where outputs include items such as customer satisfaction and safety.

311. However, we do consider that the future regulatory framework for QoS needs to move away from a model where Ofcom sets centrally controlled detailed remedies such as QoS Standards to one where Openreach and CPs are the engine responsible for specifying and tracking outcomes, including QoS, within a more flexible framework in which Ofcom retains significant powers, but only intervenes where required. In this regard, it is worth exploring other models that currently exist as part of the process for designing a regulatory framework for QoS that is likely to deliver the outcomes required including good levels of QoS delivered on a sustainable basis, high levels of customer satisfaction, innovation and investment.

312. Openreach looks forward to further engagement with Ofcom and other stakeholders on this important topic.

10. Customer feedback

313. Providing a good customer experience goes beyond hitting certain regulated metrics (including QoS Standards). Such considerations are clearly important, but are only a part of the things needed to meet the (increasingly demanding) requirements of CPs and their customers.

314. To help us assess that the QoS we are providing for Ethernet is at the right level, we have set up a detailed and systematic customer satisfaction (CSAT) process. This process focuses solely on how we are delivering Ethernet services, and so the feedback obtained is directly relevant to any consideration of Ethernet QoS[77].

315. In this section, we discuss the CSAT process that has been put in place, along with some of the results and insight that has been gained. At a headline level, the CSAT results that we are obtaining show that customer satisfaction has moved from very poor levels to good / very good (and improving) levels, and this shows that we have been focusing on the right things for our customers. Indeed, feedback from the surveys has helped to inform us what areas to focus on, and also indicates that most customers are now satisfied with the QoS levels that we are providing.

316. This is further strong evidence that Openreach has now transformed service from being inadequate to being very good across a range of factors, and while we are in no way complacent about this, Ofcom should take some comfort that there are now much stronger regular processes in place (such as the satisfaction survey) that going forward will ensure that there are continued incentives on Openreach to deliver consistently good QoS, quite independent of the regulatory remedies imposed. We also consider that Ofcom should take account of what CPs are saying via the survey, for example, it should not be the role of Ofcom to continue to simply "dial up" existing remedies in circumstances where recent detailed feedback from operational and commercial contacts in our customer base indicate that this is not a priority for them.

317. The first part of this section explains the purpose of the CSAT survey, used by Openreach and how information on the survey demonstrates how customers are satisfied with the level of service we offer. The second part of the section then discusses relevant output from the end customer Cartesian survey commissioned by Ofcom as part of the BCMR.[78] Annex 6 provides more detail on CSAT.

Customer Satisfaction Survey ("CSAT")

318. The CSAT survey that now operates on a monthly basis, was first set up specifically for Ethernet services a little over 2 years ago. As noted above the survey was set up in order to provide a regular check on whether we were meeting customer requirements in relation to Ethernet provision and repair, and to provide additional customer insight as to what their priorities were.

[77] Please note that Openreach also conducts other CSAT surveys on other aspects of its relationship with CPs, for example, covering other products.
[78] https://www.ofcom.org.uk/__data/assets/pdf_file/0009/113112/cartesian-business-connectivity-market-assessment.pdf

319. The survey is based on well-established industry CSAT processes and has developed since its inception to now include responses from [✂] of our CP customers that purchase Ethernet services. The CPs that contribute regularly to the survey represent a wide range of customer types (large, small, offering services to different end markets and utilising different channels to market), while the participating individuals are those identified by their organisation as appropriate to respond on the perception of their organisation. These individuals are those who have the best insight into what they need from Openreach in order to keep their own customers satisfied. This is therefore a very useful and relevant piece of insight that provides good quality feedback to Openreach on a monthly basis.

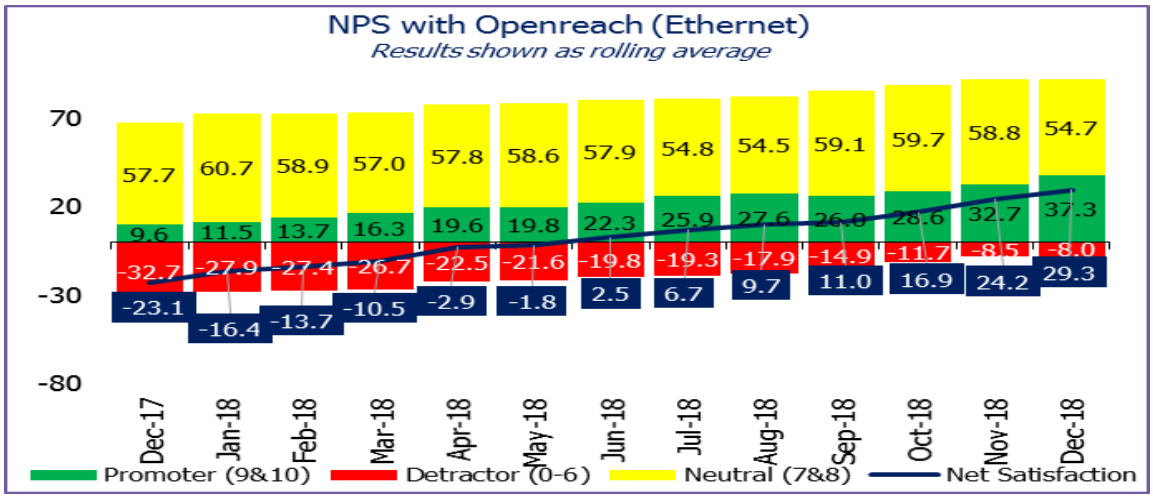
320. Openreach introduced the survey to ensure that the feedback can be acted upon. In addition to providing overall (market level) data, specific customer feedback is also provided to relevant teams within Openreach (for example sales and service relationship managers for responding CPs) who are then able to act on that feedback as required. This approach enables issues from the CSAT survey to be dealt with simultaneously at a customer and industry level as appropriate. Where industry level action is needed, Openreach uses the industry forums such as the Ethernet Service Forum.

321. The questions against which the customers use ratings to answer how Openreach are performing in a certain area are used to create a "Net Promoter Score" (NPS), for that respective area. Using NPS to measure customer perception is a well-established CSAT measure variant that reflects customer satisfaction. More information on NPS, along with further detail on output from the latest CSAT survey, is contained in Annex 6 to this response. Generally speaking an NPS that is positive is a good score, as this exhibits that there are more customers who are supportive than have a negative response.

NPS for Openreach (Ethernet specific)

322. As set out in Figure 20 below, Openreach has radically improved CSAT over time. For example, the overall NPS for December 2017 was -23.1% and by December 2018 the NPS had moved to +29.3%. The rating for December 2018, and the pattern of progress that is evident, demonstrate that our customers are generally now very pleased with the levels of customer experience that Openreach is now providing. For example, in the December 2018 survey, 92% of our customers rated us at 7 (out of 10) or higher for overall service. This shows that the majority of our customers are now more than satisfied with the overall service that we are providing for Ethernet.

Figure 20 – Openreach CSAT (Ethernet)



323. By assessing the surveys in more detail, it is clear that there are a number of important drivers for customer satisfaction (and dissatisfaction), including how reliable we are in providing the right levels of performance for provision and repair, but also how we engage with our customers. This latter factor is less more difficult to measure but very important, and includes, for example, aptitude with "softer skills" such as how Openreach representatives that deal with customers as part of their role talk to those customers. Such insight has been key to informing Openreach improvement initiatives. For example, we undertook a major training programme that was accredited by the Institute of Customer Service called "Every contact counts" (for the desk teams) and "Your Visit Counts" (for the field teams) in order to upskill customer conversation skills for all customer facing people in the Fibre and Network Delivery organisation.

324. The CSAT contains NPS ratings for a variety of different aspects that are important to customers. Provided below are two figures that summarise examples covering feedback on Customer Experience.

325. Both show encouraging performance:

- Figure 21 shows that, as with overall performance, NPS for customers experience has moved to what are now very strong levels of performance that are consistent with a highly satisfied customer base; and
- Figure 22 also clearly shows that customer consider that Openreach has continued to make improvements, and that in December 2018 around 80% of customers that responded felt that the customer experience was at good enough levels (or better).

Figure 21 - NPS for Customer Experience Management

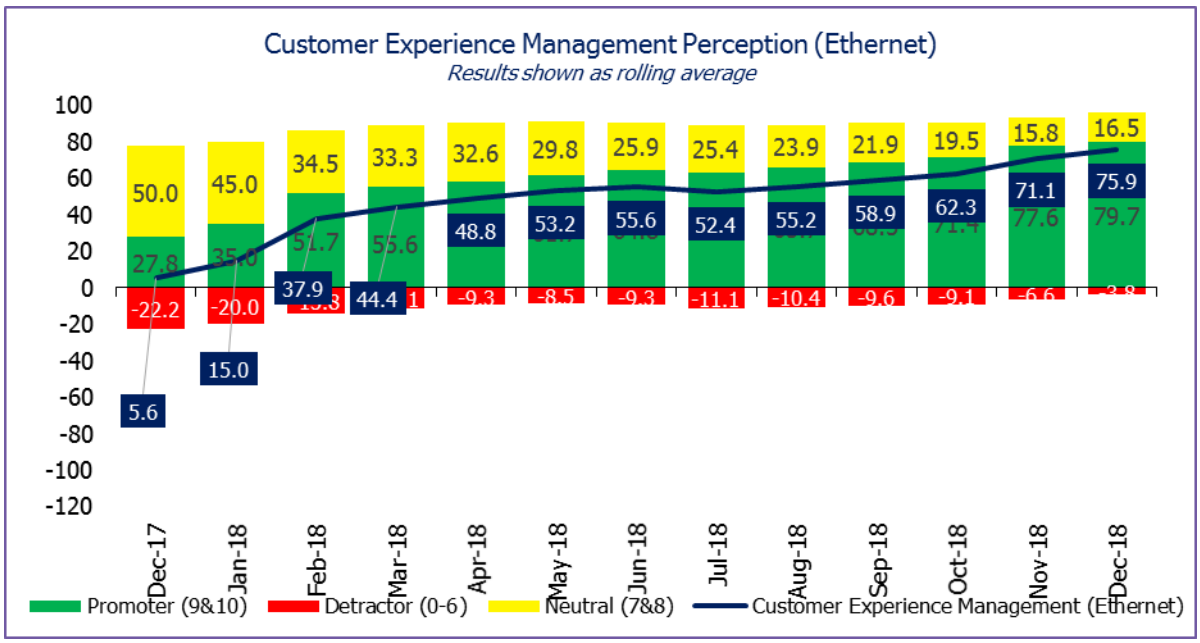
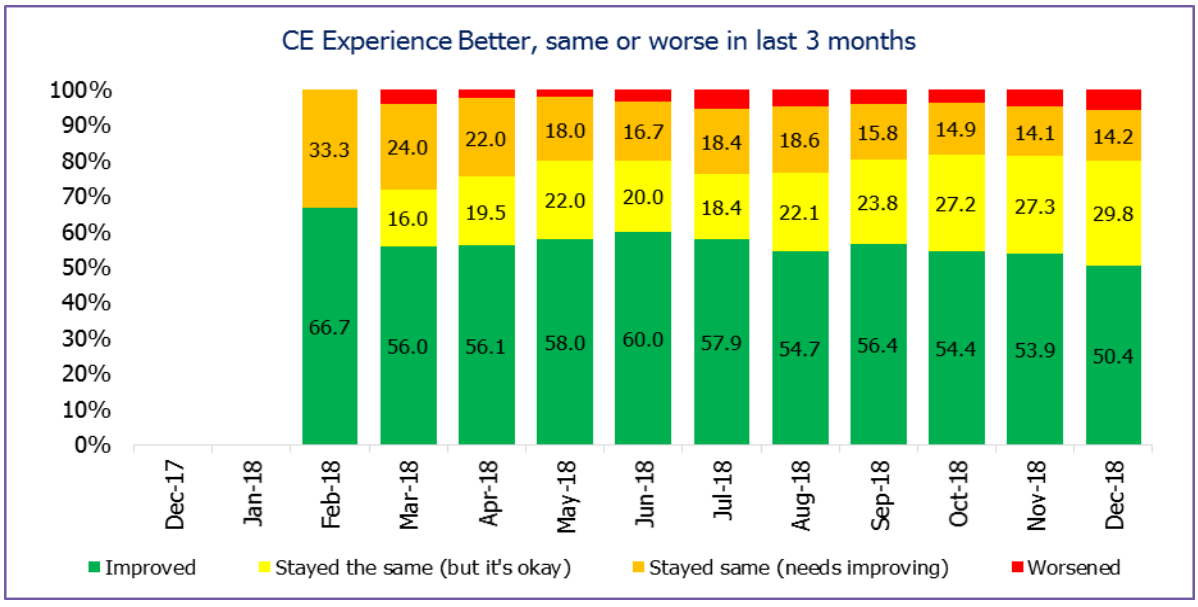


Figure 22 - Changes to Customer Experience



326. We are not complacent about these results, and we also consider that further marginal improvements to CSAT will in future will become more challenging as we attempt to move higher from already elevated levels of performance. These things said, we do consider that the CSAT results should be acknowledged by Ofcom given that they provide directly relevant insight and represent the most comprehensive research available currently available on what customers think about Openreach's QoS performance for Ethernet services. We are pleased that the overriding messages from the CSAT surveys are that Openreach is on the right track in terms of how it is performing, and that customers are in large part now satisfied (or very satisfied) with the levels of performance that Openreach is

providing. As previously noted, Ofcom should acknowledge this, and eschew an approach that simply tries to dial up QoS Standards, particularly in the face of direct industry feedback that customers are already satisfied with the service that Openreach is providing to them.

327. Finally, Openreach also considers that the detailed feedback contained in the CSAT reports should also give Ofcom the confidence that Openreach is proactively developing the level of improving QoS it offers to its customers, and that this is neither constrained by, nor limited to, exceeding regulatory standards.

328. In particular Openreach considers that the strength of processes that exist directly between Openreach and its customers, and that are independent of regulatory intervention, will be needed to facilitate a move to a different, more flexible, model for regulating QoS, as discussed further in section 9.

329. If helpful, Openreach can provide further detail to Ofcom, including verbatim comments from customers, which form part of the detailed CSAT information that we now hold.

