

Openreach response to service-related questions in Ofcom's consultation documents

*“Fixed access market reviews: wholesale local access,
wholesale fixed analogue exchange lines, ISDN2 and
ISDN30”*

and

*“Fixed access market reviews: Approach to setting LLU
and WLR Charge Controls”*

30 September 2013

NON-CONFIDENTIAL VERSION

Comments on this response should be sent to:
Alan Lazarus, Openreach Regulatory Affairs, via email at alan.lazarus@openreach.co.uk

Table of contents

1	Executive Summary.....	4
2	Introduction	24
3	Demand variability.....	26
4	Weather volatility.....	34
5	Glass Ceilings.....	47
6	Service-cost modelling.....	52
7	SLA/SLGs, KPIs and service standards	56
8	Responses to questions in Ofcom's consultation document: "<i>Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30</i>"	59
9	Responses to questions in Ofcom's consultation document "<i>Fixed access market reviews: Approach to setting LLU and WLR Charge Controls</i>"	86

Annexes

- Annex A:** Report by Deloitte, *Openreach Fault Data – Data Analysis* (September 2013) (non-confidential version)
- Annex B:** Report by Enders Analysis – *Broadband volume and uses* (September 2013) (non-confidential version)
- Annex C:** Report by Analysys Mason – *Final Report for Openreach. Fixed Access Market Review* (23 May 2013)
- Annex D:** Report by Ernst & Young – *Regulatory Benchmark of SLA/SLG applicable to WLR and LLU services provided by European incumbent fixed operators* (September 2013)
- Annex E:** Report by Cranfield University, Centre for Environmental Risks and Futures, *Openreach Climate Change Summary* (May 2013)
- Annex F:** Report by Walker Institute for Climate System Research – University of Reading, *Trends in the weather and climate of the UK: Evidence from observations* (21 June 2013)
- Annex G:** Report by UK Climate Impacts Programme (UKCIP), University of Oxford, *Ofcom's fixed asset market review – overview of climate change impacts* (2013)
- Annex H:** Openreach analysis underpinning implied reasonable SLG range for "on time" SLGs (provided in Excel format) (confidential)
- Annex I:** Review of Ofcom's proposed KPIs

Foreword

On 3 July 2013, Ofcom published its provisional conclusions on the Fixed Access Market Reviews (the "FAMR Consultation"). It subsequently published its consultation on the charge controls for Wholesale Line Rental ("WLR") and Local Loop Unbundling ("LLU") on 11 July 2013 and amended this on 20 August 2013 to correct errors in its cost modelling (the "LLU/WLR Charge Control Consultation"). The proposed controls are for the period from 1 April 2014 to 31 March 2017 (the "Control Period").

This submission is provided on behalf of British Telecommunications plc ("BT") by Openreach, a line of business within BT, in response to the service issues contained in the FAMR Consultation and, where relevant, the LLU/WLR Charge Control Consultation.

Openreach has provided a separate response to the non-service issues in the LLU/WLR Charge Control Consultation. BT Group has also provided a separate response to the FAMR Consultation and LLU/WLR Charge Control Consultation, reflecting the combined views of other BT lines of business (the "BT Group Response").

1 Executive Summary

1.1 Introduction

1. For the first time, in a Charge Control consultation, Ofcom is specifically addressing the relationship between Openreach funding (prices) and the service levels¹ Openreach delivers.
2. The consultation provides the opportunity for a cross industry outcome that properly reflects the demands of end users and Communications Providers (CPs) but also balances the trade-offs between Openreach prices and service standards/service levels, whilst recognising the challenges of delivering consistent service levels in this volatile market.
3. Since the commencement of the existing charge control review in April 2012, it has been a buoyant, exciting and challenging time for the UK copper fixed access market. Since April 2012:
 - the copper fixed access market has continued to grow, adding a further 56,300 connections;
 - end user moves between CPs, or market churn, has grown by 3.2%;
 - broadband penetration within the copper market has grown by a further 2% to circa 74%;
 - the number of retail CPs operating in the copper fixed access market offering customer choice has grown by a further 3% to 471;
 - the product mix (structure) of the market has continued to change with the market share of Metallic Path Facility (MPF) in the fixed line market increasing from 23.8% to 30.1%;
 - average broadband speeds have grown from 9.5Mb/s to 14.7Mb/s; and
 - end users' average time spent using their broadband connection per day has increased by 36%.
4. More end users, coupled with higher broadband use per customer, changes in market structure and growing extremes of climate, have pushed the physical capabilities of the copper network and Openreach engineering resources. Over the period of the existing charge control from April 2012 to September 2013;
 - the average number of faults per week has grown by 9%;
 - the percentage of faults that need to be fixed the next day has grown from 28% to 35%;
 - the number of extreme weather events grew in 2012/13 with the scientific experts forecasting this trend will continue;
 - the number of faults reported in a day demonstrated extremes of volatility. In one local area, the number of faults reported on the same day of the week had a minimum number of faults reported of 7 and a maximum number of faults reported of 747. Circa 40% of these faults need to be fixed the next day to meet the applicable Service Level Agreement (SLA) and avoid a Service Level Guarantee (SLG) payment; and
 - the actual repair service performance against SLA averaged 69.3%, but included a high of 86% and a low of 49%, due to the high fault volumes driven by the growing weather extremes.

¹ For the purposes of this response, service level is defined as the percentage of times that Openreach delivers the contractual product standard service (provision and repair) on time.

5. Throughout the period of the existing charge control Openreach has continued its programme of significant investment in its critical assets including:
 - [REDACTED] in the network to proactively reduce potential future faults and improve network performance;
 - [REDACTED] in improved tools for engineers to help better detect and diagnose complex faults; and
 - [REDACTED] invested in engineering training to improve Openreach engineering capabilities.
6. Since the Communications Act 2003, Ofcom has used successive market reviews and associated charge controls, to analyse market volumes and costs and, in the light of that, to set Openreach's prices with the aims of driving market growth, stimulating competition and improving customer outcomes.
7. Openreach has responded to this developing market environment and the core rental prices for MPF, Wholesale Line Rental (WLR) and Shared Metal Path Facility (SMPF) products have reduced by an average of 33% since 2003.
8. In the same period, average consumer line rental prices for CP services which use MPF, WLR and SMPF as inputs have increased by circa 40%.
9. Analysing all the evidence above, it is fair to conclude that Ofcom's approach to charge controls to date has played an important part in driving market growth, stimulating product innovation and new services plus stimulating competition, but the 33% average reduction in Openreach core rental prices for MPF, WLR and SMPF has not flowed directly through to end users.
10. Openreach welcomes the linked activity of the FAMR, LLU/WLR Charge Control and Service Consultations to fully align demand for provision and repair service with the components and costs of consistent service and the service levels that can be physically delivered.
11. In this response, Openreach sets out its views and evidence regarding the factors that impact on Openreach's service, including the challenges we face. This response contains extensive data and analysis comprehensively demonstrating that:
 - The service delivered to end customers through 2011/12, 2012/13, and so far in 2013/14, was and is reasonable, given the existing input costs, high demand variability and the physical and practical challenges of delivering service on the day;
 - The variable components that determine the service levels, and therefore costs, have changed and are forecast to change further, with the resultant effect that the efficiently incurred cost of delivering the current level of service from April 2014 will further increase;
 - The combination of several significant issues beyond our control, plus hugely variable local repair demand that cannot be accurately forecast, limit our current ability to deliver beyond circa 65% performance against applicable repair SLAs; and
 - There is a range of options to improve service with different costs and investments associated – and hence trade-offs with price.
12. It is critical that Ofcom and industry clearly understand the relationship between desired service levels and the funding levels necessary to deliver them. There are obvious trade-offs between service and price and moreover different CPs have different business models with different target service levels and customer experiences.

13. Openreach believe that the best outcome for industry is to gain agreement on (and Openreach funding for) the appropriate level of service for provision and repair that can be consistently delivered from April 2014.
14. Using Openreach analysis, plus the use of external market data and specialist experts, it appears that many of the component drivers of the cost of delivering service are increasing and market volatilities are growing.
15. Based on an analysis of just two of the key components, physical constraints prevent Openreach engineers fixing 21% of faults on the day. In addition, high local repair demand variability (variability coefficient of 44%) plus even higher local repair skill demand variability (variability coefficient of up to 75%) means Openreach can fail up to 50% of jobs on the day during peaks of high local repair demand. This is without factoring in the impact of extremes of weather. Consequently it is a challenge for Openreach to get consistent repair service levels above 65% against applicable SLAs.
16. Any service level improvements above this 65% level will require copper access prices to rise to enable Openreach to consistently deliver service levels nationally against existing repair and provision SLAs.

1.2 The service equation

17. For all major service organisations, service is an "equation," comprised of the elements outlined below. Some elements are within Openreach's control, some are the responsibility of the CP, and all are subject to volatility. The equation depends upon:
 - **Demand** - the current and future demand for both provision and repair services, recognising the different demands of products and product mix over time;
 - **Demand variability** – the fluctuations in demand for repair and provision at a local level;
 - **Forecasting accuracy** – the extent to which the variable demand for provision and repair can be forecast to a meaningful level of accuracy;
 - **Standard Service Levels** – the volumes and different levels of service required by end users and CPs with accompanying SLGs that are payable if service level(s) are not met;
 - **Economic resourcing** - how resource is organised and deployed to meet this customer demand, in terms of both the overall level and skill mix, and how that resource is deployed between work type, including the use of contingency; and
 - **The practical capability to deliver on the day** – the physical and practical constraints preventing 100% job completion on the day.

1.3 Demand

1.3.1 Demand - Repair

18. The key drivers of repair demand and Openreach repair service levels are as follows:
- fault rates by product and the impact of changes in product mix over time;
 - impacts of types of weather;
 - impacts of extremes of weather;
 - end users changing use of products and the impact that has on fault volumes;
 - the time of day that a fault is reported has a significant impact on determining whether Openreach can repair it on time in accordance with the applicable SLA; and
 - types of fault to be repaired and impacts on the end user of that fault type.
19. To fully understand the components of repair demand, Openreach undertook an analysis of all fixed access market faults for the period September 2011 to August 2013. In addition, Openreach commissioned an independent report and analysis of the same data by Deloitte (the Deloitte Report is attached as Annex A).

1.3.2 Demand – Repair - Fault rates by product and impact of changes in product mix

20. Within the Fixed Access market there are two main types of end user: those who purchase voice only, and those who purchase voice and broadband services. Voice only end users primarily use WLR and broadband customers use either WLR + SMPF or MPF. The critical difference between MPF and WLR faults is that, under the in-tariff applicable SLA, MPF faults (even voice faults) have to be fixed by the end of the next working day whereas WLR faults have to be fixed by the end of the next working day plus one.

Fault Rates

21. The fault rates per product (faults per 1,000 lines) are:

Table 1: Fault rates - The fault rates per product (faults per 1000 lines)

Product	Average	In-Life	Early Life
WLR	1.6	1.5	4.0
WLR + SMPF	2.3	2.1	4.5
MPF	2.0	1.7	13.2

Source: Figure 1 from the Deloitte report - (Early Life Faults are those that occur within 28 days of an engineering provision or repair) (see Annex A)

22. From September 2011 to August 2013 average fault rates per product have been stable but MPF faults show an increase² driven by the significant increase in MPF Early Life Failures (ELFs) since January 2012³.

² Deloitte Report, Figure 4 (see Annex A).

³ Deloitte Report, Figure 12 (see Annex A).

Volumes

23. From April 2012 to date, MPF market share of the fixed access market line base has grown from 23.8% to 30.1% and it is forecast to grow to [30.1%] by April 2017.
24. The growth in reported MPF faults reflects the growth in MPF market share and will exceed it if the growth in MPF ELF's continues.

Conclusions

- Growth in broadband penetration drives an increase in the average faults per line.
- The MPF fault rate is increasing.
- The growth in the MPF market share of the fixed access market line base means many more faults now have to be fixed by the end of the next working day after the fault report is received, adding additional pressure on Openreach overall service levels across all products.

1.3.3 Demand Repair - Impacts of types of weather

25. The sheer scale and ubiquitous nature of the Openreach network means that it is susceptible to a wide range of different weather types, primarily:
 - all connections carried by poles are potentially affected by wind, lightning, snow and precipitation ingress in joints;
 - joints and D-side boxes/chambers are affected by precipitation and flooding;
 - exchanges and network terminating equipment (NTEs) are affected by lightning and high temperatures; and
 - pole connections and NTEs are affected by fog and humidity.
26. Analysis of the faults over the last two years shows the strongest correlations between weather and faults were for the weather types precipitation, wind, humidity and temperature⁴.
27. Further analysis showed that, on average, faults that correlate to weather account for 34% of total fault volume, representing 43% of engineering task time on repair⁵.
28. Moreover, weather not only increases faults, but the impact is worsened as faults caused by adverse weather have average task times 20% higher than faults in other categories⁶.

Conclusions

- 43% of the engineering time on repair is spent fixing faults which correlate to weather types, particularly precipitation, wind, lightning humidity and temperature.
- Faults caused by adverse weather have average task times 20% higher than faults in other categories.

⁴ Deloitte Report, Figures 15, 16, 17, 18, 22 and 23 (see Annex A).

⁵ Deloitte Report, Figure 19 (see Annex A).

⁶ Deloitte Report, Figures 24 and 25 (see Annex A).

1.3.4 Demand Repair - Impacts of extremes of weather

29. The last few years have seen more extremes of different weather types at different times – the summer of 2012 was very wet throughout whereas the summer of 2013 has been very warm with thunder and lightning, plus some highly localised rainfall.
30. Extremes of certain specific weather types (precipitation, humidity, lightning, wind and temperature) correlate to peaks of faults volumes⁷.
31. During the wet summer of 2012 the conditions experienced were thought to be extraordinary. Although 2013 has, so far, seen less extremes of precipitation (albeit with some highly localised rainfall), there have been more extremes of wind and temperature. In fact fault volumes are 12% higher than in the so-called “extraordinary” year of 2012.
32. Weather experts now believe that extremes of weather will continue and perhaps even intensify. According to the Walker Institute (University of Reading):⁸

“...it is clear that the UK has become wetter over the past decade and rainfall events have become more intense ... The recent decade in the UK has included some of the most extreme weather on record and at this stage there is little evidence to suggest such a pattern will be broken in the near term ... it is clear that we are currently in a period of increased weather volatility and this pattern is likely to persist for the remainder of 2013 and for some time beyond. Increased local variability in weather patterns can be expected to be observed both geographically across the UK and in terms of seasonal variations with increases both in absolute terms (eg higher average UK rainfall) and in individual peak events (e.g. record temperature, rainfall events etc.)”