Ofcom research: the Cartesian report

330. This section discusses the findings of the Business Connectivity Market Assessment, published on 29 March 2018, which was prepared by Cartesian and commissioned by Ofcom. The objective of the Cartesian Report was in part to identify any possible areas of concern for business consumers of fixed and mobile services. Consequently Cartesian interviewed 75 large UK enterprises and 16 business Customer Service Providers (CSPs – i.e. CPs) serving the UK market.

331. Based on the report, the causes of frustration for large enterprises included long lead times, delays, uncertain delivery times and lack of communication from the service providers. In this regard, Openreach is pleased that, for our part, we appear to be successfully addressing these particular areas of end customer concern. For example, lead times have dramatically improved (See Figure 15), while Certainty performance has also increased significantly (see Figure 13) and feedback from the CSAT surveys (above) indicates that our ability to communicate with our CP customers has also improved significantly. This is also a reminder that delivering good service to end-customers relies on both Openreach and CP inputs.

332. Given this, plus the detailed CSAT available on Openreach performance (as discussed above), Openreach considers that in evaluating market requirements for QoS, Ofcom should note both the end-customer (Cartesian) and the Openreach CSAT material. This will provide Ofcom with a more comprehensive understanding of what the market requires, in relation to QoS.

333. Openreach is pleased to note that the results from the CSAT survey tend to show that Openreach bucks trends seen across the telecommunications markets (as described in the Cartesian report). For example, contrary to the Cartesian Report, Openreach are proud to be offering good value for money on our fixed data services against the

trend of industry[79] and Openreach are pleased to be providing a good level of Ethernet provision[80] both based on responses from the CSAT report.

[79] Cartesian, Business Connectivity Market Assessment, 29 March 2018, Page 36, paragraph 6.23.
[80] Cartesian, Business Connectivity Market Assessment, 29 March 2018, Page 36, paragraph 6.24.

11. Next steps

334. Openreach welcomes further engagement with Ofcom on the matters raised in this response. We would like Ofcom, in its deliberations, to engage with the substance set out in this response (including annexes). Openreach can provide further information to Ofcom as required.

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A Statistical Analysis of the feasibility of meeting the Upper Percentile MSL

Background Paper prepared to assist in the formulation of appropriate MSL targets for Openreach

12 December 2018

[Executive summary only]

I. Executive Summary

Aims of Paper

1. It is broadly accepted by both Ofcom and CPs that over the past two years, Openreach has made very substantial improvements to the provision of Ethernet circuits and that the Minimum Service Level (MSL) regime[1], when viewed overall, has 'done its intended job'[2]. However, the setting of the Upper Percentile Limit (UPL) has proved to be problematic for a number of reasons and in essence there is not currently a common position between Openreach and Ofcom on the historic choice of 2011 as the baseline for setting this target nor how the minimum performance standard for UPL should be set[3].
2. Openreach has also argued that there have been long term changes which have tended to work against improvements in tail measures arising from an unfavourable circuit mix and changes in circuit complexity, for example from the requirement for acquisition of wayleaves.
3. In July 2018 Openreach provided Ofcom with a pre-Consultation submission which set out our thinking on the scope for future MSLs and KPIs[4]. In that submission we also indicated that additional analyses and work had been in train to guide the setting of proportionate and fair targets[5].
4. The purpose of this Paper is to provide Ofcom with new evidence to support the position that:
   - There have been underlying changes in factors affecting the delivery of circuits tending to make them more difficult.
   - The backlog did affect the preponderance of some of the factors of circuit complexity in 2016 but this does not detract from those longer term factors making circuit provision both more difficult and simultaneously more uncertain and thereby affecting tail performance.
   - The UPL will inevitably have a degree of uncertainty associated with its outturn which has nothing to do with underlying efficiency by Openreach in delivery of circuits.

Some relevant background facts

Implications of basing the MSLs on the Service Completion Date

5. The MSLs are based on closed orders and typically are set for a financial year. There is an issue here of some nuance which is that the mix of circuits in any year by Service Completion Date (SCD) i.e. the date on which the order is closed is then greatly affected by the orders actually placed in the *previous* year(s). Put another way, using completion statistics introduces an intrinsic bias to the results but the magnitude of this bias cannot be determined in advance. It is equivalent to a permanent 'backlog effect' which is irreducible.
6. It is shown in this Paper that the only situation in which the outturn measured MSL performance will have a property of statistical 'consistency' over time, is when the rate of orders is actually constant across both periods. Even where orders are trending consistently over both the previous and current period in either a positive or negative fashion, then the outturn distribution of orders completed by SCD will not be stable i.e.

[1] Now referred to by Ofcom as 'Quality of Service' standards.
[2] Ofcom November 2018 Consultation paragraphs 15.24-15.25.
[3] In this Paper UPL refers to the specific MSL Ofcom target e.g. that no more than 3% of closed circuits should take more than 118 days to complete. The descriptor of Tail' is a general label which refers to circuits that are intrinsically difficult to deliver. A mathematically precise explanation is contained at Annex 2.
[4] 'Summary of Openreach's current position on Ethernet Quality of Service' July 2018.
[5] Paragraph 3, paragraph 7 'better insight', paragraphs 37-46, paragraph 53.

precisely predictable and unvarying, or even comparable across periods. This will have ramifications for all the speed and certainty MSLs but especially for those associated with the tail.

Order volume and circuit distributions introduce further elements of complexity which are outside Openreach's control

7. There are a number of sources of uncertainty in any MSL period which will affect outturn and some of these are in Openreach's control and responsibility; but others such as the volume and the distribution of circuits by their intrinsic complexity are outside Openreach's control. The very fact that there is variation in the rate of order intake means that the outturn for all MSLs is going to be within a statistical range. This is on top of the intrinsic bias mentioned above from using closed circuits, many of which will have been opened in the prior period(s).
8. Over time Openreach has evolved its own system of classifying circuits for operational reasons. One implication of this development is that it is not now possible to track circuit complexity on a consistent basis prior to 2016 due to changes in the categorisation system.
9. Openreach has recently developed its forecasting of MSLs using a sophisticated set of models described as an End-to-End (E2E) model structure i.e. it looks at plausible achievement taking account of orders already in train and possible future demand[6]. This Paper makes use of this model to illustrate some key points about the tail MSLs and to show that outturns will only be predictable within certain ranges.

There is a trade-off between tail positioning and its precision

10. Here there is a distinct trade-off to be determined: the more that the tail MSL focuses on a smaller cohort of circuits the proportionately less certain the outturn will be against those minimum level targets. Setting values which are very onerous therefore implies that Openreach could fail the MSLs due to factors outside its control. This is in addition to inherent uncertainty in the outcomes of tail measures in any case.
11. It should be noted that focussing first on the particular number of days to define a 'tail' and setting a percentage failure rate, or alternatively setting a failure rate first and then picking a point in the tail - are effectively equivalent. This means that the uncertainties and flaws on one will inevitably be mirrored in the other.

Paper Outline

12. There are a number of distinct issues here which each merit separate consideration as well as explaining how they inter-relate to each other. The following text summarises the contents of each Section which solely address the construct of the UPL measure. However, its learnings have a broader implication, in particular vis-à-vis the Certainty MSL, which we will set out in our main response to the consultation.
13. Section II: Trends in circuit complexity. When comparing performance for example in 2016 with 2011, the challenge is to take out the role of backlog circuits which built up over the prior few years as by definition these are the ones most likely to have complex requirements in provision. To take out backlog effects, the trends in circuit features are computed on the basis of 'Order Validation Date' (OVD) as well as on a completion basis (SCD). This allows monitoring of circuit complexity in 'real time' which in effect is a current or forward-looking view rather than SCD which by definition has to be backward looking. Trends are also presented

[6] Annex 1 provides a detailed description of this model.

which distinguish according to the degree of rurality of the circuits and also separately whether they are used for mobile backhaul.

14. Section III: Analysis of historic variation in growth rates. The fact that the MSLs are on closed orders means that the impact of the volume and nature of orders placed in the period prior to the target period will necessarily have a distorting effect especially on the UPL measure. This Section sets out the historical evidence on how order intake rates have fluctuated since Ethernet was first offered as a product back in 2004. The Paper presents evidence on the impact of this variation in order intake on Time-To-Provide (TTP) MSLs in three ways: empirically; using statistical simulation; and using precise mathematical modelling.
15. Section IV: Achievable performance in 2016. The potential failure to meet an SMP condition may have serious reputational and financial implications for Openreach. Openreach and its consultants had provided some analyses which indicated that in 2016 it was unrealistic for Openreach to meet the UPL, even if the backlog had not been present and underlying delivery performance in 2016 was at least as good as in 2011.
16. This Paper computes the relevant calculations in a different fashion and comes to a similar conclusion on achievable performance. The methodology is to take actual orders going back to 2014 and apply the performance standards of 2018 allowing for complexity in different circuits. This demonstrates how an efficient operator would have delivered these same orders and enables us to calculate the MSL results that an efficient operator might have achieved.
17. Section V: The treatment of complexity and the E2E model. This Section sets out the basic operation of the E2E model using the current set of order categorisations and how statistical simulation can take account of variation in overall growth in demand and complexity in circuit provision. These can be proxied by differences in the proportions of different circuit types. The impact of circuit growth and complexity are first shown as separate effects even though in practice they will vary simultaneously and a combined scenario is provided.
18. Section VI: Specific simulations of achievable performance against the UPL. This Section develops the scope of the simulations to contemporaneously vary growth and complexity and does so by a series of scenarios which emulate the forecast UPL for the period 2019-20. This period is chosen as it can demonstrate the full effect of uncertainty in the UPL unaffected by any period where outcomes are already established i.e. performance is already known for earlier periods.
19. A series of four Annexes provide further background information:
    - Annex 1 provides a more complete explanation of the E2E model.
    - Annex 2 provides a mathematically precise explanation of the bias problem from using MSL targets based on circuit completions rather than (for example) circuits opened and completed within a given target period. The Annex shows how the order intake rate in the previous period will affect the outturn values of MTTP and UPL based on SCD.
    - Annex 3 presents some additional simulation results for UPL for the Temporary Conditions period. This Annex also shows that there is an inherent trade-off between a tail set at a much longer period and the intrinsic uncertainty in such a target.

Key findings

Section II: Trends in circuit complexity

20. The key conclusions of this Section are as follows:
    - There has been a rise in incidence of Wayleaves and Civils (duct requirements) which is also reflected in an underlying increase in more difficult Rural circuits which are more likely to require new duct to be built.
    - There has been a steady increase in the frequency of orders in the most rural areas to roughly [✂]% of the total for orders received in 2017 and 2018 to date.

- The rise in circuit complexity since 2011 is not solely down to the growth of these most rural circuits but applies to other circuit types in addition. In the period of 2014-15 in particular, the 4G mobile mast contract involved backhaul circuits which were more complex and which were not just in rural areas.

21. By evaluating performance on an OVD as well as SCD basis it is also possible to discern: (a) underlying performance in 2018 appears to have stabilised to a steady state in that TTP levels are similar on both bases; and (b) that current performance is at least as good as it was in 2011 where the circuit mix was in any case more favourable to quicker completion times.

22. The overall conclusion which Openreach had previously advanced that there has been a net adverse trend in circuit complexity is shown to be correct. This has been driven by the falling price of Ethernet services leading to demand for example from business parks in out of urban areas, and for some of the period since 2014 also from mobile backhaul in less accessible areas.

Section III: Analysis of historic variation in order rates

23. It is proven mathematically that the fact that relying on order volumes opened but not closed in prior periods has an inevitable distorting effect on MSLs and on the UPL in particular. Where the prior period had high growth from a lower order volume base, this will depress the likely UPL performance in the closed order measured target period. The converse is also the case.

24. The fact that there was high growth in order intakes during 2010/11 is estimated to have artificially lowered the UPL by around 0.75 percentage points in absolute terms in 2011. This is against the UPL outturn in 2011 of 3% and so it suggests a significant adjustment was necessary for 2016 and subsequent UPL targets which are also based on 2011 performance.

25. It is also observed that it is not feasible to produce a similar direct estimate for the impact of changes in complexity on the UPL. This is because complexity is by definition multi-dimensional across many factors such as wayleaves, civils, circuit type and so forth and the approach taken to measure these factors have changed over time[7].

Section IV: Achievable performance in 2016

26. Using the benchmark of 2018[8] performance as a standard indicates that an efficient operator would have achieved a 6% result for the UPL MSL of 118 days in 2016/17. This compares with the actual outturn of 13.8% and the UPL MSL target originally set by Ofcom of 3% which was what was actually achieved in 2011. The vast bulk of the observed UPL tail in 2016 was therefore attributable to backlog completions of complex circuits built up in prior years, but by the same token, the standard of 2011 for UPL was itself over-optimistic as circuits have become more complex since then and the UPL for 2011 was depressed from the high order intake growth in the prior periods.

27. Based on the statistical simulations conducted for 2016 as discussed below, Openreach is of the view that the contribution from complexity to UPL is likely to have been greater than the growth effect. It is considered that roughly one-quarter of the gap between the target of 3% and benchmark of 6% arose from the anomaly of choosing 2011 as a baseline and three quarters was from increased in circuit complexity over the period 2011-2016. The gap between 6% and outturn of 13.8% can be attributed to backlog effects.

Section V: The treatment of complexity and the E2E model

[7] The analysis in this Paper focusses on incidences of complexity rather than for example length of duct or wayleaves. This facilitates statistical comparisons without detracting from relevant conclusions drawn on underlying trends.
[8] The reason for using 2018 performance as the standard is explained in the methodology description in section IV

28. This section explains the key workings of the model and shows how circuit complexity and order growth are taken into account to allow accurate forecasts to be made of key performance metrics including MSLs and other operational statistics for internal performance evaluation.

Section VI: Specific simulations of achievable performance in UPL

29. Table 1 below summarises the outcome of a series of simulations which are explained in the Paper. It suggests that a very plausible range of outturn of the UPL[9] for the period 2019/20 is in fact in the range of [✂]% to [✂]% corresponding respectively to the 10th probability percentile of an optimistic view of circuit growth and complexity, to the 90th percentile of the outcome of a more pessimistic view of these factors.

Table 1

UPL 90th percentile ranges April 2019-March 2020[10]

Case	UPL % (118 days)		
	10th Per.	**Mean (50th Per.)**	**90th Per.**
Pessimistic	[✂]	[✂]	[✂]
Realistic	[✂]	[✂]	[✂]
Optimistic	[✂]	[✂]	[✂]

30. Put in simpler terms, the range represents the outcome of the factual evidence of variability in circuit order intake and complexity along with Openreach delivery performance and how these will combine to make outturn UPL performance one of a statistical probability not a single number.

31. The fact that a statistical range of about [✂] percentage points in UPL is plausible is an important finding and the general principles are demonstrated with additional simulations over different periods presented in this Paper. Setting MSLs further into the future for longer periods still would widen such a range.

32. An alternative way of expressing a tail target is to flex the number of days for a given percentage of traffic in the tail. Table 2 below shows the translation between the two, which is based on actual current performance of TTP in the tail; a full explanation is provided in Annex 2.

[9] All the UPL measurements in this document are based on 118 working days, unless explicitly stated
[10] All the data in this report are sourced from Openreach analysis unless otherwise stated

Table 2

Relationship between tail days and traffic percentage

Upper Percentile At 118 days	Equivalent days at 3% Upper Percentile
3.0%	118
3.5%	131
4.0%	144
4.5%	156
5.0%	168
5.5%	179
6.0%	190

33. To explain these numbers. If 3% conforms to 118 days then if actual performance is 3.5% at 118 days, then 3% would correspond to 131 days and similarly with tail values in the range of 4%-6% at 118 days.

34. In relation to the upper and lower bounds for likely UPL performance discussed above at 118 days of [✂]% to[✂]%, these translate to a range of outcomes in days in the order of [✂] to [✂] days i.e. in comparator UPL MSL values set on days. So if the effects of random variation in circuit volumes and complexity suggested that the outturn could be anywhere between these percentages at 118 days, the equivalent values in terms of days for 3% would be between [✂] and [✂] days.

35. An additional consideration is that the outturn is not likely to be symmetric around any particular value of UPL but this will not be known in advance – only in retrospect. Picking a particular value for UPL or alternatively a particular point as representing the 'tail' is not an exercise that can be done with precision but rather the outcome will have a high degree of randomness associated with whatever target is chosen.

Overall conclusions

36. These are as follows:

- The circuit mix has most definitely become more complicated to deliver and this is nothing to do with backlog which was cleared in 2016.
- The 2011 UPL was an untypical year which exaggerated achievable performance and which has been perpetuated in UPL targets set by Ofcom ever since including for 2016 and the Temporary Conditions Period up to March 2019. Outturn performance in 2016 could never have been as good as in 2011 even if the performance was at its current high level.
- It is critical to appreciate the inherent statistical uncertainty arising from setting the UPL which is on completed orders within a time window that is not congruent with the order placement period and which risks serious misspecification.
- There will be an inherent randomness in outturn of UPL from volatility in circuit order types during the target period and how this bears out in relation to orders in the prior periods. This can be accentuated by the impact of potentially large unforeseeable shifts in demand from very large customers. In other

words, there is uncertainty not only from 'known unknowns' such as large orders which have a reasonable chance of being placed, but also from 'unknown unknowns' where Openreach has no prior knowledge of the likelihood of such orders in any case. These could have favourable or detrimental impacts on actual UPL performance.

- Not only is there randomness from these sources, there is likely a degree of asymmetry in outcomes which could be favourable or unfavourable to Openreach from all these factors - past, present and future. This raises a substantive question of how these factors are accounted for to ensure fairness in setting a regulatory obligation.
- Specifically, it would be inappropriate to base an SMP condition on something which has a random element outside Openreach's control and this would support using a value at the lower end of any probability distribution i.e. so that Openreach has a fair chance of achieving it.[11]

[11] There is a parallel here with Ofcom's emphasis for example in setting investment incentives which satisfy the 'fair bet' principle.

QoS Regulation: A comparative benchmark

Insights from European Ethernet approaches

13 November 2018

wik CONSULT

European Ethernet analysis

Executive summary

Context

Challenges raised by Ofcom's QoS approach

- Ethernet Access Direct (EAD) and other Ethernet services are subject to contractual SLAs and SLGs, paid to customers
- However, there were concerns over length and lack of predictability in provisioning leadtime being offered by Openreach
- To address these concerns, in the 2016 BCMR Ofcom introduced minimum QoS standards under SMP regulation for provisioning and repair, in addition to the SLA/G regime. Following the CAT judgement which overturned BCMR market definitions, Ofcom reimposed QoS regulation through temporary conditions
- The QoS provisioning obligations set 5 provisioning targets (MSLs) which apply across all lines. However, neither the MSL nor the contractual SLA/SLG regime distinguish between lines which are already available on-net from lines requiring new construction, which can take more time. In addition, third party delays, including delays caused by the need to obtain permission for wayleaves – are included in the timeframes used to measure Openreach's compliance with the MSL. These include delays which are outside Openreach's control

Key findings

European Ethernet benchmarks

- WIK analysed approaches by European telecom regulators and incumbents towards provisioning and repair in FR, DE, IT, ES, PT, NL, BE, EL*** and IE and compared these with the regulations and SLAs applying to Openreach in the UK
- We found that the UK regime is unique in setting regulatory obligations beyond SLA/G regimes and the SLA/G targets are themselves stringent. Key findings:
  1. European telecom regulators do not set regulatory QoS obligations which apply over and beyond contractual SLA/G regimes*
  2. European Ethernet Reference Offer SLAs make explicit allowances for the expected differences between on-net vs off-net lead-times
  3. Where available, the provisioning KPIs which are used to assess compliance with RO SLAs generally exclude third party delay
  4. Openreach's provision and repair SLA/G arrangements are stringent compared with benchmarks
  5. Openreach's provisioning performance appears comparable to European benchmarks, although differences in measurement methodology** and lack of available data in most countries make meaningful comparisons difficult

* NRAs have in most cases required SMP operators to amend SLAs and SLGs in the Reference Offer, and/or specified in their regulatory decisions that the RO must include specific minimum service level standards and guarantees. However, a breach of these standards does not constitute a breach of SMP Regulation. Only a failure to reflect the requirements in the RO would constitute such a breach
** There are differences in the way provisioning indicators (KPIs) are reported, and in particular whether customer and/or third party delays are included or excluded from the reported figures . *** refers to Greece (Hellas)

European Ethernet analysis

Key findings from a benchmark analysis of Ethernet SLAs in 10 countries

European Ethernet benchmarks

The QoS regime in the UK

- The UK is unique amongst the countries benchmarked, in that it is subject to a detailed set of QoS regulatory remedies that go beyond the SLA/G arrangements
- Ofcom has imposed 6 Minimum Service Levels (SLAs) covering provisioning and repair
- For the provision MSLs, customer delay is excluded from the measures and all other forms of delay (including MBORC) are included in the measures

MSL	Type	Target
Mean time to provide	Provision	40 working days
Upper Percentile Time to Provide	Provision	No more than 3% circuits delivered in more than 118 working days
Lower Percentile Time to Provide	Provision	At least 40% of circuits delivered in 29 working days or less
Certainty	Provision	88% of circuits delivered on or before the initial delivery date offered
Crosslink	Provision	Average of initial delivery dates offered no greater than 55 working days
Repair	Repair	At least 94% of circuits fixed within SLA

European Ethernet benchmarks

European regulators have not set additional QoS standards under SMP rules

- Unlike Ofcom, other European regulators have addressed QoS concerns solely through non-discrimination SMP obligations and through setting or modifying SLA/Gs in the RO and monitoring associated KPIs
- **Other regulators have not set additional QoS regulatory obligations for Ethernet** which incur separate penalties
- In most cases, NRAs have not given consideration to additional obligations
- Where concerns have arisen over Ethernet QoS, they have been addressed in other ways:
  - In 2017, the Spanish NRA CNMC fined Telefonica €5m for not respecting the RO conditions (applying higher prices and leadtimes than were permitted through the regulated Ethernet RO)
  - The French NRA ARCEP opened an inquiry into business QoS. This was closed in 2016 after Orange established an action plan which contributed to improvements in provisioning and repair KPIs. In its 2017 BCMR, ARCEP highlighted the importance of non-discrimination in QoS, informing customers about issues causing delay, and required data on penalties paid so that it could assess the degree to which they were dissuasive

* CNMC Resolution SNC/DTSA/1821/14, ARCEP Decision no. 2016-0665-RDPI

European Ethernet benchmarks

European incumbents distinguish SLAs for on-net lines from those needing build

- A common feature in all ROs is that there is some means to distinguish or differentiate leadtimes for challenging connections
- Some incumbents only have leadtime targets for on-net lines (lines with an existing connection) – and leave provisioning **timeframes for off-net lines to be subject to negotiation or agreement** (FR, IE, BE)
- Others address challenges of minor infrastructure build in the Reference Offer:
  - By setting differentiated leadtimes for on-net/near-net (NL, DE, PT); or
  - By setting a delivery target range i.e. % within given timeframe (PT, ES, IT)
- **Major infrastructure build justifies exemptions or extensions to provisioning timeframes in all cases apart from DE**

European Ethernet benchmarks

European Ethernet SLAs address infrastructure build challenge (2)

Country	Company	Source of commitments	Baseline target (working days)	Definition of a 'standard' request for purposes of baseline QoS/SLA obligations	Treatment of non-standard requests/difficult construction
UK	Openreach	Regulation	40 (average)	All requests	Delivery target range around average of 40WD. 118WD assumed to represent outer bound
UK	Openreach	Contractual SLA	30 max	Requests which are not subject to "deemed consent"	Leadtimes for non-standard lines subject to justification and agreement
Belgium	Proximus	Contractual SLA	30 max	On-net: where infrastructure is available	
France	Orange	Contractual SLA	40 max	On-net: infrastructure present	Leadtimes for non-standard lines subject to agreement - no offer in many communes
Germany	Deutsche Telekom	Contractual SLA	36 max	On-net: Necessary network resources are already available	Differeniated leadtimes - 78 near and 116 WD off-net
Ireland	Open Eir	Contractual SLA	45 max	On-net	Due delivery date subject to agreement
Italy	TIM	Contractual SLA	34 (95%) 71 (100%)	On-net: infrastructure in place or no feasibility study needed	If feasibility study is needed, then provisioning time based on feasibility study
NL	KPN	Contractual SLA	50 on-net, 65 near-net	On-net + near-net (end-user within 250m from fibre	Differentiated leadtimes on vs near-net lines, off-net project specific
Portugal	PT	Contractual SLA	29 max Type I 43 max Type 2	Reasonable request (cost covered by standard prices)	Differentiated leadtimes for on-net and near-net zones, project specific for high cost lines
Spain	Telefonica	Contractual SLA	43 (85%) 86 (last 15%)	On-net and/or reasonable cost	Non-standard (not on-net and high cost) to be negotiated, NRA can intervene if no agreement

Source: WIK-Consult based on regulated Reference Offers

* NRAs have in most cases required SMP operators to amend SLAs and SLGs in the Reference Offer, and/or specified in their regulatory decisions that the RO must include specific minimum service level standards and guarantees. However, a failure to meet RO SLAs does not constitute a breach of SMP Regulation. Only a failure to reflect regulatory requirements in the RO or the non-application of the RO (e.g. applying different terms) would constitute a breach. Discrimination in service levels would also constitute an SMP breach

European Ethernet benchmarks

Third party delay such as wayleaves are often excluded from SLA

- In the ROs of most other European incumbents, the requirement for infrastructure build is typically a condition which justifies extension of the leadtime or exemption from the standard SLA (see following slide)
- In this way, provisioning targets are linked to the type of connection, recognizing that infrastructure build impacts leadtimes
- In addition, in many cases, delays associated with wayleaves and other third party delays are excluded from the assessed timeframes
- Only five of the 10 assessed countries have detailed KPIs (IE, FR, PT, ES, UK)
- KPIs in Spain, Portugal and Ireland show timeframes which exclude wayleave delay
- In contrast, in the UK, infrastructure construction requirements are not reflected in the QoS target (e.g. through exclusion or a differentiated target) and delays associated with wayleaves and other third party delays are not excluded from these targets or the associated KPIs
- The EAD RO (schedule 4) includes a lead time of 57 working days for orders categorized as 2.1, which include orders requiring cabling/tubing activity. However, some CPs have opted out of this clause so the 30 working days lead time applies as provided for in the contract

European Ethernet benchmarks

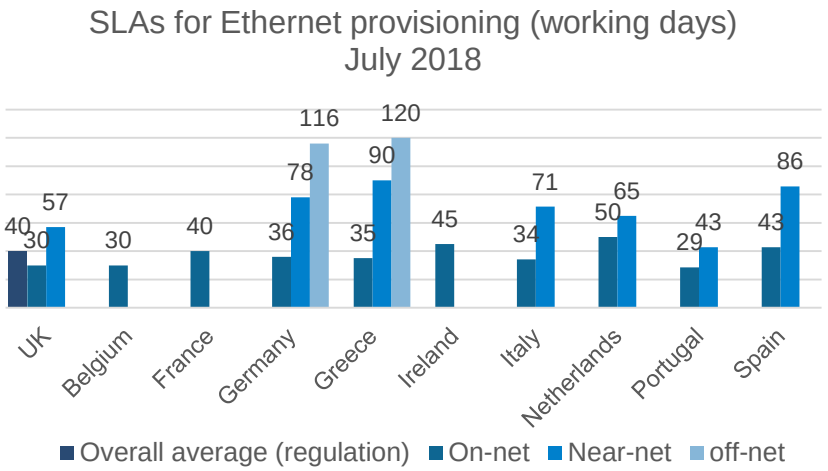
Conditions justifying SLA extension or exemption