Conclusions

- Extremes of weather cause more fault volumes.
- Extremes of weather are growing and experts believe they will continue to grow.

1.3.5 Demand Repair - End users' changing use of products and impact on fault volumes

33. The ways in which end users are using CPs' services, and hence using the underlying Openreach copper access products, has changed. Openreach has commissioned an independent report from Enders Analysis (attached to this response) to review changes in broadband use trends.
34. From April 2102 to April 2014, end users are forecast to be using the internet for 36% more time each day and using multiple devices in the home (e.g. tablets and smartphones) to access new and growing applications, such as television (TV) and video on demand⁹.

⁷ Deloitte Report, Figures 20 and 21 (see Annex A).

⁸ Walker Institute Report, Executive Summary (see Annex F).

⁹ Enders Report, page 17 (see Annex B).

35. The growth of bandwidth hungry and digital specific applications such as high definition television has seen a growth in customer "issues" which are not technical copper line faults e.g.:
- buffering of the TV signal;
 - loss of pixilation;
 - delayed sound; and
 - reduced broadband speed.
36. A technical copper line fault occurs where the line electrical characteristics do not meet the agreed industry standard of SIN349 (SIN349 is the agreed industry standard for the electronic characteristics of the line).
37. The sorts of end user issues described above, where the line does meet the line specification of SIN349, can nevertheless be investigated and improved using products called SFI2 (Special Fault Investigation) and BBB (Broadband Boost). These growing end user issues which reflect rising expectations put growing pressure on Openreach service teams.

Conclusion

- Over the last two years, the growth of broadband use per household per day and the different applications that end users are accessing has led to a growth in end user issues not related to the SIN349 line specification. This will continue to grow in the next charge control period.

1.3.6 Demand Repair - The time of day that a fault is reported has a significant impact on determining whether Openreach will fix the fault on time, and meet the applicable SLA.

38. A key challenge for the Openreach repair service is fixing the fault on time, which means the end of the next working day for MPF faults or the day after that for WLR faults.
39. The percentage of faults that need to be fixed by the end of the next day is increasing significantly. It has grown from 28% in April 2012 to 35% in September 2013 and is forecast to rise to 37% in April 2014 and to a potentially very challenging 44-50% by April 2017.
40. CPs can report faults, for end of next working day repair, up to midnight on the day. In such circumstances Openreach has physically only 18 hours, up to 6.00pm the next day to fix the fault. This is further limited in winter, because of health and safety restrictions on performing certain types of work in the hours of darkness. In some parts of the UK this can affect service operations from as early as 2.00pm and on a more general basis across the country after 3.30pm when we move from British Summer Time to Greenwich Mean Time.
41. Over the last two years the proportion of faults received after 6.00pm has increased from circa 18% to circa 22% and one CP in particular places more faults later in the day than others¹⁰.
42. The effect on Openreach is that faults placed after 6.00pm are 22% more likely to not be fixed within the applicable SLA and therefore result in Openreach making SLG payments¹¹.

¹⁰ Deloitte Report, Figures 27 and 28 (see Annex A).

¹¹ Deloitte Report, Figure 26 (see Annex A).

43. The consequence of Openreach having to repair more MPF faults by the end of the next working day is that it limits the volume of complex WLR faults that Openreach can schedule for the next day engineering activity, allowing the day after for any necessary skill specific work to meet the WLR SLA. Consequently, Openreach performance against the WLR repair SLA, and more generally the performance against provision SLAs will decline as the impact of the MPF repair SLA grows alongside MPF market share growth.

Conclusion:

- Openreach do not believe that the end of the next working day repair standard SLA for all MPF faults is a suitable service level target for consumer MPF customers, especially when faults can be reported up to midnight the day before.

1.3.7 Demand Repair - Types of faults to be repaired and impact

44. The other added challenges of repair demand are the complexities and varieties of faults and the skills and logistics required to fix them.
45. Faults can be caused by an extensive range of events, circumstances and incidents. Weather is a major factor with 34% of faults correlated to specific weather types. In addition, faults can be caused by:
- third party damage;
 - vandalism;
 - cable theft;
 - poor quality of installed home network;
 - public utility interference; and
 - road accidents.
46. All of these examples of events, circumstances and incidents plus other similarly unforeseeable events and circumstances are extremely difficult to anticipate.
47. Different faults require different skill sets and equipment to repair them. As outlined in Section 3 below, the daily repair demand volatility at an operational manager level has a variability coefficient¹² of 44%. If the same repair demand was to be modelled at the next level of complexity (repair skill variability) then the skill demand variability coefficient increases to up to 75% at an Operational Manager (OM) level depending on the skill modelled. Therefore, not only is it virtually impossible to forecast the type of event, circumstances and incidents that cause most faults, it is even more difficult to forecast the engineering skills required to fix the fault on the day.

¹² The fault volume variability coefficients above were calculated using the standard deviation of the time series divided by the mean – the coefficient of variation; a standard statistical measure.

48. Although some fault types can be diagnosed, on many occasions, when an engineer is despatched to a fault, until they arrive on site and assess the job it is not known what will be needed to fix it. A job may require any of the following equipment or skill-sets:
- a hoist;
 - a gulley sucker;
 - underground skills;
 - cable jointing skills;
 - digging skills;
 - construction or duct replacement equipment;
 - pole replacement or repair skills and equipment; or
 - pressurisation skills.
49. Two further significant challenges affecting repair variability are the differences between what can often look like similar jobs and geographic/network differences:
- No two repair jobs are the same, and two identical looking jobs can take significantly different task times to fix. On many occasions when two similar faults are compared, they take very different periods of time to fix, for example from our analysis one took 2 hours 16 minutes and the other took 5 hours 20 minutes for good reasons.
 - No two geographies or local networks are the same. For example, in the Isle of Arran recently, fixing circa 3k faults required replacing 400 poles.
50. There are more extremes than might be expected, yet all faults have the same SLA (end of next working day or end of next working day plus one) regardless of severity or complexity.

Conclusions

- Most of the events, circumstances and incidents that generate faults cannot be anticipated.
- The daily variability, at an operational manager level, of the skills required to fix faults has a variability coefficient of up to 75%.
- On many faults, the exact skills and equipment required cannot be definitively assessed until the engineer visits the site.
- No two faults are the same and task times for the same or similar type faults vary significantly.
- Specific geographies, network configurations and events, can require very specific unforeseen engineering solutions to fix.
- All faults have the same SLA regime irrespective of the severity or complexity of the fault, or the skills and equipment needed to fix it.

1.3.8 Demand Variability - Repair

51. As outlined in the previous section, faults that are randomly generated by different and mostly unforeseeable events, circumstances and incidents, are extremely difficult to fix in many cases, and the volume of work they generate is extremely variable on a daily basis at an OM level.

52. Openreach engineering resources are organised in geographical patches. There are 9 General Manager (GM) patches, 58 Senior Operational Manager (SOM) patches and 487 Operational Manager (OM) teams operating across circa 430 Preferred Work Areas (PWAs).
53. Monthly and weekly resourcing is planned at a SOM level. Daily operational resourcing is then planned at an OM level with engineers mapped to PWAs, which allows resources to be utilised optimally with inter-patch mobility supported via loans of resources at peak times. This also facilitates the application of local engineering knowledge and minimises engineering visit times.
54. The challenge for the OM is to resource the correct number of engineers with the right skills to repair a constantly changing number of faults, many driven by unpredictable events, circumstances and incidents with many that need to be fixed by the end of the next working day.
55. Using repair volumes from September 2011 to August 2012, we measured the daily repair demand variability at GM patch, SOM patch and OM patch level.
56. The repair demand variability coefficients at different geographical levels are as follows:
 - National – 10%
 - GM patch – 14%
 - SOM patch – 21%
 - OM patch – 44%

Conclusions:

- Daily repair demand variability at an OM level is highly variable with a daily repair demand variability coefficient of 44%.
- The daily repair skills variability at an operational level is even more variable when looked at in more depth at a skill level, where the daily skill demand variability coefficient is up to 75% depending on the skill required (see Section 1.3.7 above).

1.3.9 Demand Variability - Provision

57. Prior to the introduction of the Copper Appointment Availability (CAA) SLA there was no requirement for prior notice from CPs of potential provision peaks of demand, unfortunately similar to the way repair still works today.
58. Lead times on provision fluctuate due not only to high un-forecasted provision demand but also due to the knock-on impact of spikes in repair volumes. The introduction of the requirement for CPs to forecast provision volumes at a regional level, well in advance, has helped Openreach to plan for future provision volumes. However, given the agreement Openreach has with industry to prioritise repair over provision services, local repair demand spikes mean Openreach engineering resource can be switched from provision to repair to deal with local repair demand spikes. Openreach performance against the provision CAA SLA of 13 days has improved to an average of circa 10 days currently, however Openreach's performance against the CAA SLA continues to be dependent on local repair demand variability.
59. On provision, Ofcom has recognised the importance of Openreach receiving detailed and accurate forecasts from our CP customers as part of the recent CAA SLA negotiations.

60. The three major consumer-focused CPs (BT Retail, Sky and TalkTalk Group (TTG)) now forecast regional monthly provision volumes three months in advance. Whilst helpful, this does not show demand at an OM, or even a SOM level and the forecast regional accuracy has varied between 0% and 100%. The management of provision demand is also helped by the Openreach appointment book resourcing process from two weeks in advance of the day.
61. A key issue for Openreach is the adverse impact of excessive un-forecasted or unforeseeable repair volumes on the availability of provision appointments, given the agreement with industry that repair work should be prioritised.
62. The poor summer of 2012 and the recent lightning strikes in 2013 both had a significant impact on our ability to offer available provision appointments, with availability extended by 20-30% (2-3 days), but depending on the nature and location of the unforeseen repair spikes the impact on provision could be worse than this and take considerable time to recover.

Conclusions:

- CP provision forecasts would be more meaningful if they were provided at a SOM/OM level on a weekly basis.
- CPs need to continue to improve their regional provision forecasting accuracy.
- The volatility of local daily fault demand means Openreach now risks incurring provision appointment availability SLGs because of the industry agreement to prioritise repair.

1.4 Forecasting Accuracy

63. Repair forecasting and resourcing is carried out at a number of levels;
- Geography – GM, SOM and OM patch;
 - Timescales – yearly, monthly, weekly; and
 - Skill – standard, broadband, specialist.
64. Strategic estimates of the number of repairs at a weekly level are made at the GM level to ensure that the best view of resources and skills are planned. This uses long term forecasts of the future product mix, expected improvements derived from improvement initiatives and long term seasonal trends due to climatic conditions to predict future repair requirements.
65. To provide shorter term resource estimates, Openreach produce repair forecasts at the SOM level and develop resourcing plans at an OM and individual skill level. These take account of the recent history of repair requirements within the SOM patch, combined with local, day by day weather forecasts 14 days into the future. This information takes some account of the volatility of the repair intake at the OM level but clearly there are practical limitations to our ability to forecast demand 'spikes'. However, these approaches will never be accurate enough to cope with the repair skill demand variability that is observed daily at local OM level, as outlined above.

66. As outlined in the Demand Variability – Repair (Section 1.3.8 above):
- weather correlates to 34% of total faults (43% of engineering repair task time) and cannot be forecast accurately even the day before, as industry experts tell us¹³.
 - other unforeseeable events, circumstances, random incidents and end user behaviour generate large volumes of faults which are also very difficult to anticipate.
67. Openreach sampled and analysed the accuracy of its own daily repair assumptions at an OM level. Unfortunately it was clear that the local variability of repair demand variability meant that the accuracy of the Openreach resource forecasts were only 2 or 3 percentage points better in accuracy at an OM level, than the repair daily demand variability coefficient of 44%.

Conclusions:

- The Openreach forecasting accuracy for daily repair demand at an OM level is marginally better than the daily variability of the demand itself, which is significant, with a daily repair demand variability coefficient at an OM level of 44% and a skill demand variability coefficient of up to 75% dependent on the skill.
- The reasons for such a high level of daily repair demand forecasting inaccuracy are that the key drivers of repair volume (weather and unforeseeable events and circumstances plus random incidents) are very difficult to anticipate.
- As outlined in the provision demand variability section above, the major CPs forecast regional monthly provision volumes in advance. However, provision forecasts would be of greater use to Openreach in terms of resource planning if CPs were able to accurately forecast provision at a SOM/OM level on a weekly basis and also improve the accuracy of CP monthly regional forecasts.

1.5 Economic resourcing

68. Openreach continually strives to improve the flexibility with which we manage our workforce – so that we can deploy the right level of resource at the right time, in the right locations, and with the right skills and equipment to meet the demands of each individual task.
69. The regional/local structure established for our engineering force optimises local network knowledge and minimises engineering travel times. Some local demand spikes can be managed through the use of mobile engineering teams, contractors and flexible working with overtime. There is nevertheless a practical limit to our ability to respond to localised spikes in repair demand, while further constraints have been added with the introduction of the provision CAA SLA/SLG.
70. Getting an engineer with the right skills to the right job is essential for completing efficient and on time repair. Diagnostic tools enhance the ability of our engineers to understand the specification and location of faults in the network and Openreach has invested considerable resources ([£]) to optimise these. The challenge of completing repairs on time is exacerbated by the fact that many jobs require engineers with specialised skill-sets, particularly for those harder to fix faults driven by extreme weather, as outlined in the Demand Repair section above.

¹³ Deloitte Report, Key Findings – Page 5 (see Annex A).

71. There are practical limitations to our ability to move engineers with the right skills to local areas where there are spikes in demand.
72. We respond flexibly to increased and volatile demand through loaning engineers to other areas; the increased use of contractors; and increased overtime, including invoking contractual overtime. [X].
73. It should be noted however that such measures increase task times and reduce productivity. This is because travelling increases, and there is a lack of local geography and network familiarity.
74. Openreach sets resources at an OM level to the equivalent of the mean of repair and provision demand, the most economic point.
75. Given a daily repair volume demand variability coefficient of 44% at an OM level, the further complexity of the skills required and the inability to forecast weather and other unforeseeable events, circumstances and random incidents, Openreach is significantly challenged to meet a considerable number of daily demand spikes throughout the year.