	Company	Commitment type	Customer delays	Build needed	Wayleaves required	Force majeure	Comments
UK	Openreach	Regulatory obligation	x				Infrastructure build and wayleave delays etc are included – Ofcom aims to address potential for delay through target range
UK	Openreach	Contractual SLA	x	x	x	x	Delivery date can be extended to address infrastructure build or blockage, wayleave approvals. SLA/Gs do not cover customer delay, breach, access limitations, force majeure, refusal of permissions, lack of or inaccurate information
Belgium	Proximus	Contractual SLA	x	x	x	x	Excludes delay attributable to access seeker + other causes beyond control Proximus (site access , delay by third parties, line measurements etc.) Infrastructure build can trigger extended leadtime,
France	Orange	Contractual SLA	x	x	x	x	SLA exemption where (i) exceptional construction difficulty (ii) decongestion needed; (iii) roadworks requiring permission from the commune; (iv) requesting operator does not respect procedure; (vi) where fibre in commune where feasibility study is required
Germany	Deutsche Telekom	Contractual SLA	x	x		x	SLA exemption if client does not respect requirements. Infrastructure build/wayleaves addressed through differentiated leadtimes
Ireland	Open eir	Contractual SLA	x	x		x	Delivery date can be extended to address infrastructure build needs. SLA exemption if client does not respect requirements, problems with access, force majeure.
Italy	Telecom Italia	Contractual SLA	x	x	x		Delivery date can be extended where permits are needed, infrastructure build, problems with access, customer delays
NL	KPN	Contractual SLA	x	x		x	Delivery date can be extended if compelled by third parties or unforseen events including route changes caused by third parties, polluted ground. Infrastructure build can extend deadline if not near-net. Wayleaves on clock, but network constructors have preferential access rights.
Portugal	PT	Contractual SLA	x	x	x	x	SLA exemption if client does not meet requirements, problems with access, or works still in progress, force majeure or third parties (e.g. municipalities and other entities) are responsible for interruption.relay of installation.
Spain	Telefonica	Contractual SLA	x	x	x	x	Exemption from SLA where time needed to get building permissions, requesting operator or end customer is responsible for delay, force majeur

Source: WIK-Consult based on regulated Reference Offers

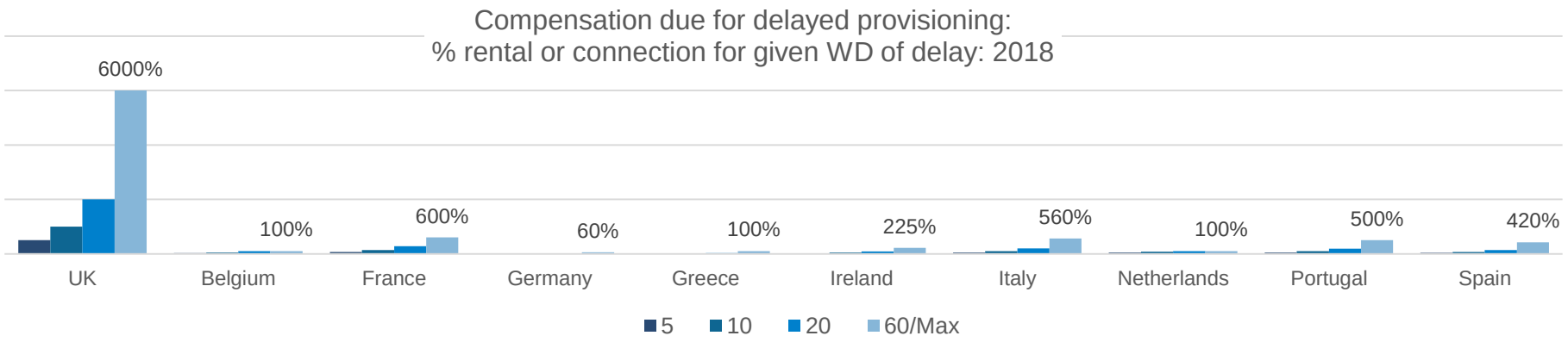
European Ethernet benchmarks

Openreach QoS requirements are challenging



Source: WIK-Consult based on regulated Reference Offers

- Openreach is subject to two parallel QoS commitments – contractual and regulatory, with different approaches
- Openreach's RO provisioning targets already reflect EU best practice and the SLGs significantly exceed benchmarks
- The additional QoS provisioning obligation (esp upper percentile) creates further challenges not faced by other EU incumbents because it includes lines requiring construction and does not exclude third party delay, or account for proportion of lines with difficult construction



Source: WIK-Consult based on regulated Reference Offers

On-net refers to lines with an existing fibre connection, near-net refers to lines requiring some limited construction, off-net refers to lines for which a significant degree of new construction is needed. Precise definitions may vary, refer to spreadsheet

European Ethernet benchmarks

Openreach performance is comparable with benchmarks (provisioning) although different approaches make direct comparison difficult

Trends in mean time to provide (working days) for fibre-based leased lines

	2016	2017	2018 Q1	2016	2017	2018 Q1	Comments
	On-net			Off-net			
UK	25	26	24	114	101	73	Excludes customer delay, includes other delays
France	76	89	34	173	285	120	Includes non-Orange related delays, converted from CD
Ireland	20	20	19	40	51	42	Average monthly. Excludes elements for which the dock is stopped incl customer delays, third party delays
Portugal	26			22			Excludes non-Portugal Telecom related delays

Source: WIK-Consult based on regulated KPIs and Openreach

- It is difficult to make direct comparisons between provisioning KPIs due to different approaches to measurement – and lack of publication of KPIs in several countries
  - Third party delay is *excluded* from the IE and PT benchmarks; and
  - All delays including third party delay are included in the FR benchmark
- Different measurement methods lead to high leadtimes in FR and low leadtimes in IE – most visible for off-net
- When different methods are taken into account, Openreach performance seems comparable with other countries

Long lead times in France have been reported e.g. in the 2017 business access market review as being due to delays associated with ‘desaturation’ and new construction. In addition to excluding these delays from its reporting, PT benefits from extensive existing fibre and ducting

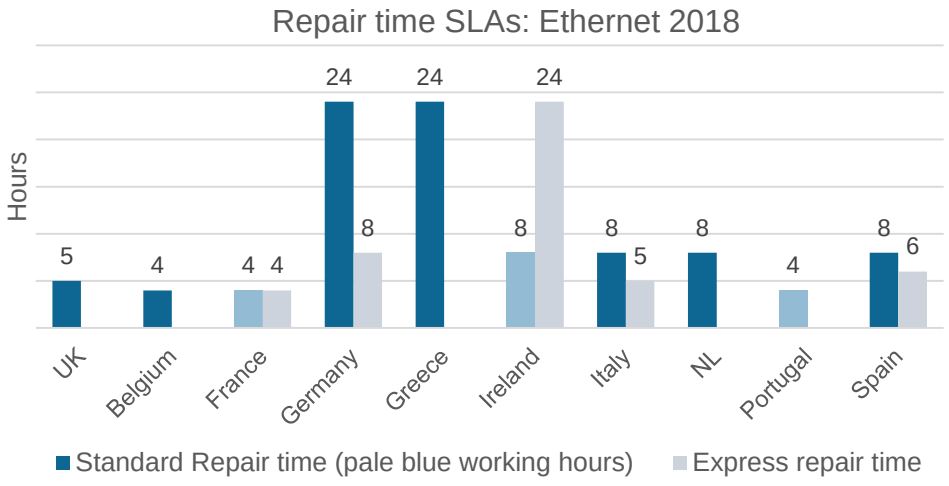
European Ethernet benchmarks

The UK system creates greater provisioning uncertainty for off-net lines

- An important downside to the UK SLA/G system is that it sets an expectation about delivery times (30WD) that is unrealistic for off-net lines
- Having one lead time for all orders can lead to customers making assumptions about delivery times, when orders are often in fact bespoke in nature
- The EAD RO allows delivery time frames to be extended beyond 30 days when infrastructure build is required or other conditions apply, as set out in the RO. However, in practice, as these permissible cases constitute around 50% of the total, the current formulation provides little certainty
- In France, where there is a clear distinction between on-net and off-net – and off-net CDDs are set “by agreement”, recent KPI data shows that the quoted time for off-net provisioning is met in nearly all cases, thereby ensuring predictability

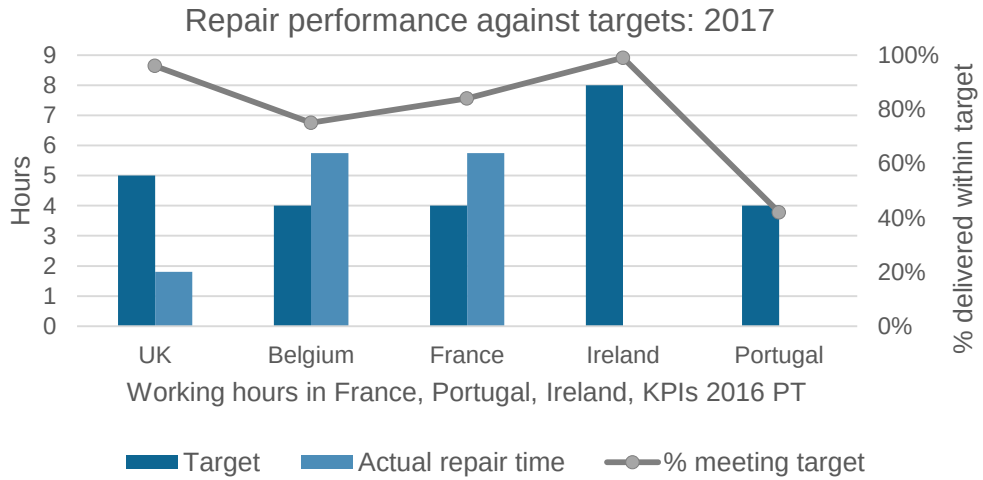
European Ethernet benchmarks

Openreach performance is comparable with benchmarks (repair)



Source: WIK-Consult based on regulated Reference Offers

- Openreach's repair time SLAs are amongst the toughest in Europe
  - 2 out of the 3 other countries with short repair times (FR, IE) deliver repairs only in working hours, implying much longer repair times in practice
  - Several countries charge extra for shorter repair times

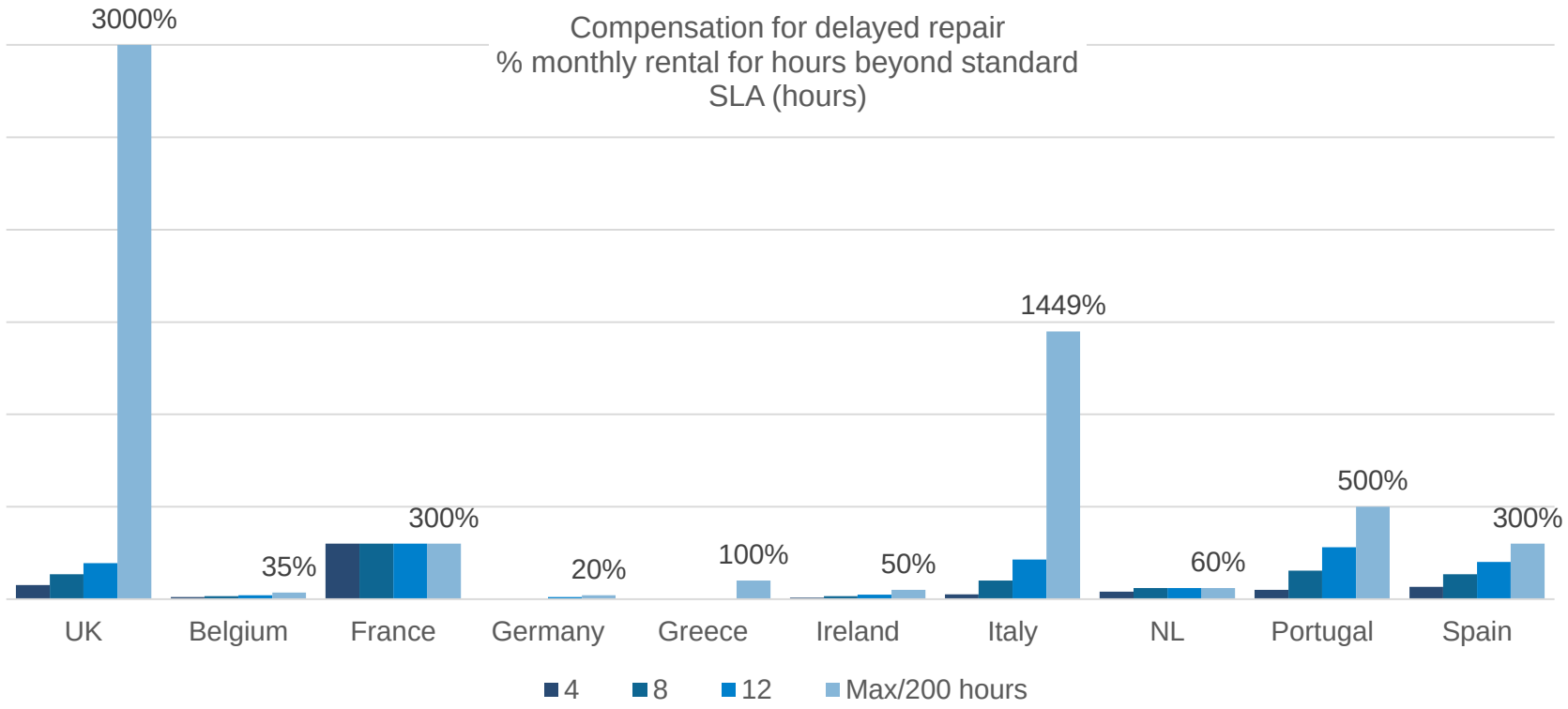


Source: WIK-Consult based on regulated Reference Offers and KPIs

- Openreach performs comparatively well in meeting repair targets
- The only country with higher performance (Ireland) has much looser targets (8WH) and stop the clock allowances which make the targets easier to meet

European Ethernet benchmarks

Repair SLGs are harsh for long delays



Source: WIK-Consult based on regulated Reference Offers and KPIs

- SLGs for repair in the UK are comparable with our other countries for repairs made early in the process, but due to a high cap, the penalties considerably exceed SLGs elsewhere for long delays

European Ethernet benchmarks

Stop the clock SLA exemptions also commonly apply to repairs

Country	Company	Comments
UK	Regulation	Refers to SLA
UK	Openreach SLA	Customer delay or fault, breach, access difficulties, lack of information, unable to obtain permissions, force majeur, planned outage, inaccurate fault reporting
Belgium	Proximus	Repair time excludes repair activities beyond control of Proximus such as inability to access sites, delay by third parties etc.. Guaranteed repair time does not apply to cases of Force Majeure.
France	Orange	Fault must be responsibility of Orange within the limits provided for in the contract. Access must be allowed. Parties must confirm time of reporting. Orange may charge for faults that are customers' responsibility or due to misuse of equipment
Germany	Deutsche Telekom	Repair SLA disapplied if inaccurate fault report, customer fails to meet requirements, customer delays, force majeure, planned interuptions
Ireland	Open eir	Parked time for customer delay, access problems, force majeure, health & safety. SLA disapplied where fault caused by third party activities (e.g. variation in electricity), weather, changes in apparatus
Italy	Telecom Italia	Repair SLA disapplied where 1. force majeure; 2) breakdowns caused by third parties; 3) Customer/Operator cause, i.e. unavailability of the Operator's registered office or of the Operator's end-client, where access to such locations is essential for the repair the fault; 4. links in challenging zones
Portugal	PT	Force majeure, non availability caused by maintenance works in network, planned interruptions/maintenance
Spain	Telefonica	Delays caused by the requesting operator and his direct clients (accessibility of premises or no availability of technical personnel of requesting operator).

Source: WIK-Consult based on regulated Reference Offers

Conclusions

Insights from Ethernet benchmarks

- KPIs from a number of EU countries confirm that there is a genuine and significant leadtime difference between on-net Ethernet lines and lines which require build – which may be affected by factors outside the incumbents' control such as wayleaves
- Elsewhere in Europe, these differences are clearly reflected in the SLA targets through different lead-times or a bespoke process for setting leadtimes for off-net Ethernet
- Those European incumbents which provide KPIs mostly show figures which exclude delays caused by third parties/wayleaves
- Incumbents in other European countries do not have additional QoS targets beyond those in the RO. There is thus clarity about the standards to be achieved. It can be assumed that European regulators have considered SLA/Gs to be a sufficient remedy. Problems with QoS in Ethernet (e.g. in ES, FR) have been handled without resorting to separate rules and targets

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QoS Regulation: A comparative benchmark

Insights from Utilities approaches

13 November 2018

wik CONSULT

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Key findings
Utility benchmarks

- WIK analysed approaches taken for regulated utilities in the UK (electricity, gas and water) towards provisioning and repair. Key elements:

1. Most utilities have **both regulated QoS and statutory (legal) SLA/G obligations** to customers for provisioning and repair
2. **There are no *absolute* statutory or contractual SLA/G targets for connection/provisioning leadtimes in energy** (only to deliver to CDD), while water connection targets are limited to the final drop*
3. There are absolute QoS targets (42WD MTTP) for electricity (not other utilities), but they **apply only to small (not large/complex) connections, and they are subject only to rewards**, and not penalties**
4. **Large and complex connections, which are not subject to effective competition, are handled through co-regulatory approaches** in electricity (ICE) – operators set and measure own targets, subject to oversight by Ofgem. Co and self-regulation (through Water UK) has also played a significant role in incentivising QoS in water

* Connection between the distribution point in the street and the customer
** RIIO-ED1 Guide – incentive is 'reward only' to ensure the overall connections package is balanced

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Competition models for utilities and telecoms

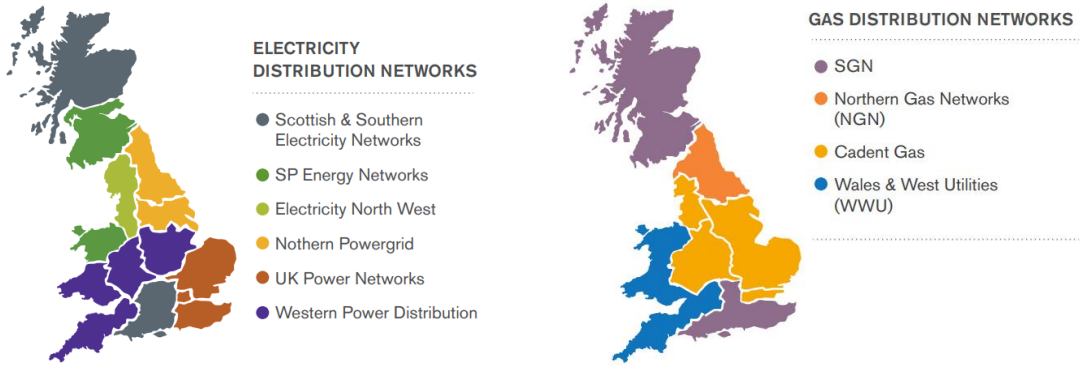
Infrastructure vs service competition

- Like Ofcom, the primary objective of Ofgem and Ofwat is to protect the interest of consumers, through competition where appropriate
- However, utilities have taken a different approach from telecoms towards achieving this
  - Utilities were liberalised through separation of the network from service provision and the creation of **regional distribution network monopolies in energy** which are connected to national transmission networks operated by National Grid. In water, there are local regional water and/or waster water companies providing services from source to tap and back again. These regional networks mostly remain monopolies, although there have been moves to open them to competition (e.g. self-lay, independent transporters and retail service providers). Enduring monopolies require **detailed targets and incentive regulation to incentivise investment and innovation**
  - Telecoms infrastructure was historically supplied by BT across nearly all of the UK territory (excl Hull). A key aim for Ofcom is to promote **infrastructure competition to foster investment and innovation** for the long-term benefit of users. Potential duplication of access and core networks, and/or the emergence of alternative technologies, should imply less need for regulation of minimum standards as the market should ultimately provide a constraint

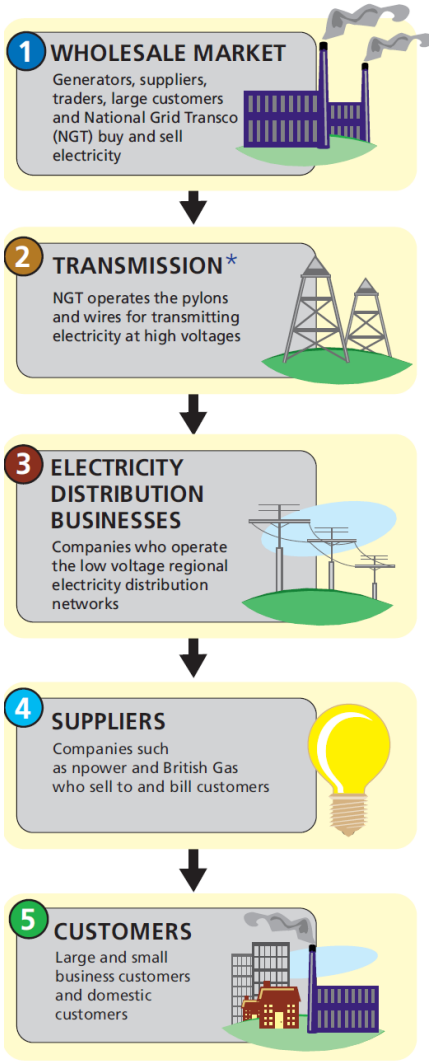
The energy value chain

How different companies interact

- The value chains for gas and electricity are similar
- There are two types of energy network within the value chain: transmission and distribution.
  - Transmission networks carry gas or electricity long distances around the country, operated by National Grid
  - Distribution networks run take gas or electricity from the transmission system into homes and businesses
- Like Openreach, distribution companies are responsible for the “local access network”. However, unlike Openreach, customers mostly obtain new connections directly from the distribution company
- There are 14 licensed electricity distribution network operators (DNOs) in the UK, owned by 6 groups, and 8 gas distribution network operators (GDNs) owned by 4 groups



Electricity value chain



Source: Ofgem

The energy market

Competition for gas and electric connections

- The provision of connectivity to the gas and electricity network is characterized by competition “for the market”
- Customers can order a connection to the electricity or gas network directly from their distribution company (DNO or GDN), or from an independent connection provider which then transfers the connection to a distribution company
- In addition to the DNOs and GDNs listed on the previous slide, independent distribution operators (IDNOs in electricity and IGTs in gas) also own parts of the network – these networks are mainly extensions to the DNO/GDN networks serving new housing and commercial developments (and therefore do not duplicate). They are also regulated, but under simplified rules – charges are linked to those of the DNOs/GDNs.
- Retail gas and electricity services are subject to service competition. Customers can purchase retail services from a variety of suppliers, irrespective of the ownership of the underlying distribution network

The energy market

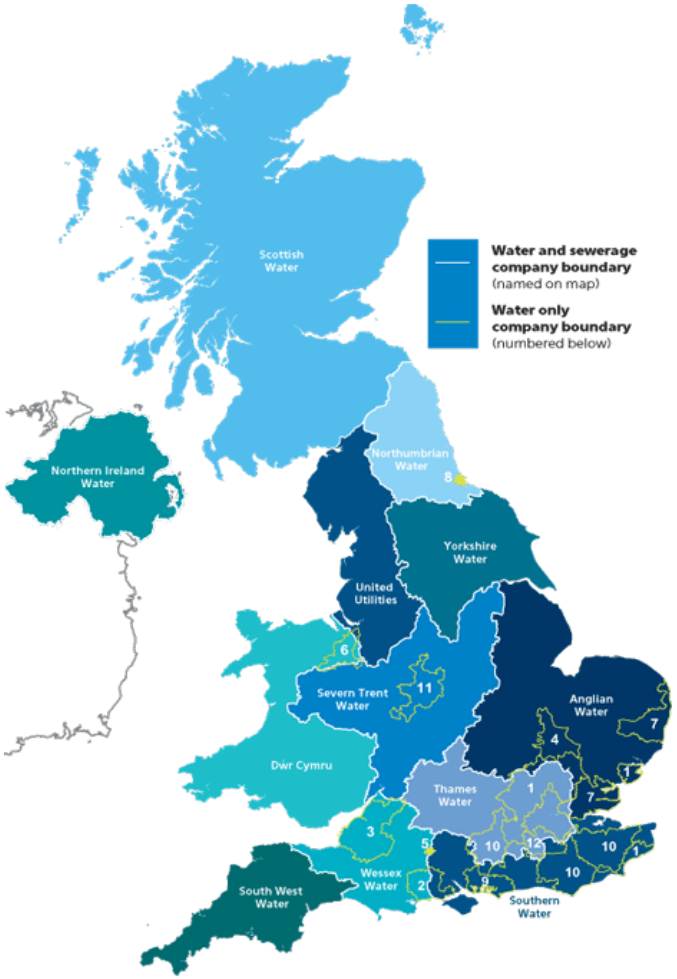
Charge controls

- Gas and electric utilities are subject to incentives as well as penalties for meeting objectives (outputs). Rewards or penalties are provided through the revenues companies are allowed to collect under the **charge control (RIIO)**
- RIIO stands for: Revenue = Incentives+Innovation+Outputs. The outputs for the electricity distribution RIIO are shown below

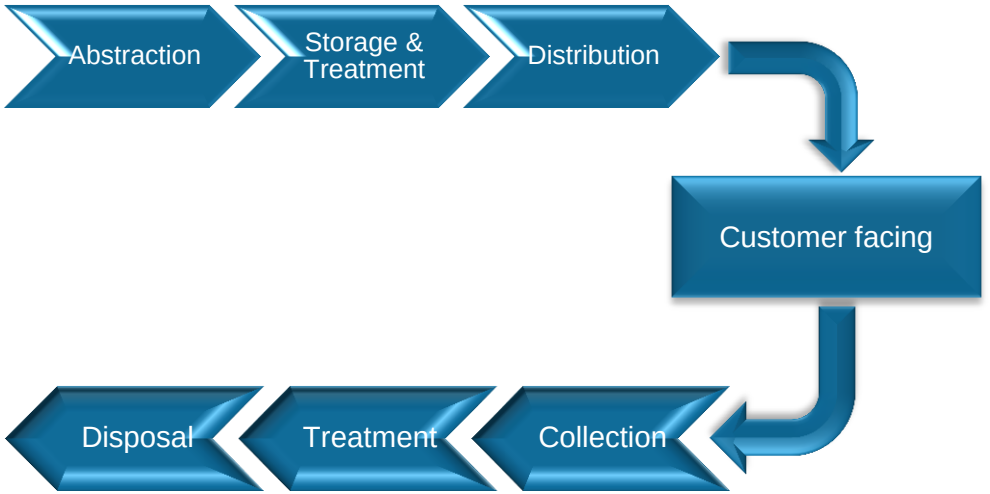
Output	Detail
Reliability and availability	providing long-term reliability of supply, minimising the number and duration of interruptions and ensuring adaptation to climate change
Environment:	reducing carbon emissions and the environmental impact of the company'' activities by managing carbon footprint, visual amenity and pollution.
Connections	connecting customers in a timely and efficient way, and enabling competition.
Customer satisfaction	maintaining high levels of customer satisfaction and improving service. Social obligations: helping vulnerable customers
Social obligations	Helping vulnerable customers
Safety	providing a safe network in compliance with Health and Safety Executive (HSE) safety standards.

The water value chain

How different companies interact



Source: Water UK



- Water and sewerage management involves a two way process as follows:
  - First, fresh water is abstracted (with separate licences obtained form the EA), stored and treated and then distributed to customers by the regional, Ofwat licensed water companies (the WOCs and WASCs)
  - Second, waste water is collected, treated and disposed by those regional companies who also have licences from Ofwat to treat sewerage (the WASCs)

The water connections market

Competition in water connections and services

The connections market includes all new connections to the water and/or sewerage network for both household and non-household purposes, where a customer requires either or both:

- Access to the existing public water supply or sewerage system by means of a service pipe or lateral drain; and/or
- A new water main or public sewer.

Incumbents have a statutory duty to expand their network to meet emerging demand for new connections. However, there is competition to incumbents for construction of new water mains and services from

- an accredited self lay organisation (SLO) using a self lay option: the developer must agree T&C with the SLO; or
- a new and variable appointee. New Appointees (NAV) can provide wholesale water and/or sewerage services for a specified area. If a developer chooses a NAV to provide wholesale services the NAV will need to apply to become a service provider for a specified area. Once granted they will be responsible for the ongoing operation and maintenance of onsite water and/or wastewater infrastructure replacing the incumbent water and/or sewerage company.