Conclusion:

- Even after using contractors, loaned engineers, voluntary and contractual overtime, the mobile workforce and managing provision appointment availability, Openreach can still fail to get to up to circa 50% repair jobs on the day, with an average of circa 20% jobs failed across the country due to the variability of daily repair demand (volumes and skills) at an OM level.

1.6 Service Level Agreements

76. Openreach believes, given the service challenges in the fixed access copper market, that Ofcom is right not to modify existing SLA/SLG arrangements in this market via further regulation, but rather to allow these to develop via a process of facilitated negotiation between Openreach and CPs. While we generally support the negotiating principles outlined by Ofcom, Ofcom should also recognise that the function of this process should not solely be to create more SLAs or deepen existing SLGs (or add new ones), but rather to assess how the existing arrangements can be more effective – for example by extending the CP forecasting approach that has been of great benefit in the CAA SLA.
77. Accurate local forecasting from CPs is essential if consistent service levels are to be delivered. There needs to be clear consequences for CPs who consistently under-forecast demand, and thereby disrupt Openreach's ability to deliver service to all CPs in the market. In addition, Ofcom should also incentivise CPs (in addition to Openreach) to play their part in delivering incremental service benefits, for example by continuing to deliver in industry programmes such as the "OTA2 tasks" (Office of the Telecommunications Adjudicator) that have delivered industry best practice and real benefits into the market.

78. Openreach already has the most comprehensive SLA regime in Europe. This is demonstrated in two independent benchmarking reports by Analysys Mason (attached as Annex C¹⁴) and Ernst & Young (attached as Annex D¹⁵). As Ernst & Young point out, the Openreach SLAs are the most comprehensive on multiple levels:

“Openreach’s SLA targets appear to be more extensive in specification than most other European providers; e.g., Openreach has four different SLA targets for repair activities, ranging from a maximum target of 3 working days to a minimum of 6 hours. In a number of other countries, (e.g., Portugal) there is just one service level.

Openreach SLA targets relate to a greater number of stages of each process compared to all of the other European operators in the sample. For example, for LLU provision, there is an “on-time” SLA target, a “lead time” SLA target for provisions that require an engineering visit, an SLA target relating to whether the engineer arrives within a specified time slot and an SLA target relating to whether the circuit is delivered in a fully functional state. Our analysis has shown that, for all the operators in the sample that we have reviewed, there is not the same breadth of SLA targets.”¹⁶

79. Furthermore, all these SLAs are accompanied by an SLG that is proactively paid on a per occasion basis, and SLGs are not mutually exclusive (i.e. it is quite possible for multiple SLGs to be paid in any given provision or repair scenario where SLAs have not been met). The comprehensive nature of these SLAs mean that in circumstances where Openreach prioritises repair in times of high fault intake, there is a consequence on the appointment availability SLA/SLG for provision (i.e. the “pressure valve” previously available of extending provision appointment books now comes with an additional cost).

1.7 The physical and practical capability to deliver on the day – the “Glass Ceiling”

80. Even with sufficient funding and the ability to better anticipate demand volatility, an upper threshold of the best possible service or “glass ceiling” will always exist, with a range of different factors preventing 100% job completion in any day.
81. Based on a detailed job analysis undertaken last year, Openreach have identified a “glass ceiling” to complete jobs on the day (not SLA performance) at the level of circa 79.50% for repair and 83.7% for provision. The key factors establishing the “glass ceiling” are as follows:

Table 2: Key Factors Establishing a “Glass Ceiling” on Service Levels

Repair		Provision	
CP issues/No Access	6.2%	CP issues/No Access	10.0%
Needs civil engineering	6.0%	Network fault found	3.7%
Specialist skills required	5.2%	Needs civil engineering	1.4%
Other	3.1%	Other	1.2%

Source: Openreach

¹⁴ Analysys Mason, *Final Report for Openreach. Fixed Access Market Review* (23 May 2013) (see Annex C).

¹⁵ Ernst & Young, *Regulatory Benchmark of SLA/SLG applicable to WLR and LLU services provided by European incumbent fixed operators* (September 2013) (see Annex D).

¹⁶ Ernst & Young Benchmarking Report, page 2 (see Annex D).

82. For a complete list of the categories affecting the Openreach ability to complete tasks on the day and an associated analysis please refer to the more detailed explanation later in this response.
83. In addition to these factors, there is also a further range of constraints which are seasonal and/or geographic, such as:
- the amount of daylight available and certain health and safety restrictions on the work that can be carried out in the hours of darkness; and
 - the specific restrictions on street works (for example, in Cornwall in summer).

1.8 Our customers can help to improve outcomes

84. Openreach is one part, a very key part, in a three part service value chain that also includes the CP and end user. Each part of this service value chain has important responsibilities to discharge to enable effective consistent quality service levels to be delivered on an end to end basis.
- end user – I am clear what I want, understand what I will be paying, I have agreed what I and getting and when, I understand when someone needs to be at the premises.
 - CP – we are clear what we selling, we set customers' expectations, we pass on the correct customer details, we agree and set customer appointments, we use the appropriate Openreach products, we try to understand and accurately diagnose the end user issues.
 - Openreach – we are clear where and when we are going, we are clear what we are doing, we are clear on the quality standards expected of the work delivered.
85. Openreach does not control all aspects of this service value chain, particularly in respect of initial and any subsequent interactions with end users and setting clear end user expectations.
86. Ofcom should acknowledge the boundaries of what is reasonably within and outside of Openreach's control, and which aspects are within the control of CPs. There are a number of important aspects that need to be addressed through improvements in CPs' own processes and better CP management of the customer experience.
87. In addition to the need for CPs to actively and accurately forecast provision demand and to ensure reasonable notice is given of planned increases, there are a number of improvements that could be made through CPs adhering to "process" best practice. The key issues CPs can address to add to industry capacity and improve service levels are:
- cancelling engineering appointments at late notice for provision and repair, this is equivalent to 3-7% of appointments;
 - engineers not being able to gain access to the end users premises because end users are not present or no longer want the service, this is equivalent to 5-7% of appointments;
 - ordering an engineering appointment when it is not needed – poor use of "Working Line Takeover" (WLTO) or "start of a stopped line, this is equivalent to 4-5% of appointments;
 - incorrect/inconsistent use of diagnostics/testing resulting in differential fault rates between CPs, this is equivalent to 1-2% of repair appointments; and

- sending engineers to the wrong address due to incorrect address details being given to Openreach.

Conclusion:

- CP best practice behaviour can remove significant areas of wasted or inefficiently used Openreach time and improve the end user experience

1.9 Future trends

88. As outlined in this Openreach submission and the referenced independent reports, there are a number of factors that impact Openreach volumes and therefore delivery of service levels.
89. With the introduction of the CAA SLA, growth and spikes of un-forecast repair volumes now impact both Openreach performance against both repair SLAs and provision SLAs,
90. The key components driving engineering resource demand and their potential trend and impact over the period of the next charge control are outlined in Table 3 below:

Table 3: Future Trends for Variability Driving Potential Demand for Provision and Repair Volumes and Service Levels

Volume Driving Factor	2014 to 2017 Trend	2014 to 2017 Impact
Provision volumes	Growing	Performance to SLA challenged by local repair variability
Market churn	Increasing	Performance to SLA challenged by local repair variability and danger of a growth in product ELF's
Broadband growth	Increasing slightly	Increase in fault rates per line
MPF fault rate	Increasing	Increase in fault rates per line
WLR/MPF Early Life Failures	Increasing	Increase in fault rates per line
MPF% of market base	Increasing	Increase in faults that need to be fixed next day
Weather	Variable between types – precipitation, temperature, humidity and wind	Increase in fault volumes, fault complexities and fault task times
Extremes of weather	Increasing	Increase in fault volumes, fault complexities and fault task times
Broadband use per line per day	Growing	Increase in complex customer issues and complex repair tasks
Demand variability	Increasing due to weather extremes	Reduced ability for resources to meet SLA/SLG will decline
Forecasting accuracy	Difficult to improve with demand variability increasing	Ability for resources to meet SLA/SLG will decline
Customer behaviour	Some CPs aspiring to best practices but not adhered to by all CPs	Potentially restricting the ability of Openreach fixed resources to meet SLA/SLG

Source: Openreach

Conclusions:

- Nearly all the key components that drive engineering resource demand are increasing without any increase in funding Openreach costs.
- The introduction of the CAA SLA means Openreach has a double SLA/SLG consequence when there are unforeseen spikes in local fault demand – the SLA/SLG for repair on time and the SLA/SLG for appointment availability.
- CP behaviour can reduce some of the cost of failure in the market, some changes of behaviour are championed by CPs, others are not.

1.10 Service and funding options

91. As outlined in all of the sections above, existing product prices coupled with increasing fault demand variability and fault volumes will only sustain a repair on time service performance of around 65% now and declining into the future as faults continue to increase.
92. Openreach believe it is clear from the analysis of the impact of demand volatility that performance outcomes cannot be consistently delivered without increased resources at an OM level to cater for unexpected demand. Unless there is funding for such contingency resourcing to meet demand 'spikes', it is clear that not all SLAs can be delivered to a consistent level. If this is to be the case, then this price and service levels trade-off should be made explicit.
93. Ofcom accepts that there is a clear linkage between the charge control outcomes and the level of service performance required. As Ofcom's current consultation notes, we have engaged E&Y to build a detailed simulation model to quantify the impacts on Openreach resourcing and costs (and hence, on MPF and WLR prices) of different service levels for both provision and repair. This work will serve to highlight the trade-offs between cost and service and form the basis of Ofcom's October consultation. The preliminary results, shown in Ofcom's consultation, indicate that to have lifted repair performance to 80% from the actual average achieved in 2012/13 would have required an additional 15% of engineering resource. The modelling also demonstrates that the relationship between service levels and costs is non-linear: as service levels increase over 80% the costs of delivery rise steeply.
94. Openreach currently takes reasonable steps to mitigate the adverse trends outlined in the sections above – we are committed to, and are increasing, our fault volume reduction programmes and our quality and process improvement initiatives such as R10k/ R15k. However, there are practical limits to what can be achieved given Ofcom's current charge control approach.
95. An alternative approach is for Ofcom to take more radical steps to incentivise more investment in the network to try to reduce fault levels. One striking feature of the current regulatory regime is that it does not allow for or incentivise major capital expenditure on network renewal (which could be in the order of billions of pounds) in contrast to arrangements in place in other sectors such as the water and energy industries where mechanisms exist to allow price rises to fund specifically-agreed major renewal projects. Openreach believe that in developing a new charging regime aligning Openreach prices and service levels Ofcom should consider such alternative approaches.

1.11 Service targets should reflect our ability to deliver

1.11.1 SLAs should be industry-led with SLGs set at the right level

96. Ofcom should recognise the breadth and generosity of our current SLAs/SLGs. As indicated above, our independent international benchmarking studies from Analysys Mason and Ernst & Young show that Openreach offers a broader range of SLAs than other incumbents and we are one of the few who are liable for SLG payments on each individual failure to meet an SLA. Openreach's individual SLAs and SLGs are more stringent than the European average. For example, Analysys Mason found that *"Among operators that have 100% achievement targets, Openreach has the highest penalties"* and that for WLR repair *"Openreach is stricter than the average for repair SLAs and penalties"*.¹⁷
97. Given that most Openreach SLAs are not mutually exclusive (i.e. it is possible that an MPF provision scenario could involve the failure of four separate SLAs with SLGs payments on each), and that Openreach's SLAs have 100% achievement targets, all the available evidence points strongly to a rigorous and comprehensive regime with no gaps and no case for regulatory intervention.
98. Openreach believe that based on the analysis in the sections above, there is no need to mandate new SLAs. In particular Openreach believes the proposal to mandate a new fibre appointment availability SLA is unnecessary; introduction of this SLA should be left to industry agreement so that it can incorporate appropriate CP forecasting requirements. An industry-led approach leading to commercial agreement will always be preferable to SMP regulation given, in particular, that this allows responsibility to be shared throughout the value chain. We support Ofcom's suggestions to improve and shorten the industry negotiation process with OTA involvement to help clarify the key issues of agreement/disagreement.
99. Ofcom should take the opportunity to review the current SLG levels, originally set as part of the 2008 SLA Direction¹⁸. In determining the recent dispute between Openreach and TTG relating to MPF New Provides Ofcom developed a methodology to assess the "reasonableness" of the level at which the SLG was set (in the case of the dispute the CAA SLA/SLG). Applying this method to assess the reasonableness of some other existing SLA/SLG arrangements (specifically the "on-time" provision SLGs for WLR and MPF) shows a reasonable daily SLG range of [£7.77, £8], set against the existing daily SLGs that stand at £7.77 and £8 for WLR and MPF respectively. On this basis the current SLGs are set well beyond what is reasonably required – and are in effect punitive (i.e. not compliant with liquidated damages principles and so potentially unenforceable in contract law). This needs to be addressed as part of Ofcom's review.
100. The best option available to Ofcom is to use the existing industry process to debate the requirement for any new SLAs/SLGs and modifications to existing SLAs/SLGs. This approach would have the additional benefit of allowing the development or modification of an SLA with full industry participation and for the SLA to be launched with the necessary addition of a CP forecasting process, in line with the principles enshrined in the CAA SLA/SLG.

¹⁷ Analysys Mason Report, page 7 (see Annex C).

¹⁸ Ofcom, *Service level guarantees: incentivising performance*, 20 March 2008. See <http://stakeholders.ofcom.org.uk/consultations/slg/statement/>

1.11.2 Service targets should be achievable

101. As indicated in this response, Openreach do not believe there is a need for SMP service targets in addition to the already broad contractual range of SLA/SLG requirements. However, if Ofcom do decide to mandate new service targets as SMP conditions in addition to existing SLAs, these need to be set at an achievable level, consistent with the level of funding explicit in the charge control settlement and recognising the practical challenges outlined above, including the repair and provision glass ceilings.
102. Our realistic assessment of the service-cost 'equation' would suggest that, if targets are to be set, then these service level targets should be set at a maximum of 75% on a national basis with suitable funding. Given the extent of demand volatility at local level, we do not believe it is appropriate to set sub-national SMP services targets, but if these are set, they should certainly be at a level significantly lower than any national targets, and accompanied by forecasting dependencies of CPs at the same level of granularity.