In April 2017 competition was also introduced into supply of non-residential retail services. However, there is no competitive provision for domestic retail services at the moment

The water connections market

Charge controls

- Ofwat includes **allowances** in the water companies' price controls – where the companies provide sufficient evidence – for them to:
  - invest in their water and sewerage networks to support growth; and
  - recover the costs of this investment from customers
- At the last Price Review (PR14) for 2015-2020, separate price controls were introduced for wholesale and retail and an outcomes-based process was introduced:
  - Within each outcome **the companies set and agreed Performance Commitments** (PCs) with Ofwat. Each PC contains an Outcome Delivery Incentive (ODI), which can carry a financial **reward or penalty or both**. These PCs can also be reputational
- In the next price review (PR19) there is a further disaggregation of the price controls into six component parts, i.e.: a water resources control; a bioresources (sludge) control; Network plus water and wastewater controls; and retail water and wastewater controls
- The aim of these controls is to encourage further market reform and contestability across the water and sewerage value chain by improving transparency and incentivsing efficiency
- There are separate regulators and regulatory regimes for water in Scotland and Northern Ireland

Similarities between telecom and utility obligations

Some parallels in provisioning and repair obligations for DNOs/GDNs

- Openreach is required to supply fibre Ethernet leased lines on regulated terms
- Energy and water utility distribution companies must also provide connections (including connections for large users). However, there may be a **higher proportion of new build lines** required for utilities than in telecoms, as many utility connections are for new premises – therefore the parallels are not exact
- Like Openreach, the distribution energy suppliers and regional water companies must repair their infrastructure where there is a fault (unplanned interruptions)
- There are also detailed rules around planned interruptions for the maintenance and upgrade of utility networks

Key differences between telecom and utility obligations

Different objectives and incentives apply in some cases

- Utilities have a number of obligations and incentives which are not relevant to telecoms
  - Utilities have environmental targets, and there is an overarching political objective to **reduce consumption**, whereas increased consumption (of bandwidth) is a key objective in telecoms
  - Utilities **have specific requirements to make investments** which foster innovation and efficiency e.g. in smart meters; and to upgrade their networks to prevent leaks. Conversely, in telecoms, infrastructure competition and incentives in the pricing approach are used to promote investment and innovation rather than specific investment and innovation targets and obligations
  - Utilities have a specific primary statutory duty of **financiability** to ensure that price control will be set at levels which would allow a company to finance its licensed activities
- The presence of multiple regionally distinct distribution companies (mostly regional monopolies) allows the utility regulators to **benchmark across regional operators** – in contrast with telecoms, where there is a (nearly) nationwide incumbent

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How do approaches to service levels compare?

QoS and SLA/Gs are present for utilities as in telecoms

- Most utilities have **both regulated QoS and statutory (legally mandated) SLA/G obligations** for connections and repair (as well as other objectives)
- However, utility SLA/G and QoS targets differ from Ethernet as follows:
  - There are **no absolute SLA/G commitments** to customers for connection/ provisioning leadtimes in energy (connection SLA/Gs based on agreed date)
  - There are **absolute connection QoS targets for electricity connections – average 42WD** (not other utilities), but these apply **only to small connections** and are **subject to rewards only** and not penalties
- There has been a greater role for self- and **co-regulatory approaches** in utilities governing service levels. In electricity co-regulation governs targets for large or complex (non-domestic) connections, while in water the industry (Water UK) has developed detailed self-regulatory targets

How do targets compare?

Connection/installation regulatory targets and statutory requirements

	Telecoms	Electricity			Gas		Water
	Business (fibre)	Low voltage (domestic)	Low voltage (<5 premises)	Large/ complex (HV)	Small (<275kWh)	Large (>275kWh)	
Regulated connection targets	40 WD average	42 WD average	53 WD average	na	90% within statutory SLAs – no absolute connection target	90% within statutory SLAs – no absolute connection target	No absolute connection targets, allowances for investment in price control
Exemptions to regulated connection targets	No exemption for 3rd party delay/ wayleaves	No exemptions (Ofgem states included in target)	No exemptions (Ofgem states included in target)				
Contractual or statutory commitments	30 WD except where deemed consent provisions apply	No target for connection Quote 5WD CDD given 7WD after acceptance	No target for connection Quote 15WD CDD given 7WD after acceptance	No target for connection Quote 35WD CDD given 10WD after acceptance	No target for connection Quote 6WD (standard) CDD 20WD after acceptance	No target for connection Quote 21WD CDD 20WD after acceptance	21 days to install a service pipe (final drop from street distribution point to premise)
Exemptions to contractual or statutory commitments	Exemptions incl infrastructure build requirements and 3rd party delay/ wayleaves	Exemptions for 3rd party delay/ wayleaves	Exemptions for 3rd party delay/ wayleaves	Exemptions for 3rd party delay/ wayleaves			
Self/Co-regulatory targets	na	na	na	Set by DNOs. Reviewed by stakeholders and Ofgem - penalties possible			Water UK industry service levels. Ofwat has power to intervene in disputes inc re. T&Cs

Source: WIK-Consult based on regulated Reference Offers

How do targets compare?

Repair/unplanned interruptions

	Telecoms	Electricity		Gas	Water
	Business (fibre)	Low voltage	Large/ complex (high voltage)	All	All
Regulated repair/restoration targets	94% faults repaired within 5 hours	Varies by DNO; 32min average	na	Varies by GDN – 19 hours per interruption on average	Customer compensation applies if service is cut for > 4 hours
Contractual/ statutory minimum standard	5 hours	12 hours normal conditions	12 hours normal conditions	24 hours normal conditions	3 hours
Self/Co-regulatory targets			DNOs report on goals and delivery. Reviewed by stakeholders and Ofgem - penalties possible		Targets set for each company based on industry average with 2% cap of RORE for reward and 2% of RORE collar

Source: WIK-Consult based on regulated Reference Offers

There are no absolute SLA/G targets to deliver a connection

Connection SLA/G targets reflect complexity of connections

- Utility distributors are required by statutory Regulations to provide minimum standards of service (Guaranteed Standards of Performance (GSoP) in energy, guaranteed standards scheme (GSS) in water)
- Energy distributors must meet target leadtimes for quotations and for providing dates for delivery (CDD) to customers, and they are obliged to deliver within the agreed delivery dates. They must pay compensation to customers if these obligations are not met. However, the actual **timescales for delivery of connections are not regulated**
- The lack of absolute targets may reflect the fact that many of the connections are **new connections**, which require a degree of build
- In water there is a statutory provisioning target, but this applies **only to the final drop between last distribution point in the street and the customer**. Water companies are required to deploy infrastructure to meet expanding requirements and are compensated for this under the price control – which limits the degree of infrastructure build needed for new connections
- **Self-lay providers and NAVs** (see later discussion) have also entered the connections market in water and energy providing **competition on installations**

Overall QoS targets do exist in electricity for connections

42 working days average

Table 9.2: Time to Connect target and maximum reward score

connection process	connection size	target (working days)	maximum reward score (working days)
time to quote	Single service low-voltage connections (LVSSA)	8.21	6.4
	Small project demand connections (low-voltage) (LVSSB)	11.73	10.12
time to connect	LVSSA	42.08	32.47
	LVSSB	52.70	39.91

Source: Ofgem Guide to the RIIO-ED1 2017

- Overall QoS targets do exist for low-voltage (mainly domestic) electricity connections (but not gas)
- A target of 42 working days has been established on average across the distribution companies

Meeting connection targets has proved challenging

Third party delay has been acknowledged as an issue for connections

Table 2.1: DNO output performance, 2016-17

	Reliability and availability	Connections	Customer service[1]	Safety	Social obligations
ENWL					
NPgN		TTC targets missed			
NPgY		TTC targets missed			
WMID					
EMID					
SWALES					
SWEST					
LPN		TTC targets missed			
SPN		TTC targets missed			
EPN		TTC targets missed			
SPD		TTC targets missed			
SPMW	CI target missed (marginal)[2]	TTC targets missed			
SSEH					
SSES		TTC targets missed			

TTC = Time to Connect; CI = Customer Interruptions.
1. The customer service RAG excludes DNOs' performance under the Stakeholder Engagement and Vulnerable Customer (SECV) incentive, which is reflected in the social obligations output.
2. Target was missed by only 0.26%.

Source: Ofgem Guide to the RIIO-ED1 2017

- Similar to Openreach, electricity QoS (RIIO) connection targets include 3rd party (and other) delays
- Ofgem states that the targets "take delays into account", but many electricity DNOs have missed the RIIO targets for connections (see above)
- In contrast, in gas where there are no absolute provisioning targets under the RIIO – only delivery against CDD (and other customer satisfaction metrics), the connection targets have been met
- Missed targets might be considered a challenge for the electricity industry and Ofgem, but……

But the QoS connection target is reward-based

There are no penalties for failing to meet the target

- The time to connect QoS target is structured **only as an incentive** – no penalties for failing to meet, only rewards for exceeding
- The TTC QoS target applies only to small electricity connections
- Major (business) customers are handled through flexible co-regulation (see following slides) rather than regulatory obligations

Table 9.1: Maximum revenue exposure for RIIO-ED1[39]

scope	Incentive/ measure	maximum reward exposure (per cent of base revenue)	maximum penalty exposure (per cent of base revenue)
Minor connections customers	Customer satisfaction survey	+0.5	-0.5
	Time to Connect incentive	+0.4	0
Major connections customers	Incentive on Connection Engagement (ICE)	None	Up to -0.9
	Total Penalties/Rewards	+0.9	-0.5 to -1.4
All connections customers	Guaranteed Standards of Performance (see appendix 1)	None	100 RORE basis points across RIIO-ED1 period

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QoS for large electricity customers is governed by co-regulation (1)

Incentive on Connections Engagement

- The RIIO electricity system mainly caters for small, mainly domestic connections, but Ofgem observed that the needs of domestic customers were different from those of larger, often commercial connections
- The Incentive on Connections Engagement (ICE) was introduced in April 2015 to ensure DNOs meet the needs of **larger or more complex connections customers** (unmetered, generation and higher-voltage demand customers)
- **Licensees set their own targets and objectives** and are responsible for monitoring progress against these targets and objectives, subject to the involvement of stakeholders and oversight of Ofgem as follows:
  - Under the ICE Guidance – **each licensee must submit for each regulatory year a strategic report and a report detailing implementation of the strategy**
  - Ofgem publishes these reports and seeks feedback on licensees' performance
  - Internal Ofgem panel reviews whether licensee meets criteria overleaf
- If DNOs do not meet the needs of their stakeholders they may be subject to a penalty of up to 0.9% base revenue split across relevant market segments. No penalty is applied in market segments where there is effective competition
- **No penalties were applied in 2016-17**

QoS for large electricity customers is governed by co-regulation (2)

Incentive on Connections Engagement

- The strategy and self-assessment reports developed by licensees under ICE must cover:
  - Part I: Forward-looking report:
    - This should set out the strategy for engagement, workplan and key performance outputs for the coming year and should demonstrate
      - Licensee has comprehensive and robust strategy for engaging with stakeholders
      - Workplan with delivery dates to meet stakeholder needs
      - Set out relevant outputs (KPIs, targets)
      - Evidence that strategy, activities and outputs have been informed and endorsed by broad and inclusive range of stakeholders (or if endorsement not possible, robust evidence that they have pursued reasonable endeavours to achieve this)
  - Part II: Looking back report
    - Demonstrates that strategy has been implemented and outputs delivered – or if not, that reasons provided are reasonable and justified
- Examples are provided overleaf

Illustrative ICE plans

UK Power Networks connection strategy and key outcomes

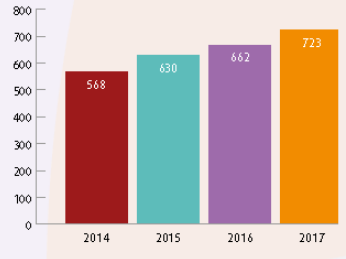
Our Connections' vision is:

"To offer a range of connection solutions that serve our customers' diverse needs, encouraging choice and supporting economic growth in the communities we serve".

We appreciate the diversity of our connections customers and our strategic priorities reflect the areas that they have asked us to focus on:

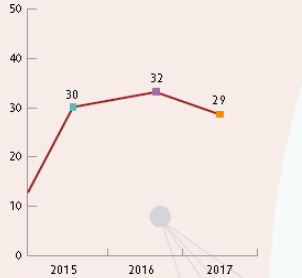
customers would like more choice and flexibility over the services they receive so that they can make a genuine and informed choice about how their electrical connection is provided.

Choice & flexibility
Increase in ICP/IDNO activity in our service area: Connections completed by ICP/IDNOs



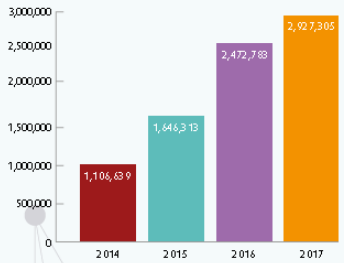
customers asked us to provide pre-application support to give them the certainty that they are making the best choices available to them to deliver critical electrical infrastructure in a timely and cost effective way.

Pre-application support
Number of metered customer 'surgeries'



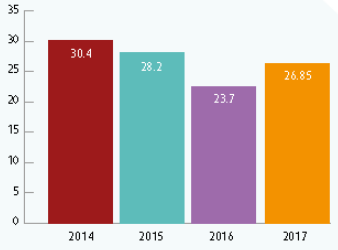
customers have expressed an interest in being able to access important business information when they need it through the channel of their choice in a way that works with their own programme of work.

Access to business information
Website hits



customers want us to reduce our lead times so that they can make important business decisions in line with their programme, not ours.

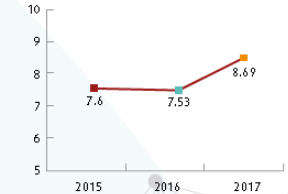
Reduce our lead times
Reducing the time taken to quote enquiry to quote sent (days)



customers have asked us to improve the delivery of their electrical connection to allow them to commit to their programme deadlines minimising delays and disruptions.

Improving connections delivery
Satisfaction with connections delivery

(score out of 10)



Source: UK Power Networks published ICE report 2017-2018

Illustrative ICE plans

UK Power Networks 2017/18 Service development plan

Service Development Plan

Reference	Initiative	Measure	Target Date	RAG	Market segment
1.17	Reduce the level of rejection of designs at 33kV	10% reduction in rejection rate over 12 months	March 2018	Complete	
2.17	Improve the information available to customers about convertible quotes to help them understand the purpose of Options B and C	Communications materials reviewed and improvements implemented	June 2017	Complete	
3.17	Complete the project to improve the accessibility and usability of the UK Power Networks' eMAPS system	Implementation of the LineSearch solution complete	July 2017	Complete	
4.17	Develop 'How to' videos and guides based on customer feedback	'How to' videos published to meet customer requirements	March 2018	Complete	
5.17	Undertake a review of the connections request process to include an application form review and introduction of an online form	Online application form introduced by target date	March 2018	Complete	
6.17	Introduce a Highway Services Ask the Expert service	Create designated mailbox for customers to send enquiries to and promote this service via social media and digital channels	August 2017	Complete	
7.17	Introduce a Site Information Pack for Housing Developments and Small Commercial Developments	Site pack co-designed with customers, published and in use by target date	October 2017	Complete	
8.17	UK Power Networks engineer to undertake a call with the customer site representative, on completion of work*	Calls made and recorded and 89% customer satisfaction achieved, for the delivery of works, from customer survey	From June 2017	Complete	
9.17	Introduce a consistent format delivery plan for all projects to ensure customers are aware of the programme of work*	Delivery plans provided to customers (where applicable) and 89% customer satisfaction achieved, for the delivery of works, from customer survey	From June 2017	Complete	
10.17	Introduce implementation meetings, once a project has been accepted and payment received, in order for site specific requirements and arrangements to be agreed, where appropriate	Initiation meetings held at customers request, and feedback received. A contributor to the 89% customer satisfaction target	From September 2017	Complete	

*Continuation of an initiative from the 16/17 Service Development Plan

Status: Target not met | At risk | On track | Completed

Customer Segments: Highway Services | Metered | Distributed Generation | ICPs & IDNOs

UK Power Networks – Looking Back & Forward Report May 2018

Source: UK Power Networks published ICE report 2017-2018

Illustrative ICE plans

UK Power Networks 2017/18 action to improve connection transparency

//ICE Initiative #9.17

Project Manager/Lead:	**Sharon Alexander**, Customer Services Manager (Highway Services/Disconnections)
Strategy Area:	Improve the communication and transparency associated with the delivery of connections activities and the management of outages
Proposed Completion Date:	From June 2017
Initiative & Measure	Introduce a consistent format delivery plan for all projects to ensure customers are aware of the programme of work *Delivery plans provided to customers (where applicable) and 89% customer satisfaction achieved, for the delivery of works, from customer survey*
Background	Feedback received from customers about the delivery of their work suggested that they do not always receive a clear plan /summary of what will take place to deliver their work. This initiative aimed to address this by introducing a consistent format plan. When discussing this with the Customer Scrutiny Panel in November 2016 they agreed the plan did not need to be a gantt chart but should be a consistent format including delivery dates, who is responsible for what aspect of the work and any other key information
Summary Status	**Overall Summary Status:** UK Power Networks engineers adopted the consistent format delivery plan from June 2017. A sample of completed jobs have been audited to ensure calls are taking place

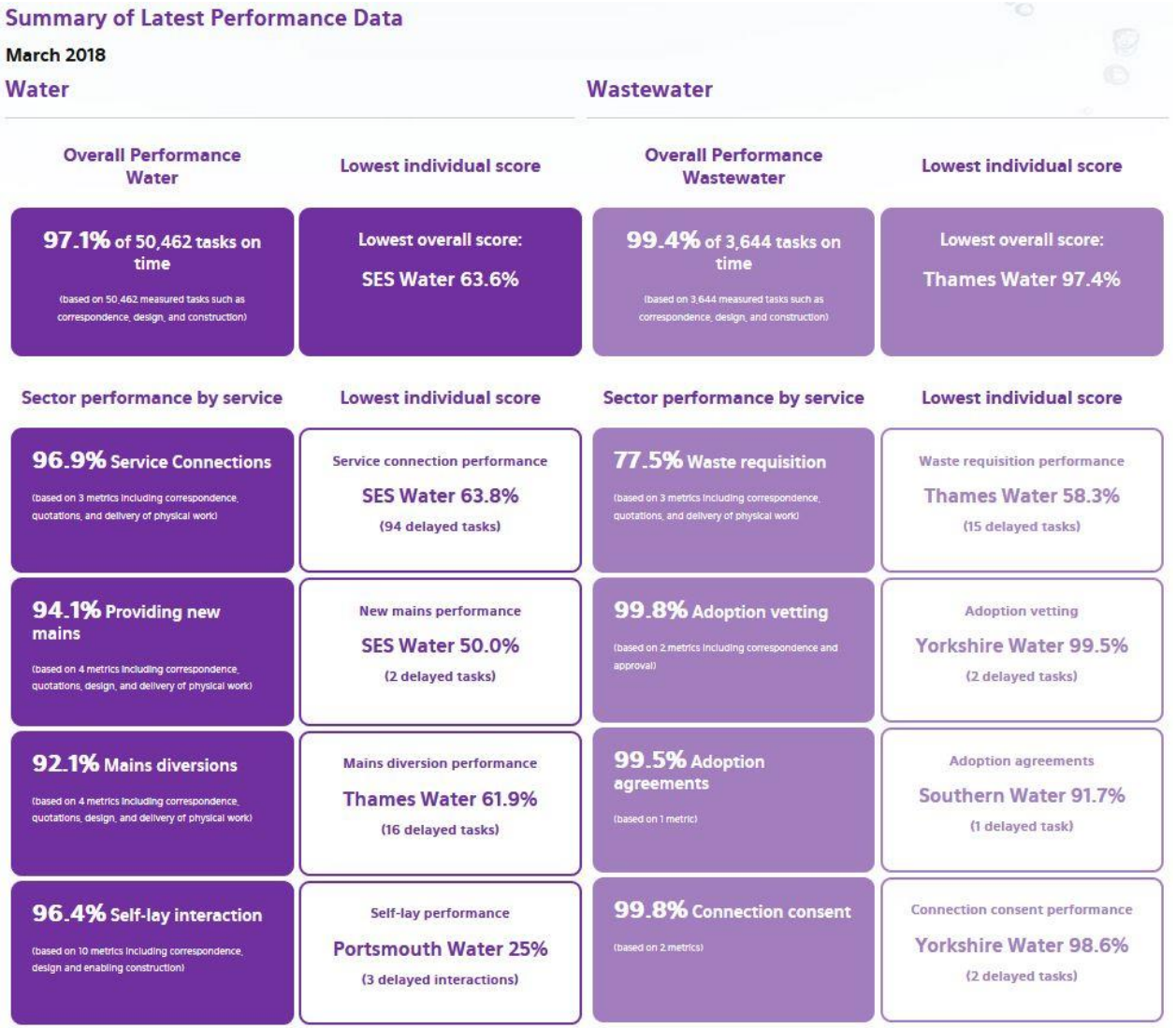
Key Milestones	Initiative #	RAG This Period	Due Date
Brief operational teams on the purpose of the consistent format delivery plan	9.17.1	●	Complete
Audit sample of projects to review, check for consistency and suggest improvements where necessary	9.17.2	●	Complete

Source: UK Power Networks published ICE report 2017-2018

Self-regulation in water targets and monitoring

The industry association has played a leading role

- Water UK is an industry body with no official affiliation to Ofwat. Nonetheless, it has worked with Ofwat to facilitate debates on the future of the industry ("marketplace of ideas") and sought to address concerns on QoS
- Water UK produces a set of non-regulated standards that developers and others can expect from water companies in relation to the provision of infrastructure for housing development. Since July 2015 Water UK has been reporting on **levels of service** achieved
- Water UK has produced and maintains a self lay code of practice for or when a developer appoints a SLO to undertake the contestable work of designing and/or installing water mains and services on a new development site in England and Wales.



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Annex 6 - Customer Satisfaction

Customer Satisfaction survey (CSAT)

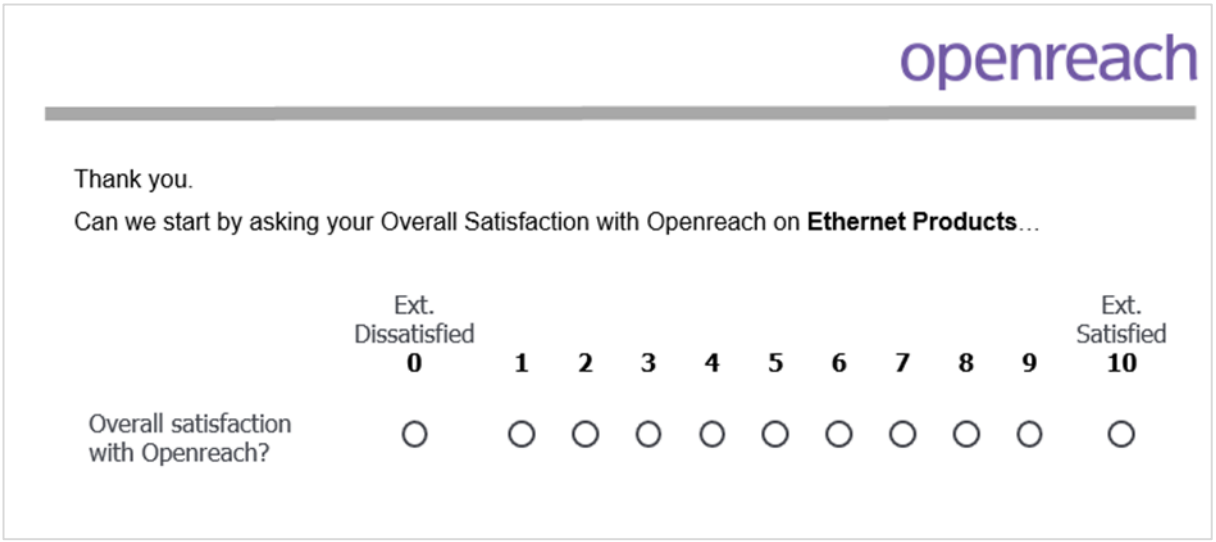
1. The CSAT survey follows a standard research approach, starting with a 'top of mind' question to establish the Communication Provider (CP) customers' overall satisfaction with the service that Openreach is providing, followed by questions about their satisfaction with individual areas/teams they engage with.

2. CP Customers can give a rating from 0 to 10 on how well Openreach is performing in each area they select to respond to with an associated opportunity where customers can leave any general comments, either positive or negative, via verbatim to explain the reason for their score.

3. At the end of the survey there is a question that asks customers if their responses can be used in publications, collateral or online. Those customers that do not wish for this can opt out.

4. Below we provide a series of 'screenshots' to demonstrate how the survey operates:

Figure 1 -Standard rating question in survey.



5. Figure 1 above illustrates a question which asks customers to provide a rating on Openreach's performance in a certain area that customers have stated they engage with (e.g. a particular product). After customers indicate the rating, they are then able to add any comments that they feel are appropriate.

6. As shown below the survey includes different types of question.

Figure 2 - Question where CPs can select which comment is relevant for their perception of a service element.

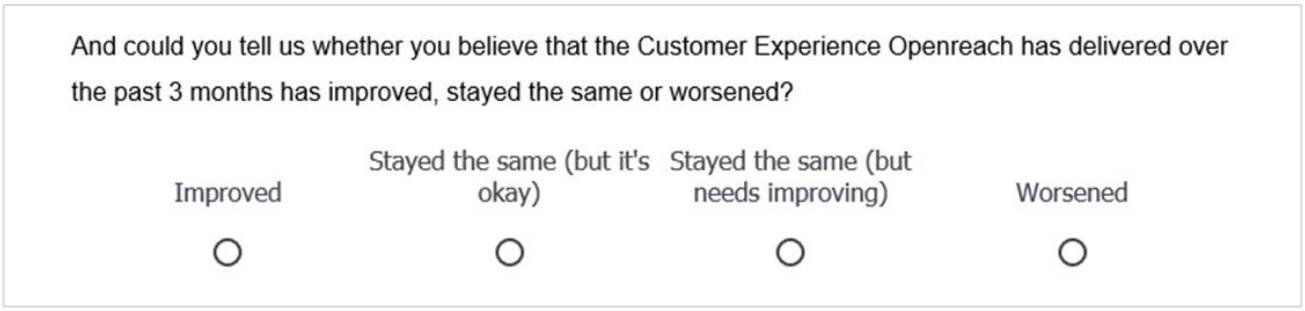
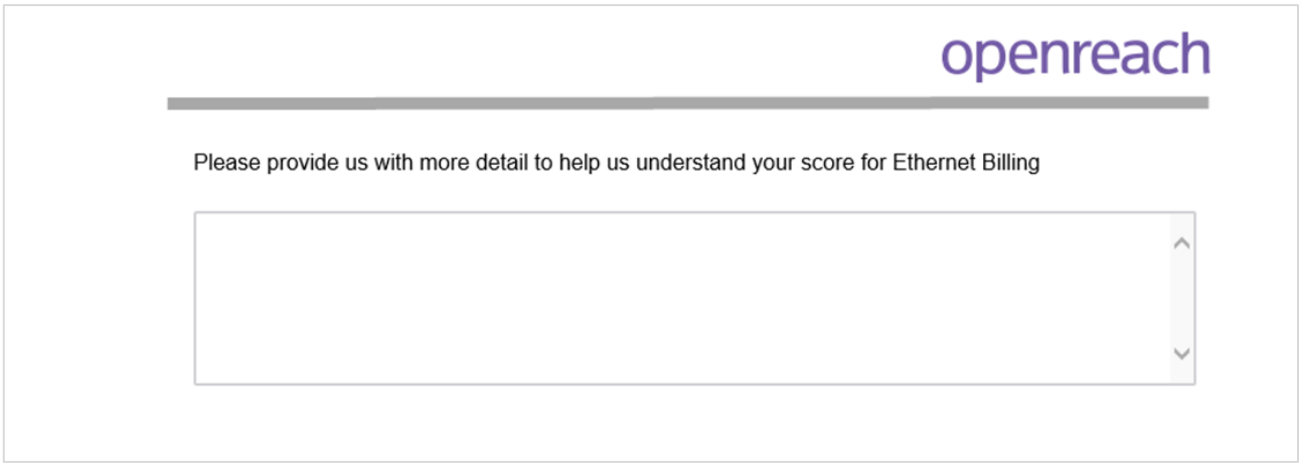


Figure 3 – Open ended question.