1.11.3 Transparency is important but any reporting must add value for stakeholders

103. Ofcom has proposed significant changes to the existing service KPI reporting, both in terms of new reports and changes to existing reports/definitions. The proposals effectively double the reporting requirement. Whilst we support the need for transparency of service performance - indeed Openreach is already more transparent than any other operator in Europe in terms of service performance reporting - it is important that KPI reports are designed to provide the right level of detail for the specific intended audiences and not confuse the relative roles of Openreach and downstream CPs. In our view it would be better to focus on a smaller number of key reports.
104. It is also important to consider, and not duplicate, the wide range of other reports already produced, such as the industry service pack. It is also not clear to us why Ofcom has felt the need to mandate these reports through SMP conditions, rather than the current industry-led approach. In our view, Ofcom needs to consult further in this area (the approach that it has previously taken on this issue) in order to ensure that the proposals are more fully considered prior to decision.

1.12 Conclusions

105. This response sets out Openreach's position on service to inform Ofcom's charge control and service regulation proposals. We would stress the following:
- Service is an 'equation' and our ability to deliver a consistent standard level of service is driven particularly by the increasing levels of repair demand we face, due to:
 - increasingly volatile weather with more extreme events;
 - increased pressure on our network with increased usage and new applications; and
 - the impact of increasing MPF volumes requiring next day repair.
 - Demand volatility creates huge challenges at an OM level unless we are resourced to cover 'demand spikes'.

- Openreach believes that a balanced view of the service-cost 'equation' leads to the conclusion that Ofcom and industry should agree a funding level linked to a standard level of performance against SLAs that can be consistently delivered.
- Our detailed analysis to date coupled with most recent 2013/14 trends, costs and performance levels shows that we are currently only funded to deliver a repair service at a level approaching 65% and with the trends we evidence, that service level is likely to deteriorate. Any standard service level improvements above this level will require copper access prices to rise in order for us to deliver consistent service levels nationally.
- If Ofcom do decide to mandate new service targets as SMP conditions in addition to the existing extensive contractual regime of SLAs/ SLGs, these need to be set at an achievable level, consistent with the level of funding and recognising the practical challenges Openreach has outlined. Our realistic assessment of the service-cost 'equation' would suggest that these targets should be set at a maximum of 75% on a national basis.

2 Introduction

106. We set out here Openreach's response on the critical issues that affect Openreach's service delivery arising from the Fixed Access Market Review (FAMR) and LLU/WLR Charge Control consultations.
107. In this response we set out our views and evidence regarding the factors that impact on Openreach's service, including the challenges we face. This response contains extensive data and analysis comprehensively demonstrating that:
- i) The service delivered to end customers through 2011/12, 2012/13, and so far in 2013/14, was and is reasonable, given the existing input costs, high demand variability and the physical challenges of delivering service on the day.
 - ii) The variable components that determine the service levels, and therefore costs, have changed and are forecast to change further, with the resultant effect that the efficiently incurred cost of delivering the current level of service from April 2014 will further increase.
 - iii) The combination of several significant issues beyond our control, plus hugely variable local repair demand that cannot be accurately forecast impact on our practical ability to deliver beyond circa 65% repair service levels on any day.
 - iv) There is a range of options to improve service with different costs and investments associated – and hence trade-offs with price.
108. In particular, this document sets out our views and evidence regarding the following key components of the service 'equation':
- **Demand variability** – covering the current and future demand for both provision and repair services, recognising the different demands of products and product mix over time; the fluctuations in demand for repair and provision at a local level; and the consequent difficulties in forecasting to a meaningful level of accuracy;
 - **Weather volatility** – evidencing recent weather trends, how they impact on Openreach's network and service delivery;
 - **The 'glass ceiling'** – that is, the practical capability to deliver on the day – the 'physics' of the practical constraints preventing 100% job completion on the day;
 - **Service-cost modelling** – covering the approach we would expect to be taken in Ofcom's autumn consultation; and
 - **SLA/SLGs, KPIs and service standards** – covering measures to regulate service in addition to the charge control.
109. We support our views with extensive analysis provided by independent experts (attached as annexes to Openreach's response):
- An analysis of Openreach's fault rates and trends by Deloitte covering the period from September 2011 to August 2013;
 - A report from Enders Analysis showing growing broadband usage trends and their impact due to the increased use of new devices and applications;
 - International benchmarking studies on SLAs and SLGs by Analysys Mason and Ernst & Young which demonstrate that Openreach already has the most comprehensive SLA regime in Europe; and

- Reports on weather trends from Cranfield University, the Walker Institute at Reading University and the UK Climate Impacts Programme (UKCIP) at Oxford University. These show how the weather is becoming increasingly volatile with a growing number of unpredictable localised extreme events.
110. Finally, this document includes Openreach's responses to Ofcom's questions relating to service from both the FAMR and LLU/WLR Charge Control consultations.
111. It should be noted that although this response primarily addresses Ofcom's current consultations, we are mindful that Ofcom will publish a further consultation on service later this year and the points we make here and the evidence we submit are also highly relevant to that consultation.
112. There are a number of critically important issues that Ofcom must thoroughly address in this further consultation on service. It is essential that Ofcom covers the following issues in depth:
- The relationship between service and costs, including additional funding required to deliver different service levels;
 - The need for minimum service level targets, with service cost-trade-offs made explicit linked to funding requirements;
 - A full analysis of fault trends by product; and
 - Full examination of the cost differential between WLR (on Care Level 1) and MPF (on Care Level 2) and the overall operational implications for Openreach of the growing requirement for Care Level 2 repair service.
113. Following the evidence we submit in this response, we also believe Ofcom should:
- Re-consult on its service KPI reporting proposals.
 - Review all SLG levels using a similar approach to the methodology adopted in resolving the recent CAA SLA/SLG dispute.

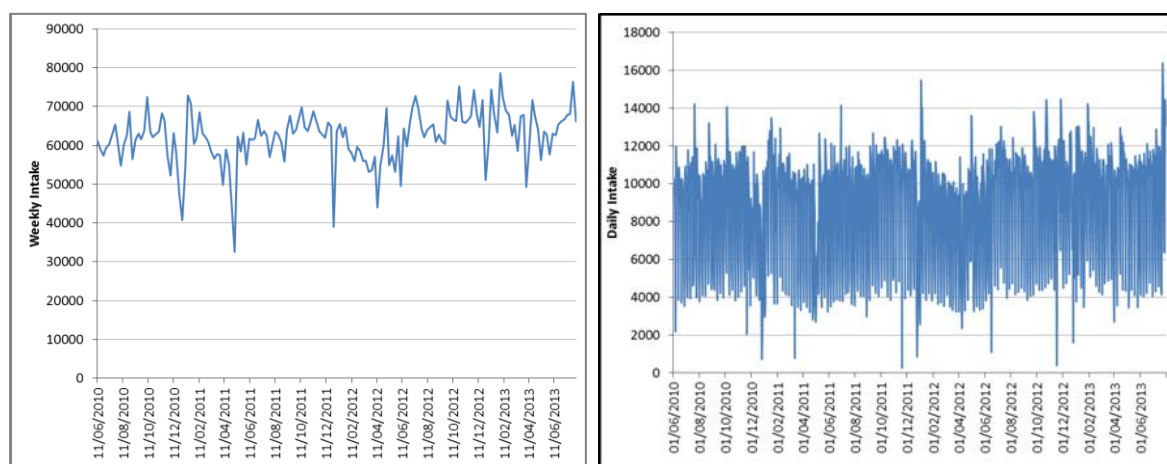
3 Demand variability

114. This section sets out the challenges facing Openreach service delivery due to demand variability, particularly volatility at a local level which is difficult to forecast and makes it practically impossible to ensure the right level of resource and skills are available to address local 'demand spikes' without significant contingency resource being held.

3.1 Repair variability

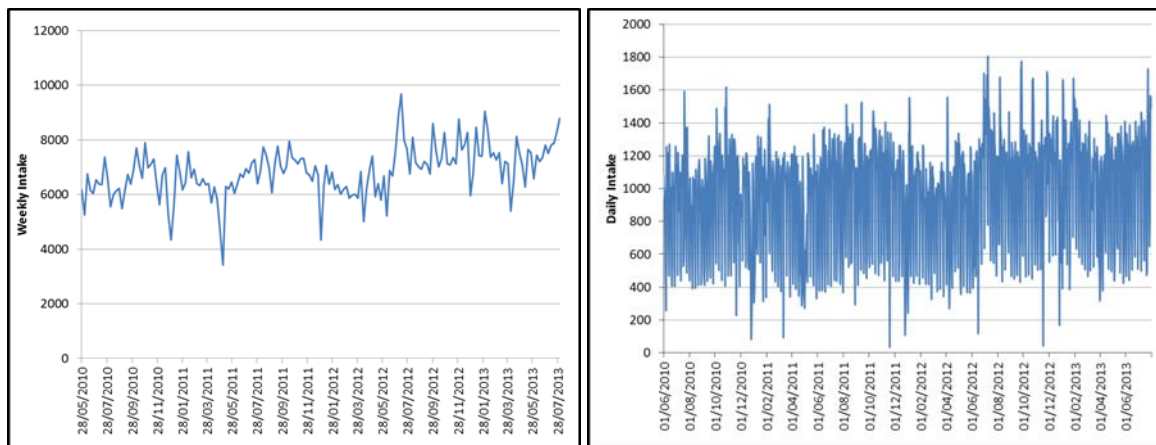
115. Faults are randomly generated by different incidents, they are extremely difficult to fix in many cases, and the volume of work they generate is extremely variable on a daily basis at an OM level.
116. Openreach engineering resources are organised in geographical patches. There are 9 General Manager (GM) patches, 58 Senior Operational Manager (SOM) patches and 487 Operational Manager (OM) teams operating across circa 430 Preferred Work Areas (PWAs).
117. Monthly and weekly resourcing is planned at a SOM level. Daily operational resourcing is then planned at an OM level with engineers mapped to Preferred Work Areas (PWAs) which allows resources to be utilised optimally with inter-patch mobility supported via loans of resources at peak times. This also facilitates the application of local engineering knowledge and minimises engineering visit times.
118. The challenge for Openreach is to manage demand variability, which increases exponentially as the geographical patch size (national, GM, SOM and OM) decreases and also increases as the time period measured decreases (weekly to daily).
119. Using repair volumes from June 2010 to July 2013, we measured the daily repair demand variability at GM patch, SOM patch and OM patch level. The graphs in Figure 1 to Figure 4 below demonstrate the daily variability of repair volumes, and how they change by patch size and time period measured.

Figure 1: Comparison of Weekly and Daily Repair Intake – National Level



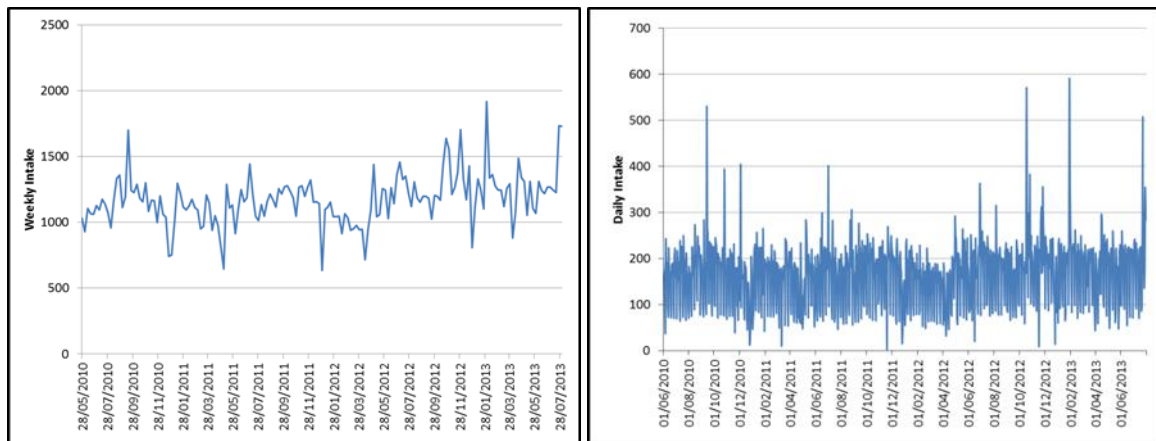
Source: Openreach

Figure 2: Comparison of Weekly and Daily Repair Intake – GM Patch Level (Example)



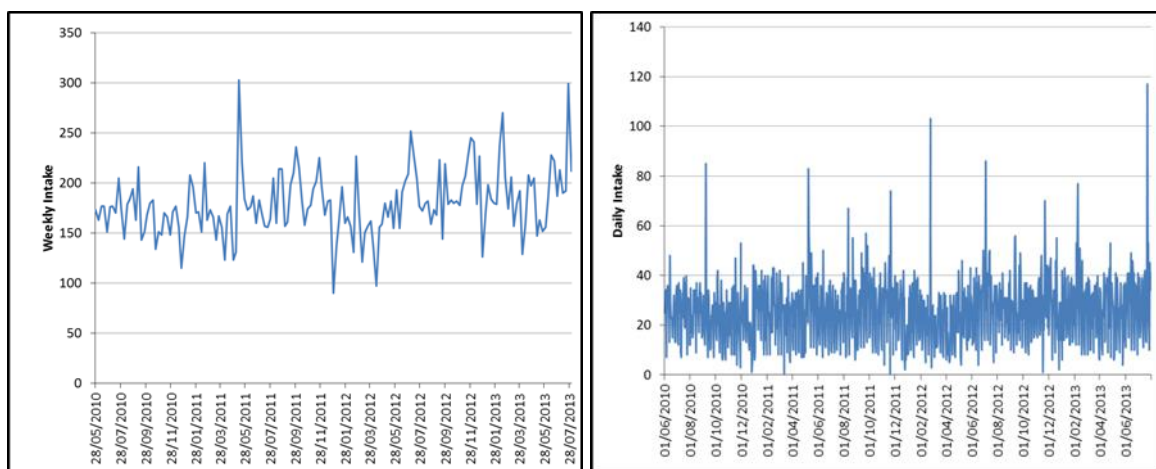
Source: Openreach

Figure 3: Comparison of Weekly and Daily Repair Intake – SOM Patch Level (Example)



Source: Openreach

Figure 4: Comparison of Weekly and Daily Repair Intake – OM Patch Level (Example)



Source: Openreach

120. These charts show that repair demand variability increases significantly at the more local, operational level where resourcing decisions to meet demand are taken. The daily fault volume variability coefficients¹⁹ by geographic area are as follows:

- Nationally – 10%
- GM patch – 14%
- SOM patch - 21%
- OM patch - 44%

3.2 Provision variability

121. Before the introduction of the CAA SLA/SLG on provision there was no requirement for prior notice from CPs of potential peaks in demand. This remains the case with repair today. Consequently lead-times on provision fluctuated significantly due to both, the un-forecast peaks in provision demand; and, the impact of the similarly variable and unpredictable spikes in repair volumes.