7. The survey gauges satisfaction from a CP customer through their ratings and comments. Combining ratings and comments provides greater understanding of the customer's strength of feeling and the reasoning behind it.

8. [✂]. Individual contacts are randomly selected from an overall pool of contacts and invited to survey no more than once every six months by the Customer Satisfaction Research team. This helps to avoid bias developing with the results through "survey fatigue." Results are assessed using a 12 month rolling average to ensure a representative result based on a statistically robust volume of responses with different functional leads across the CPs.

9. The results of these surveys are then used to assess how we are performing in the eyes of our customers.

Net Promotor Score (NPS) methodology

10. Openreach uses an industry standard calculation to assess NPS. The NPS system works on the following basis:

- **Promoters** - Customers who give a rating of 9-10. These are customers who are particularly supportive of the provider.
- **Neutral** - Customers who give a rating of 7-8. These are customers who consider to have "neutral" view of the provider.
- **Detractors** – Customers who give a rating of 0-6. These are customers with negative feelings towards the provider.

11. The NPS score is the percentage difference between Promoters and Detractors, i.e. Promoters (%) – Detractors (%) = NPS. Neutral customers are not involved in the calculation. An NPS score larger than zero is considered a good score.

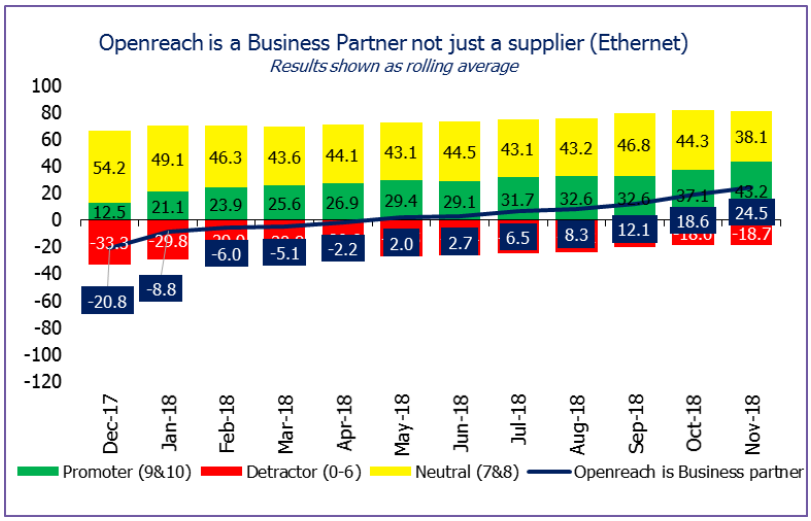
NPS Graphs and Explanations

12. When responding to the CSAT survey, CPs are asked a variety of different questions. Examples of which are provided below:

    - Given your relationship with Openreach, please rate the following 'We are a business partner, not just a supplier of products and services'.
    - Given your relationship with Openreach, please rate the following: 'We are a company you trust'.
    - Given your relationship with Openreach, please rate the following: 'Openreach provides Value for Money'.
    - Would you say that our provision of Ethernet products over the last three months has improved, stayed the same or worsened over the last three months?
    - How satisfied are you with the engagement with your Openreach Sales / Account management lead over the last three months?
    - How satisfied are you with the engagement with your Openreach Customer Experience team over the last three months?
    - Could you tell us whether you believe that the customer experience Openreach has delivered over the last three months has improved, stayed the same or worsened?

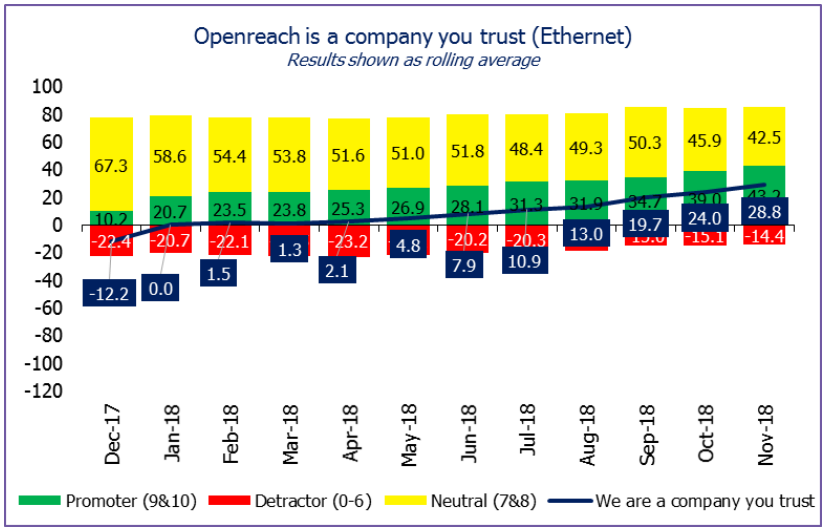
13. Figures 4 to 10 below illustrate the scores received from CP customers for these areas.

Figure 4 – Given your relationship with Openreach, please rate the following 'We are a business partner, not just a supplier of products and services'.



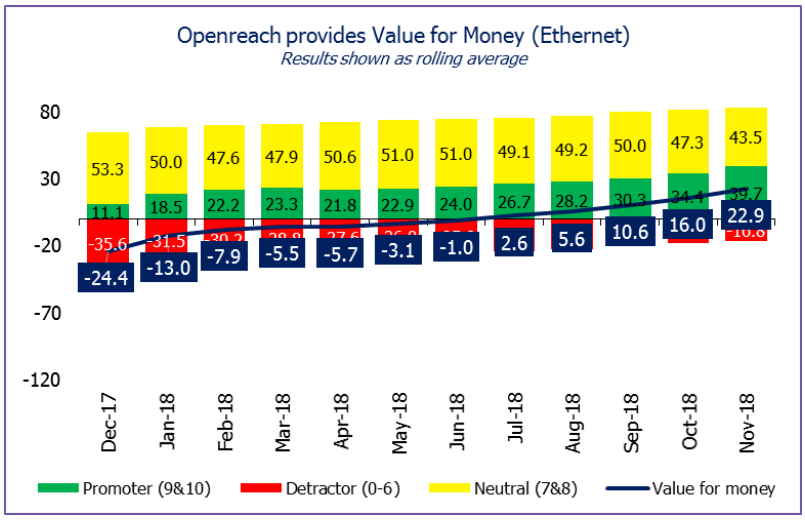
14. The NPS for this measure has shown steady improvement and demonstrates the types of relationships we have established with our customers. The NPS for *'Openreach is a Business Partner not just a supplier'* is at 24.5 and there has been an increase of 45.3 since December 2017. The NPS is currently positive which indicates Openreach are solidifying and developing the way we work with our customers.

Figure 5 - Given your relationship with Openreach, please rate the following: 'We are a company you trust'.



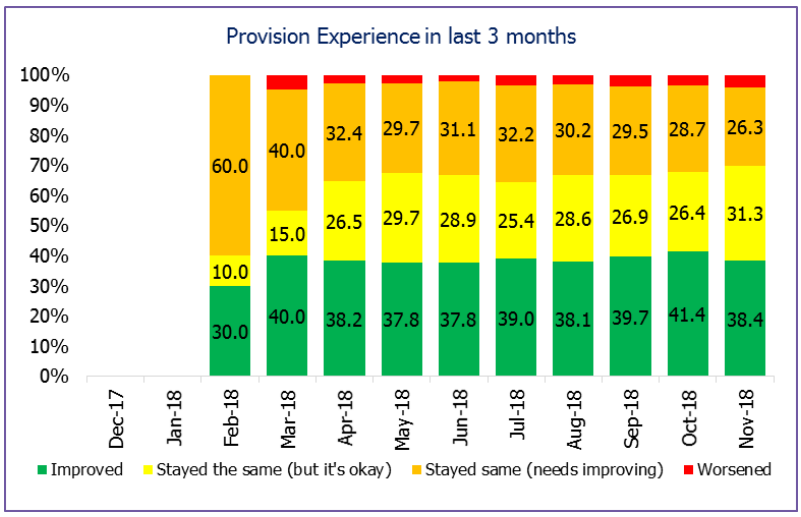
15. The NPS for this measure sits at 28.8 and since December 2017 there has been an increase of 41.0. The positive score here again shows Openreach is changing the relationships we have with our customers for the better.

Figure 6 – Given your relationship with Openreach, please rate the following: 'Openreach provides Value for Money'.



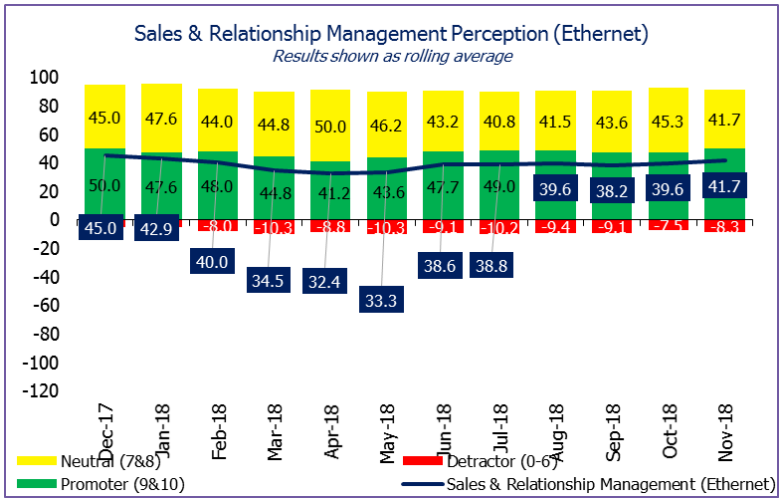
16. The measure which assesses *'Openreach provides Value for Money'* shows that there is a positive reception from our customers. As seen here, the NPS for this metric sits at 22.9 in November 2018 which in comparison to December 2017 is an increase of 47.3. This demonstrates that our customers feel that they are getting value for money from the services and products Openreach is providing.

Figure 7 - Would you say that our provision of Ethernet products over the last three months has improved, stayed the same ,or worsened over the last three months?



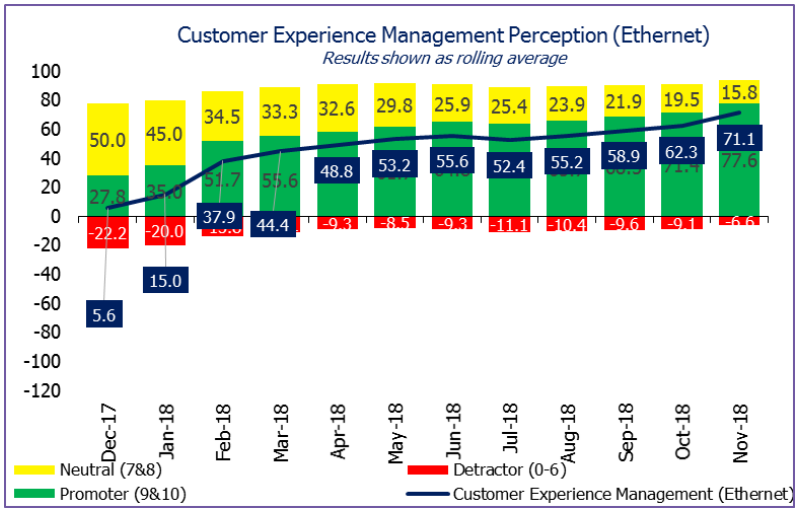
17. In November 2018 69.7% of surveyed CPs indicated that the quality of provisioning provided by Openreach had improved or been maintained at a good level. This demonstrates a steady improvement on the provisioning front, which has been one of the main drivers for our change of perception in the industry.

Figure 8 – How satisfied are you with the engagement with your Openreach Sales/ Account management lead over the last three months?



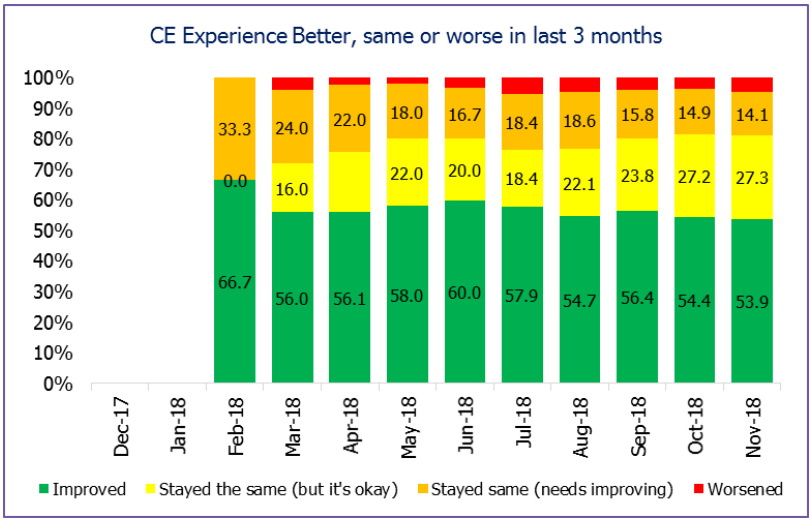
18. The NPS for this measure has been consistent, between 33.3 and 45 over the last year. The consistency of this performance at good levels has also been a key driver for our wider improvements.

Figure 9 - How satisfied are you with the engagement with your Openreach Customer Experience team over the last three months?



19. The rating for the '*Customer Experience Management Perception (Ethernet)'* metric is a notable score of 71.1. A score higher than 50 is considered 'exceptional' in NPS terms and this NPS illustrates that Openreach offers a great customer experience. Customer experience is the feelings customers have towards the way we operate and the way we do our jobs and encompasses all elements from ordering to provisioning, to repairing etc.

Figure 10 – Could you tell us whether you believe that the customer experience Openreach has delivered over the last three months has improved, stayed the same or worsened?



20. This graph demonstrates how customer experience has been in the past three months. In November 2018 81.2% of surveyed customers said our customer experience had improved or been maintained at a good level.