122. The introduction of the requirement for CPs to forecast provision volumes at a regional level, in advance, has certainly helped Openreach to plan for future provision volumes. However, as a consequence of the agreement Openreach has with industry to prioritise repair over provision services, local repair demand spikes can result in Openreach engineering resource being switched from provision to repair. Openreach performance against the provision CAA SLA of 13 days has improved to an average of circa 10 days currently, however Openreach's performance against the CAA SLA continues to be dependent on the variability of local repair volumes.

123. On provision, Ofcom has recognised the importance of Openreach receiving detailed and accurate forecasts from our CP customers as part of the recent CAA SLA/SLG negotiations. The three major consumer-focused CPs (BT Retail, Sky and TTG) now provide regional, monthly provision forecasts three months in advance. Whilst helpful this does not show demand broken down to Operational Manager (OM), or even a Senior Operational Manager (SOM) level, nor does it give us a full weekly view. Furthermore the forecast accuracy at regional level has varied between 0% and 100%.

124. The management of provision demand is helped by the Openreach appointment book resourcing process from two weeks in advance of the day. However, given the industry agreement that repair work is prioritised over provision work when necessary, a key issue for Openreach is the adverse impact of excessive un-predicted repair volumes spikes on the availability of provision appointments.

125. Both the poor weather during the summer of 2012 and the recent spate of lightning strikes in 2013, had a significant impact on our ability to offer available provision appointments, with availability extended by 20-30% (2-3 days). In fact depending on the nature and location of the unforeseen repair spikes the impact on provision could be worse than this in localised areas and take considerable time to recover.

¹⁹ The fault volume variability coefficients above were calculated using the standard deviation of the time series divided by the mean – the coefficient of variation; a standard statistical measure.

126. On provision, this leads us to conclude that:

- CP provision forecasts would be more meaningful if they were provided at a SOM/OM level and on a weekly basis.
- CPs need to continue to improve their regional provision forecasting accuracy.
- The volatility of local daily fault demand means Openreach now risks incurring provision appointment availability SLGs because of the industry requirement to prioritise repair.

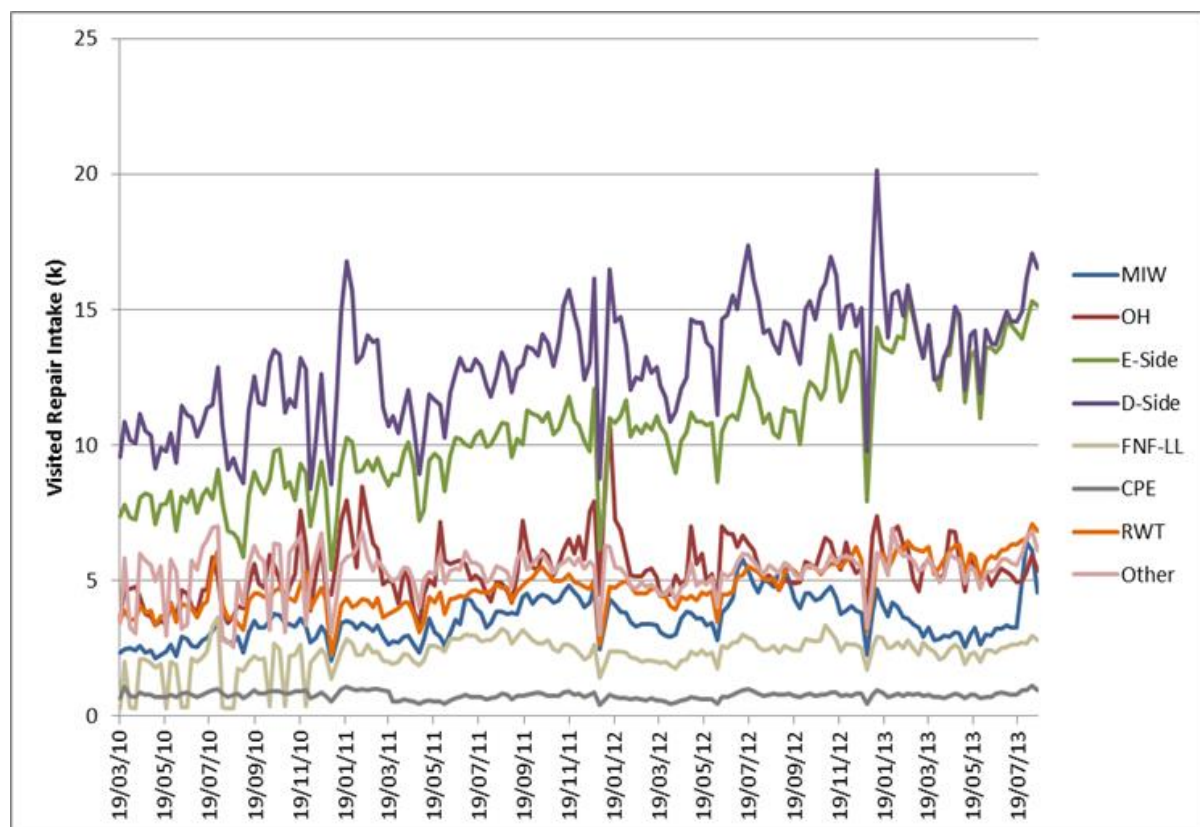
3.3 Skill variability

127. In addition to daily volume variability, the challenge for an OM is to plan and deliver the correct number of engineers with the right skills to work on faults on the right day.

128. Depending on the type and complexity of the job differently skilled engineers will be required. This introduces an additional planning and resourcing challenge which is further compounded by the different requirements of the applicable SLAs for the repair services.

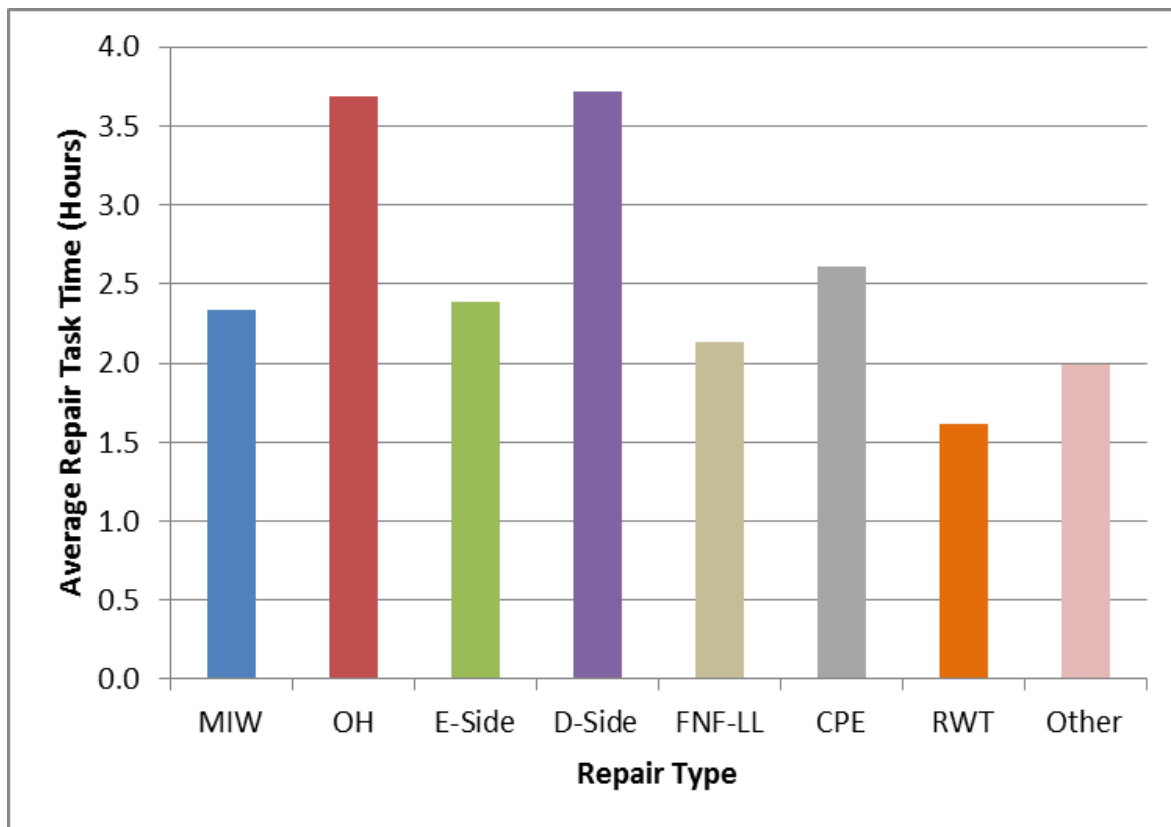
129. Figure 5 and Figure 6 below demonstrate how the mix of key types of job (and therefore skills required) has changed over the last four years and how the average time taken for a repair varies from one type of fault to another. These charts also show how the volume of the most time-consuming repair task (D-side faults) has increased considerably across this period.

Figure 5: Repair Mix (Visited Tasks)



Source: Openreach

Figure 6: Repair Task Times (Visited Tasks)



Source: Openreach

130. Getting an engineer with the right skills to the right job is essential for efficient repair. Diagnostic tools play a big role in this allocation of work, and Openreach invests considerable resources to optimise these. However, this skills allocation challenge adds another layer of volatility to the demand that we experience and manage.

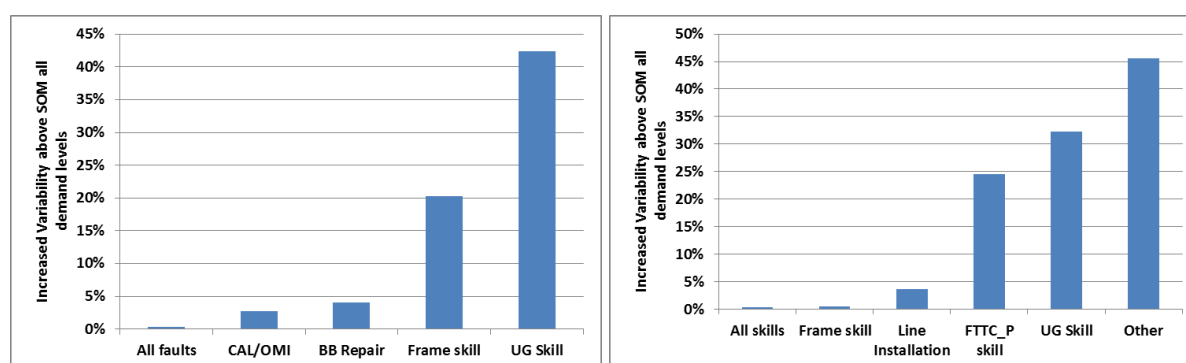
131. Provision and repair jobs are allocated based on the following skill groups (but note that beneath this high level categorisation there is a more complex mix of general and specialist skills):

- Provision
 - Line Installation
 - Frames skill
 - FTTC/FTTP skills
 - Underground (UG) skills
 - Other e.g. pole installation
- Repair
 - UG skill – for faults with an initial main fault location of LN (i.e. a suspected line fault)
 - Broadband repair (BB Repair) – for SFI and Broadband Boost type work
 - Frames skill - for faults with an initial main fault location connected to the Exchange (FU,EX)

- Customer Apparatus and Line (CAL)/One Man Installation (OMI) – all other main fault locations: at the customer's premises (CA); At the customer's end (CE); those that test OK; those that require a more detailed Diagnostic test (DT) and all others.

132. To identify the difference in the SOM variability in the weekdays' skill demand²⁰ we looked at the period between October 2011 and August 2013, both overall and also quarter by quarter. Figure 7 below shows the increase in the variability above that for the overall volume demand – it compares the average of the observed SOM variability for all volume demand to that for each specific skill type.

Figure 7: Increase in SOM variability in skill demand



Source: Openreach

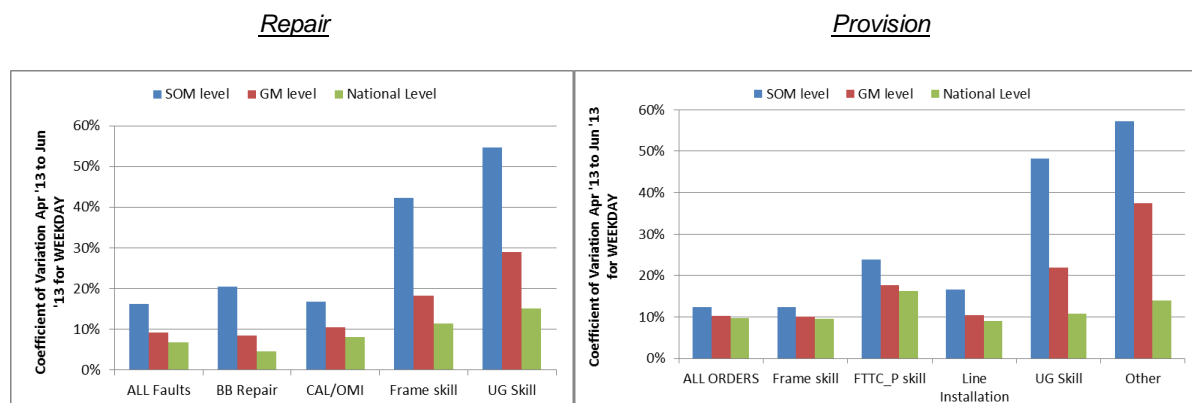
133. Critical skills like UG skills have a much higher variability. The extra additional volatility for skills can be considerable: for CAL/OMI skills +3%; for BB Repair skills +4%; Frames skills +20% and UG skills +40% on top of the 21% variability across all skill types at SOM level. These headline skill premiums conceal a wide range of variation between SOMs. The range of additional variability for CAL/OMI is from -6% to 24%; BB repair 0% to 10%; Frames skills 6% to 60%; and UG Skills from 22% to 85%. An alternative approach matching actuals to expected fault levels assuming a perfect weekly forecasting accuracy at SOM level showed similar results²¹.

134. Figure 8 below focuses on a recent representative quarter of demand and compares the average SOM variability for all demand with that for specific skills. This again demonstrates the increased variability seen at a SOM level compared to GM or national demand stories. Some evidence was found in the distributions of the daily variability for a significant degree of extremes i.e. non-normal distributions. However an alternative view based on the 80%-20% range and the median gave very similar conclusions and level of variance changes.

²⁰ Excluding any bank holidays.

²¹ An alternative approach is to assume the SOM week volume forecast accuracy was 100% (i.e. the same as the actuals observed) and based on the average proportion for each skill, compare the expected volume to the actual seen. Even for the standard CAL/OMI skill set, an additional 2%-4% variation needs to be catered for. For broadband skills an additional ~10% variation is seen and for the scarce specialist skills, such as underground repair, an additional ~20% variation needs to be managed.

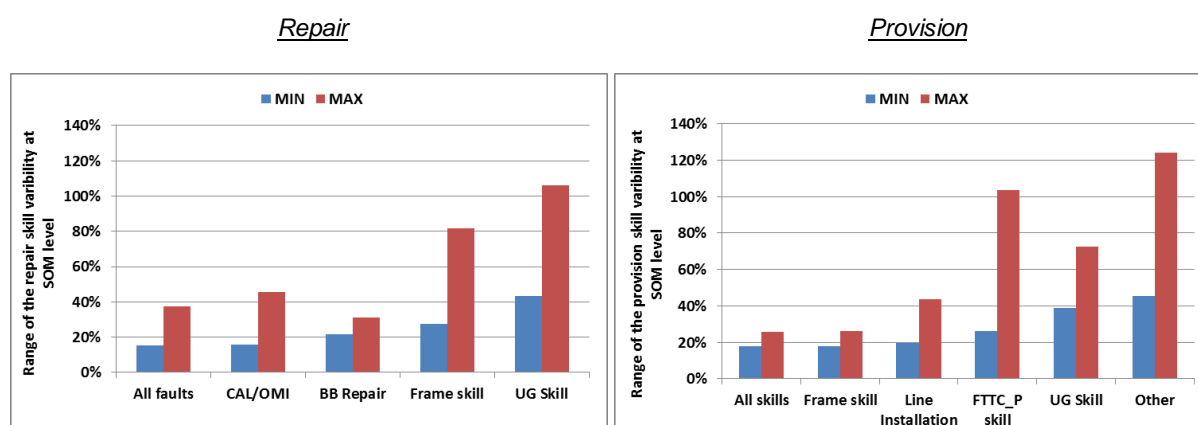
Figure 8: Comparison in National, GM and SOM skill demand variability for period April 2013 to July 2013: (a) repair skills and (b) provision skills



Source: Openreach

135. It is clear from the analysis and the graphs that skills demand variability increases significantly as geographical patch size decreases. This is particularly true for complex jobs involving underground work or advanced broadband skills.
136. The skill demand variability coefficient for National, GM and SOM follows the same pattern as the daily volume demand variability coefficient from national to GM to SOM, only the coefficient is higher.
137. The range of variability seen across the SOMs is large. Figure 9 shows this for both provision and repair skills for the period October 2011 to August 2013. Some SOMs have variability greater than the mean especially for the specialist engineering skills like underground. Openreach planning and resourcing processes attempt to mitigate as much of this regional variation as possible through flexible resourcing models, forecasting and investments in multi-skilling training and tools, but it remains a huge challenge.

Figure 9: Range of SOM variability across period October 2011 to August 2013: (a) repair skills and (b) provision skills



Source: Openreach

138. It is reasonable to conclude that the pattern of increasing variability will continue to an OM level, meaning that:

- the variability coefficient for daily repair skills variability for broadband, frames and underground skills will be between 50% and 75%; and
- the variability coefficient for daily provision jobs requiring underground work is likely to be circa 60%.

139. Conclusions:

- Daily repair demand variability at an OM level is highly variable with variability coefficient of 44%.
- Daily repair skills demand variability at an OM level is even more pronounced with a variability coefficient between 50% and 75% dependant on the complexity of skills required.
- Daily provision skill demand variability at an OM level for complex provisions has a variability coefficient of circa 50%.

4 Weather volatility

4.1 Introduction

140. As part of its consultation on service standards and the copper charge control Ofcom is specifically addressing the relationship between Openreach funding and the service levels Openreach delivers. In this regard, one of the most significant factors to consider is the effect of the weather on Openreach's network and its service organisation.

141. There have been periods of very extreme and volatile weather to deal with during 2012/13 and 2013/14, which have had a direct impact on the number of faults reported. Our analysis shows that on average those faults that correlate to weather account for 34% of total fault volume, representing 43% of engineering task time on repair.

142. The expert consensus is that these weather trends will continue and in the long term are likely to increase. The Walker Institute for Climate System Research²² have commented:

*"... it is clear that the UK has become wetter over the past decade and rainfall events have become more intense... The recent decade in the UK has included some of the most extreme weather on record and at this stage there is little evidence to suggest such a pattern will be broken in the near term... it is clear that we are currently in a period of increased weather volatility and this pattern is likely to persist for the remainder of 2013 and for some time beyond. Increased local variability in weather patterns can be expected to be observed both geographically across the UK and in terms of seasonal variations with increases both in absolute terms (e.g. higher average UK rainfall) and in individual peak events (e.g. record temperature, rainfall events etc.)"*²³

143. During the wet summer of 2012 the conditions experienced were thought to be extraordinary. However, although so far 2013 has seen less precipitation there have been greater extremes of wind, temperature and lightning and as a result fault volumes are 12% higher in 2013 than in 2012. It is this increasing prevalence of unpredictable and extreme weather which is highly damaging to the Openreach network and its operations. This needs to be fully taken into account in Ofcom's proposals for minimum service standards and in the charge control settlement so that achievable targets are set and appropriate levels of costs allowed for, to enable the targets to be delivered. In light of this Openreach have commissioned three expert studies looking at different aspects of the relationship between the UK climate and its effects on telecoms networks and services:

- *Openreach Climate Change Summary* (Centre for Environmental Risks and Futures – Cranfield University) – which focuses on the direct impacts of extreme weather and climate change on telecoms networks and service operations. See [Annex E](#)
- *Trends in the weather and climate of the UK* (Walker Institute – University of Reading) – which reviews recent observations on the UK climate and highlights the latest climate research which underpins an understanding of recent seasonal trends in UK weather patterns. See [Annex F](#).
- *Overview of Climate Change Impacts* (UK Climate Impacts Programme (UKCIP) – University of Oxford) – which looks at the consensus projections made in 2009 for climate change for the UK (UKCP 09) and discusses likely changes to extremes and impacts on telecoms infrastructure. See [Annex G](#).

²² <http://www.walker-institute.ac.uk/>

²³ Walker Institute Report, Executive Summary (see Annex F).

4.2 Ofcom's analysis of weather trends and impacts

144. Ofcom's analysis in Annex 10 of the Fixed Access Market Review (FAMR) of recent UK weather patterns and their impact on the Openreach network rightly raises several of the major themes we also highlight in this response. In particular:

- **Rainfall in 2012** - Ofcom highlights in paragraph A10.59 the high level of rainfall in the UK during 2012 and references its relationship to long term trends and averages since 1910. We agree with Ofcom's findings as we also view 2012 as a high rainfall year. We provide further information in Section 1.9 which explains the latest views on what is driving the trends for increasing average and extreme rainfall in the UK.
- **Increased Groundwater levels** – As Ofcom suggest in paragraph A10.64 of the consultation, the increased groundwater levels during 2012 did contribute to increased fault rates in the Openreach network. We provide further information on this point in Section 4.8.
- **The relationship between fault rates and rainfall** – There is a direct correlation between increased rainfall and increased fault rates, and Ofcom's analysis in paragraph A10.66 is helpful in this respect. Our view is that weather in general drives a much higher percentage of faults at circa 34% of total faults. A detailed analysis of the statistical relationship between major weather variables and fault rates is provided in the Deloitte Report (please see Sections 1.3.3 and 1.3.4 above, as well as Annex A).

4.3 Climate Change – Long Term Trends

145. Climate change will affect overall trends in the UK climate in terms of changes to averages of weather variables (such as temperature and rainfall) and instances of extreme weather (highest summer temperature, highest peak rainfall etc.). There is a large body of research in this area which deals with the link between anthropogenic climate change and both rising averages of climate variables (e.g. temperature, rainfall etc.) and instances of extreme weather. The extent to which such variability will increase over time is still the subject of much research but that change is occurring is not in doubt. The European Commission comments²⁴:

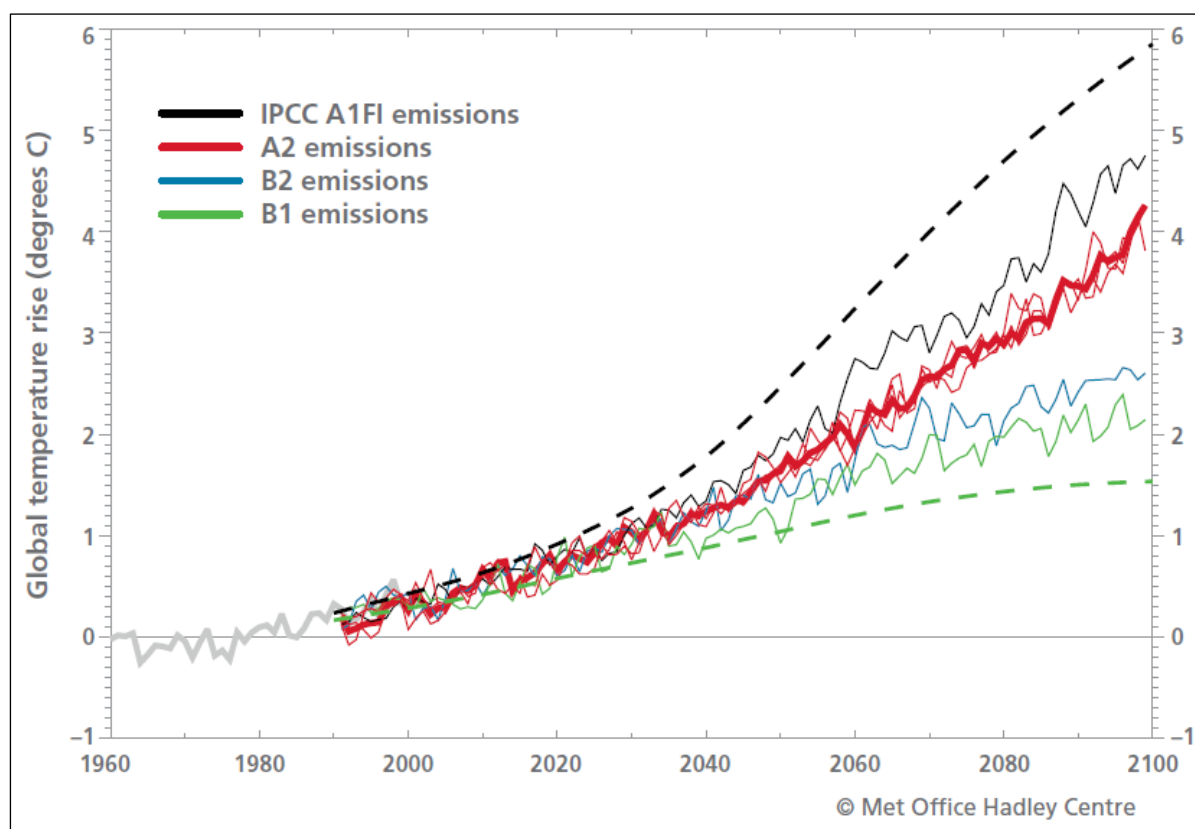
"The first consequences of climate change can already be seen in Europe and worldwide, and these impacts are predicted to intensify in the coming decades. Temperatures are rising, rainfall patterns are shifting, glaciers are melting, sea levels are getting higher and extreme weather resulting in hazards such as floods and droughts is becoming more common. Global temperatures have risen by some 0.75°C over the past 100 years. The average global temperature is projected to increase further by anywhere between 1.1°C and up to 6.4°C over the course of this century unless the world takes action to limit the concentration of greenhouse gases in the atmosphere."

146. The long term trend is clear. Global temperatures have been rising steadily over many decades and are expected to continue rising throughout the coming decade and century.²⁵ Figure 10 below, produced by the Met Office, summarises future temperature projections for different emissions scenarios:

²⁴ http://ec.europa.eu/clima/policies/brief/consequences/index_en.htm

²⁵ The IPCC released a new detailed report on 30 September 2013 which updates previous forecasts made in 2007. In this document, the IPCC notes: "**Warming in the climate system is unequivocal** and since 1950 many changes have been observed throughout the climate system that are unprecedented over decades to millennia. Each of the last three decades has been successively warmer at the Earth's surface than any preceding decade since 1850... Global surface temperature change for the end of the 21st century is projected to be likely to exceed 1.5°C relative to 1850 to 1900 in all but the lowest scenario considered, and likely to exceed 2°C for the two high scenarios." The full report can be accessed at: http://www.ipcc.ch/news_and_events/docs/ar5/press_release_ar5_wgi_en.pdf

Figure 10: Future temperature projections for different emissions scenarios



147. The process generates a range of upper and lower boundaries but the key output is that a continued upward trend in temperature is forecast for the near and long term. This sets the scene for all other aspects of the climate debate. The rising global temperature is the primary causal driver behind other increasing weather variables and weather extremes, and it is increasingly apparent from research and expert analysis that weather volatility has become the norm rather than the exception. In particular, climate change is likely to impact the UK through an increase in the number of extreme events. According to the Oxford University UKCIP:

“...it is anticipated that as part of the UK’s changing climate, we can expect to experience a greater level of exceptional weather events, in the form of heatwaves, droughts, floods high winds etc. These patterns have already been experienced with higher levels of rainfall with 4 of the 5 wettest years occurring this century.”²⁶

4.4 Increased weather extremes are statistically linked to climate change

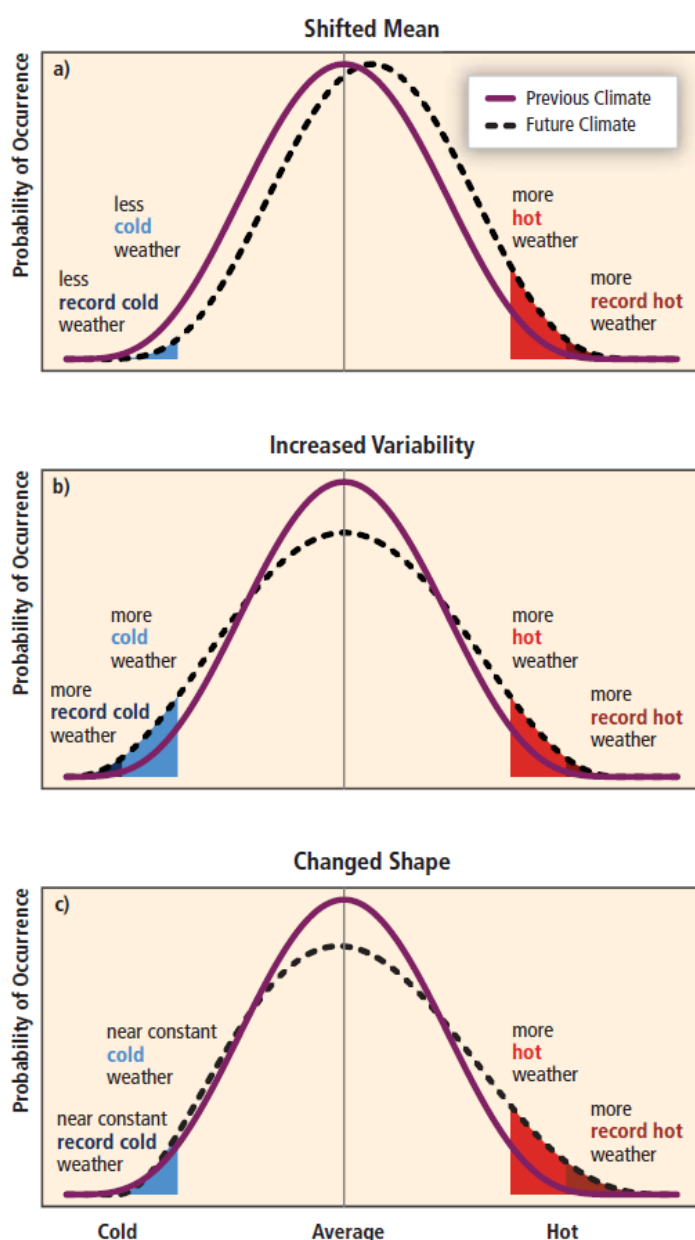
148. The changing climate, driven by global increases in temperature, also drives statistical changes in the probability of extreme weather events. The Intergovernmental Panel on Climate Change (IPCC)²⁷ has recently produced a special report dealing with extreme events where it explains the statistical basis underpinning climate change and the increasing prevalence of extreme weather events.²⁸ The illustration reproduced in Figure 11 below is taken from the report:

²⁶ UKCIP Report, page 26 (see Annex G).

²⁷ The Intergovernmental Panel on Climate Change (IPCC) is the leading international body for the assessment of climate change.

²⁸ IPCC, 2012: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Available at: <http://ipcc-wg2.gov/SREX/report/full-report/>

Figure 11: Effect of Changes in Temperature Distribution on Extremes



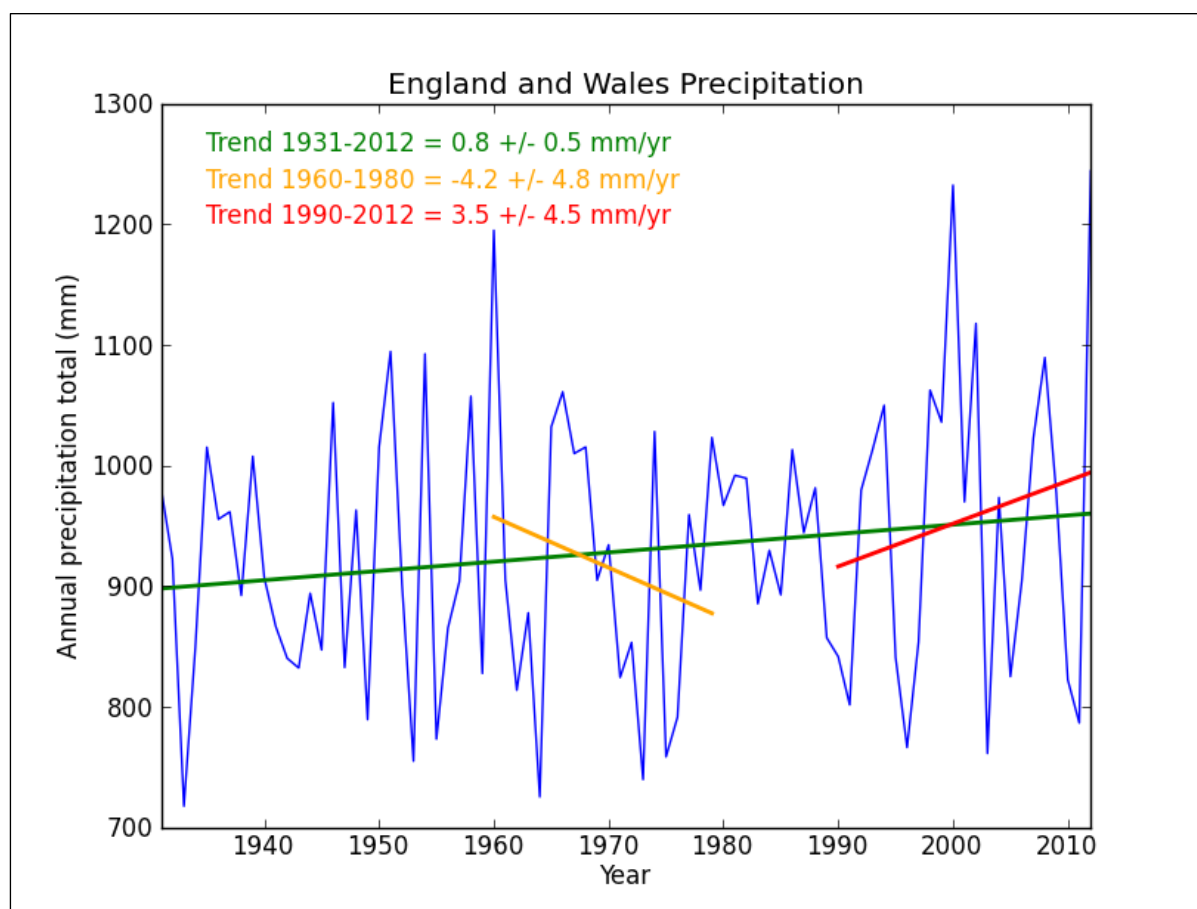
Source: IPCC

149. In relation to these charts, the IPCC notes: “The effect of changes in temperature distribution on extremes. Different changes in temperature distributions between present and future climate and their effects on extreme values of the distributions: a) effects of a simple shift of the entire distribution toward a warmer climate; b) effects of an increased temperature variability with no shift of the mean; and c) effects of an altered shape of the distribution, in this example an increased asymmetry toward the hotter part of the distribution.”²⁹
150. These types of effects are currently being observed in the UK climate. As Ofcom discusses in Annex 10 to the FAMR consultation, annual UK rainfall has been rising and there is also evidence of a recent increasing trend in the average. The University of Reading have also looked at this point in more detail. Figure 12 below shows a pronounced long term trend of

²⁹ IPCC, 2012: *Managing the Risks of Extreme Events and Disasters to Advance Climate Change Adaptation*. Available at: <http://ipcc-wg2.gov/SREX/report/full-report/>, page 41.

increased precipitation from 1931-2012 and another upturn in averages over the recent two decades from 1990-2012³⁰.

Figure 12: Time series of annual England and Wales Precipitation 1931-2012



Source: Ben Lloyd-Hughes, University of Reading. The blue line represents the annual total precipitation for each year from 1931-2012. The green, orange and red lines show linear trends computed using different time periods.

151. These long term trends are also supported by recent Met Office analysis³¹:

Table 4: Annual average UK rainfall according to 30 year averages

1961-1990	1,100.6 mm
1971-2000	1,126.1 mm
1981-2010	1,154.0 mm

Source: Met Office

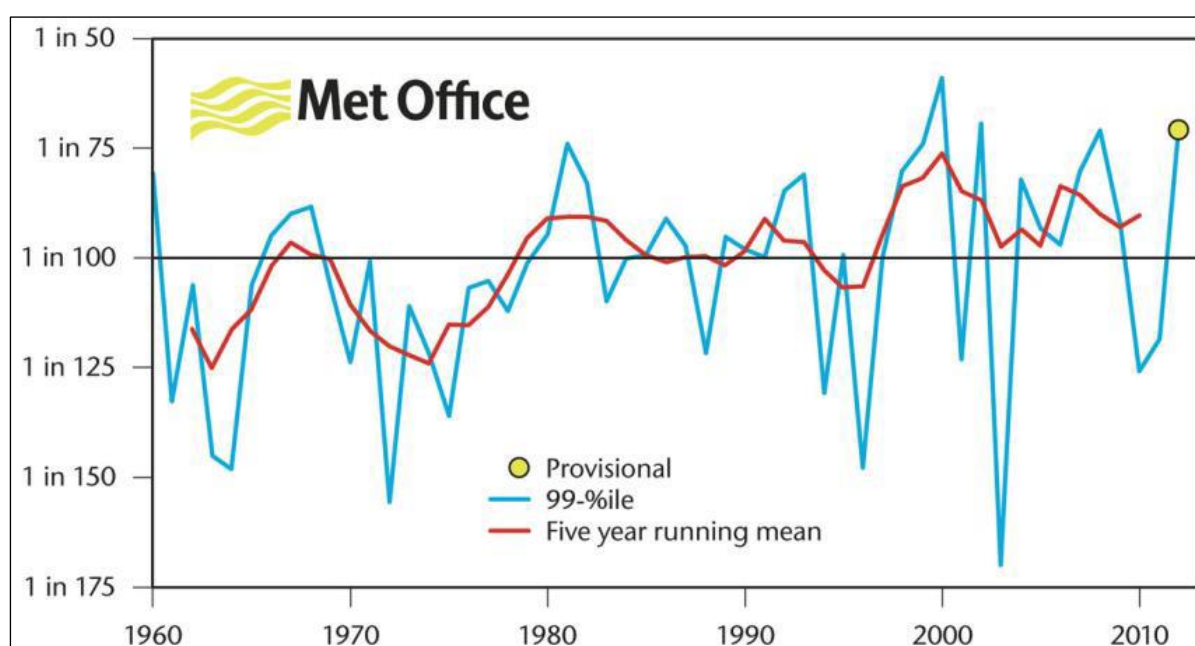
152. There is also evidence of increasing extremes in the recent rainfall record. Further statistics from the Met Office National Climate Information Centre³² indicates days of particularly heavy rainfall, defined as a 1 in 100 day event, have become more common since 1960. This suggests the UK's regional climate is mirroring an observed global trend towards more frequent extreme rainfall. The evidence suggests that the UK is experiencing more rain in total but also that it may be falling in more intense bursts. This is illustrated graphically in Figure 13 below:

³⁰ These "decadal" cycles are referred to in more detail in the Walker Institute Report (see Annex F), and possible climate mechanisms which may be driving them are also discussed in more detail.

³¹ <http://www.metoffice.gov.uk/news/releases/archive/2013/2012-weather-statistics>

³² <http://www.metoffice.gov.uk/news/releases/archive/2013/2012-weather-statistics>

Figure 13: Overview of frequency of “extreme” rainfall



Source: Met Office (January 2013)

153. All these aspects are highly significant with regard to the charge control and proposed minimum service standards. The high level of volatility and unpredictability already present in existing weather trends remains immensely challenging for Openreach as evidenced in other sections of this response. Added to this, the available climate change theory and evidence points to this variability as being on an increasing trend both in terms of moving averages (e.g. mean temperature, rainfall) but also with regard to the incidence of greater and more frequent extremes.³³

4.5 Short Term Trends

154. The UK weather is affected on many different timescales, long term (e.g. climate change over decades and centuries), decadal (e.g. changes in ocean temperature) and short-term (e.g. natural weather variability on a daily or seasonal basis). All these factors play a part in the variability of the weather. However, the observed trends in the UK climate over the past decade now appear to indicate we are in a particularly unpredictable period. Ofcom's data analysis also picks up this trend in citing the seven instances since 2000 where rainfall has exceeded one standard deviation higher than the long term mean. The factors causing this are now the subject of much research and were particularly highlighted by the recent workshop held at the Met Office in June 2013.³⁴ The June session focussed on unusual weather patterns and their potential causes in three recent seasons - the cold winter of 2010/11, the wet summer of 2012, and the cold spring of 2013. Professor Stephen Belcher, Head of the Met Office Hadley Centre and chair of the meeting, commented:

“Ultimately what we’ve seen in each of these seasons is shifts in the position of the jet stream which impact our weather in certain ways at different times of year... “The key

³³ Cranfield University also comment on the expected increases in lightning for the UK evident in the UKCP 09 data citing that it: “...projects an increase in the number of lightning days across the UK for all seasons, with the largest increases occurring in summer. Geographically, the greatest projected increases in lightning days are expected to occur in Scotland and Northern Ireland and smallest in south east England” (page 7 (see Annex E)).

³⁴ <http://www.metoffice.gov.uk/news/releases/archive/2013/meeting-unusual-seasons>

*question is what is causing the jet stream to shift in this way? There is some research to say some parts of the natural system load the dice to influence certain states of the jet stream, but this loading may be further amplified by climate change*³⁵

155. Further, it was noted that five out of the last six UK summers have seen above average rainfall. New evidence was also discussed that suggested long-term processes affecting North Atlantic currents may also be playing an important role and that these processes operate on cycles of a decade or more.³⁶ This means their influence on UK weather will be relevant for the next and possibly several future charge controls. In brief, such research provides initial insight into why recent rainfall trends in the UK have been 'unseasonal' and higher than the long term average; and why they may remain that way for a number of years. It also provides supporting evidence for the observation made by Ofcom in the FAMR consultation³⁷ that *"the high rainfall experienced in 2012 is not without precedent"* in recent years but rather appears to be part of a series of high rainfall years in the UK which has become increasingly apparent since around 2000.

4.6 The effect on Openreach's network and operations

156. Due to the nature of telecommunications infrastructure and particularly the Openreach access network, it is vulnerable to a wide range of weather variables³⁸, most typically rainfall and high winds, but is also affected by extremes of temperature, lightning and fog amongst other factors. Openreach infrastructure is extensive, and all major assets classes (ducting, poles, copper, fibre and street cabinets) are predominantly externally located (approximately two-thirds of the access infrastructure is underground) and cover the whole of the UK in all rural and metropolitan areas. As Openreach serves the vast majority of the UK's residential and business customers and delivers the infrastructure element of the UK telephony Universal Service Obligation in most of the country. Its assets are located in both high and low risk flood areas.

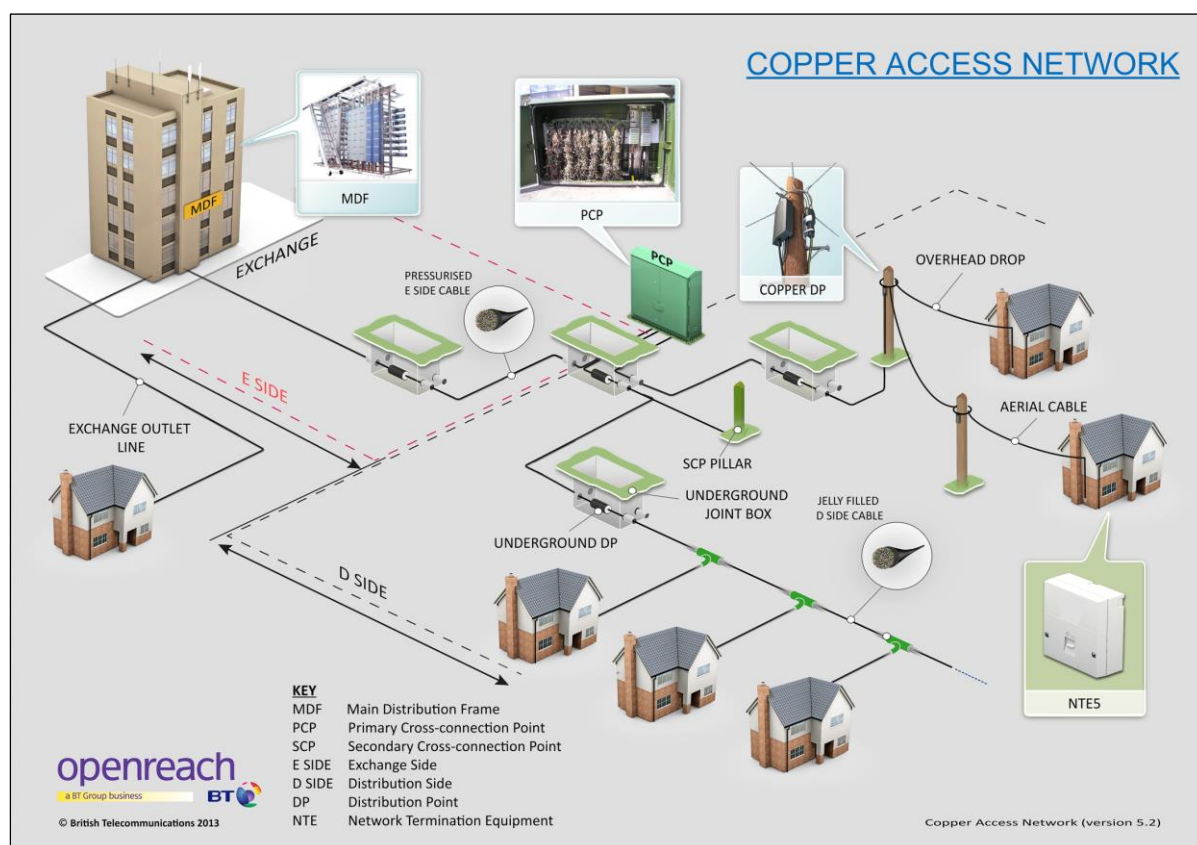
³⁵ <http://www.metoffice.gov.uk/news/releases/archive/2013/meeting-unusual-seasons>

³⁶ The research by the University of Reading is covered in detail in the attached report at Annex F.

³⁷ FAMR consultation, Annex 10, para. A10.59.

³⁸ Covered in detail in the Deloitte Report attached as Annex A.

Figure 14: Openreach's Copper Access Network



Source: Openreach

157. The most direct effect of weather damage may be the need to replace or repair assets, and this can be extensive and costly, but most significantly in the context of this market review it is the consequential generation of customer fault reports and failures of service to end-users that is the most significant issue.
158. The effects of weather are also highly geographically diverse adding another layer of complexity and volatility to forecasting and consequential resourcing. Faults can occur simultaneously across all regions or can be massively different in scale, type (e.g. lightning faults in Cornwall, flooding in North East) and timing. All these extremes substantially limit the ability of Openreach to be able to deliver the correct engineering resource on a geographical basis and to anticipate when and where peaks in fault demand will occur³⁹.
159. This evidence from current weather trends is that these challenges will be made all the more difficult over the coming decade and beyond as weather patterns become even less predictable and more variable at both a national and local level. This has direct implications for the achievable level of service at a local level, at which the Openreach service organisation is managed and resourced, and the consequential costs of implementing those service levels⁴⁰.

³⁹ The limitations of forecasting accuracy and consequential impacts on resourcing are covered further in Section 1.4

⁴⁰ These points are covered in more detail in Section 6.

160. It is worth recapping on just how severely the weather impacted on service during 2012/13 as this highlights the direct effects of poor weather on the access network and operations:

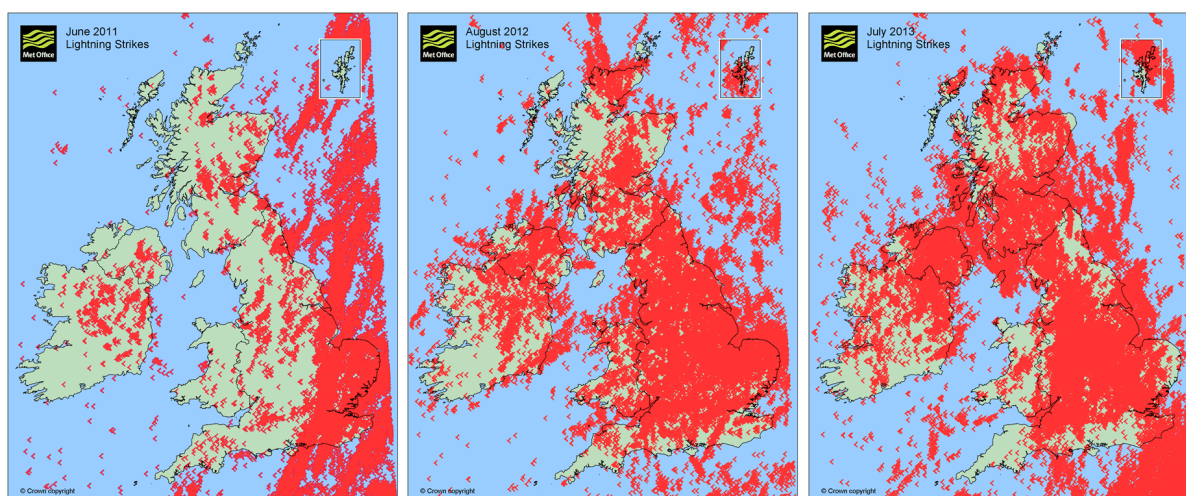
- Our provision lead times were 4 to 6 days at the start of April 2012. The repair workstack was consistently under 16,000, a very low level which allowed provisions to be completed with extremely short lead times, leading to an overall workstack of around 140,000;
- The wettest April since records began almost doubled our overall workstack. Despite that, we recovered to near normal by the end of May as we had built flexibility into our response chain and resource capacity, but were then hit the extreme weather in subsequent months;
- Our normal weekly fault intake is in the region of 55,000. We do see peaks of 80,000 a week during especially during severe winter periods but we had not experienced such a sustained period of weather-induced faults as we did from June onwards. We accumulated 100,000 more faults than we would normally expect during the summer period alone and again into the autumn of 2012, which equated to between 25,000 and 35,000 additional engineer working days. Recovering from so many faults quickly proved to be impossible;
- At peak periods of flooding and underground water damage, the industry agrees that repair must take priority. Doing so during 2012 meant that we were just not able to fulfil as many provision jobs each week, hence the increase in provision lead times;
- After the worst of the storms, underground faults rose to 25% of the total number of faults against the usual 15%: this change in the mix of faults remained for many months as underground water cannot drain away;
- High winds damaged our overhead network, bringing down cables and telephone poles: replacing this type of infrastructure requires specialist engineering resource, heavy plant and vehicles;
- The majority of flash flooding was in rural areas. Getting engineering resource to those areas is always more challenging and time-consuming;
- Weather damage is often the most complex to fix, demanding repeated pumping out of underground chambers, multiple digs, road safety apparatus and hoists for overhead work. On average, such faults take twice as long to fix as normal faults and the engineers fixing them need to be multi-skilled with years of experience and specialist training; and
- Fixing these complex faults in such volume has a knock on effect which means that at peak periods of infrastructure repair, we saw around 10,000 provision jobs over the course of a week not completed and added to the stack.

161. These types of fault profiles are what we expect to have to deal with on an ongoing basis in 2013 and beyond, and it is essential that Ofcom considers an appropriate and recent base year of data to set the charge control and service regulation; and one which fully reflects the latest and anticipated weather and fault trends. The Deloitte Report includes a review of the latest key drivers of fault rates in the network and correlations with major weather variables such as precipitation, wind, humidity and temperature.

4.7 The extreme weather has continued into 2013

162. Although it has generally been acknowledged that on average we had one of the warmest, driest summers in recent years in 2013, we have also had many instances of extreme weather, with very high localised rainfall leading to flooding⁴¹ and extreme fault intakes caused by lightning at a local and national level. The intensity of lightning strikes is illustrated in Figure 15 below for high intensity months for the period 2011-2013.⁴² Notably the most extreme months are seen in the most recent years in 2012 and 2013, and the massive peak in lightning strikes in 2013 coincided with Openreach receiving its highest intake of faults on record in a single day on 23 July 2013.

Figure 15: Lightning Strikes 2011-2013



Source: Met Office

163. For Openreach, 2013 has provided another clear example of how unpredictable⁴³ and volatile the UK weather has become and is expected to remain.

4.8 Implications for the charge control and service regulation

164. With hindsight it is now possible to see a fuller picture of what was happening to UK weather during 2012 and the immediately preceding years. A pattern of extremes was already in place. For the UK as a whole, 2012 was the second wettest year since modern records began in 1910. However, for two years prior to that 2010 and 2011 saw large parts of the country in drought. Much of central, eastern and southern England and Wales experienced a prolonged period of below average rainfall from late 2009 to early 2012. The drought was due to a sequence of dry months from winter 2009/10 to March 2012, particularly in the spring, autumn and winter seasons. For England and Wales, this was one of the ten most significant droughts of one to two years duration in the last 100 years⁴⁴. Across southern England, the two-year

⁴¹ <http://www.dailymail.co.uk/news/article-2401339/UK-weather-Parts-Britain-months-rain-hours-beaches-festivals-soaked.html>

⁴² The above maps are a selection from high activity months for lightning over recent years. No individual months in 2010 or 2011 showed the high peak intensity reached in 2012 and 2013 on a national basis.

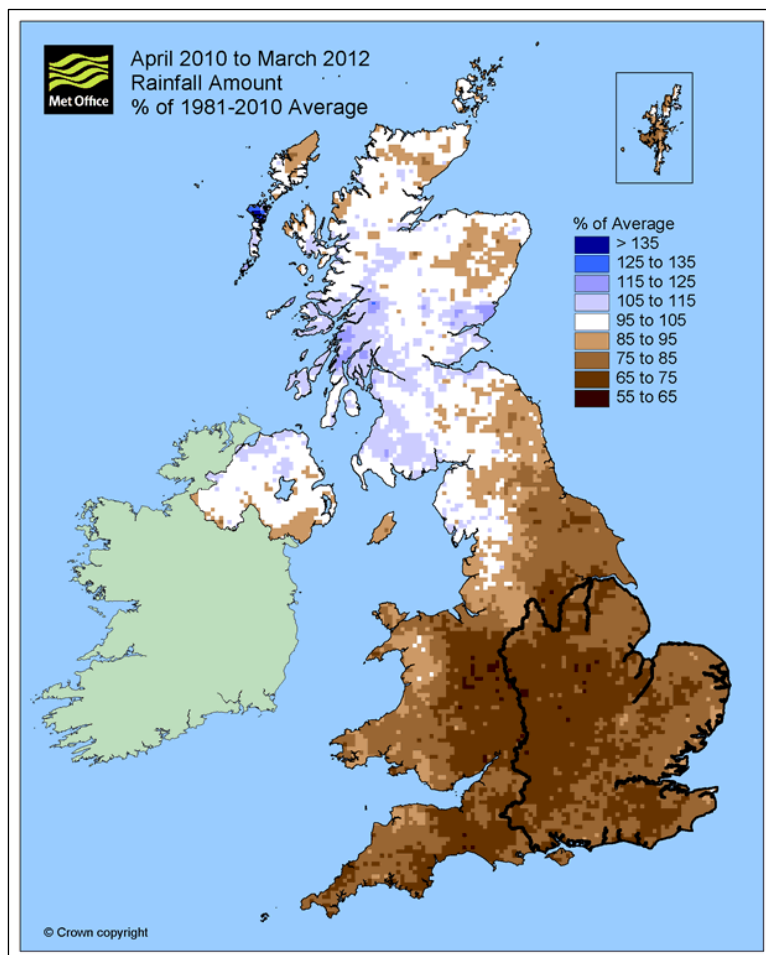
⁴³ <http://www.bbc.co.uk/news/uk-23415544>; <http://www.bbc.co.uk/news/uk-23415544>

⁴⁴ <http://www.metoffice.gov.uk/climate/uk/interesting/2012-drought>

period April 2010 to March 2012 was the equal-driest such two year period in records from 1910, shared with April 1995 to March 1997⁴⁵.

165. The extent of the drought is very clear from the Met Office analysis published later in 2012 and is illustrated in the Met Office graphic reproduced as Figure 16 below which shows rainfall for April 2010 to March 2012 as a percentage of the 1981-2010 average:

Figure 16: Rainfall Amount% of 1981-2010 Average (April 2010 to March 2012)



Source: Met Office

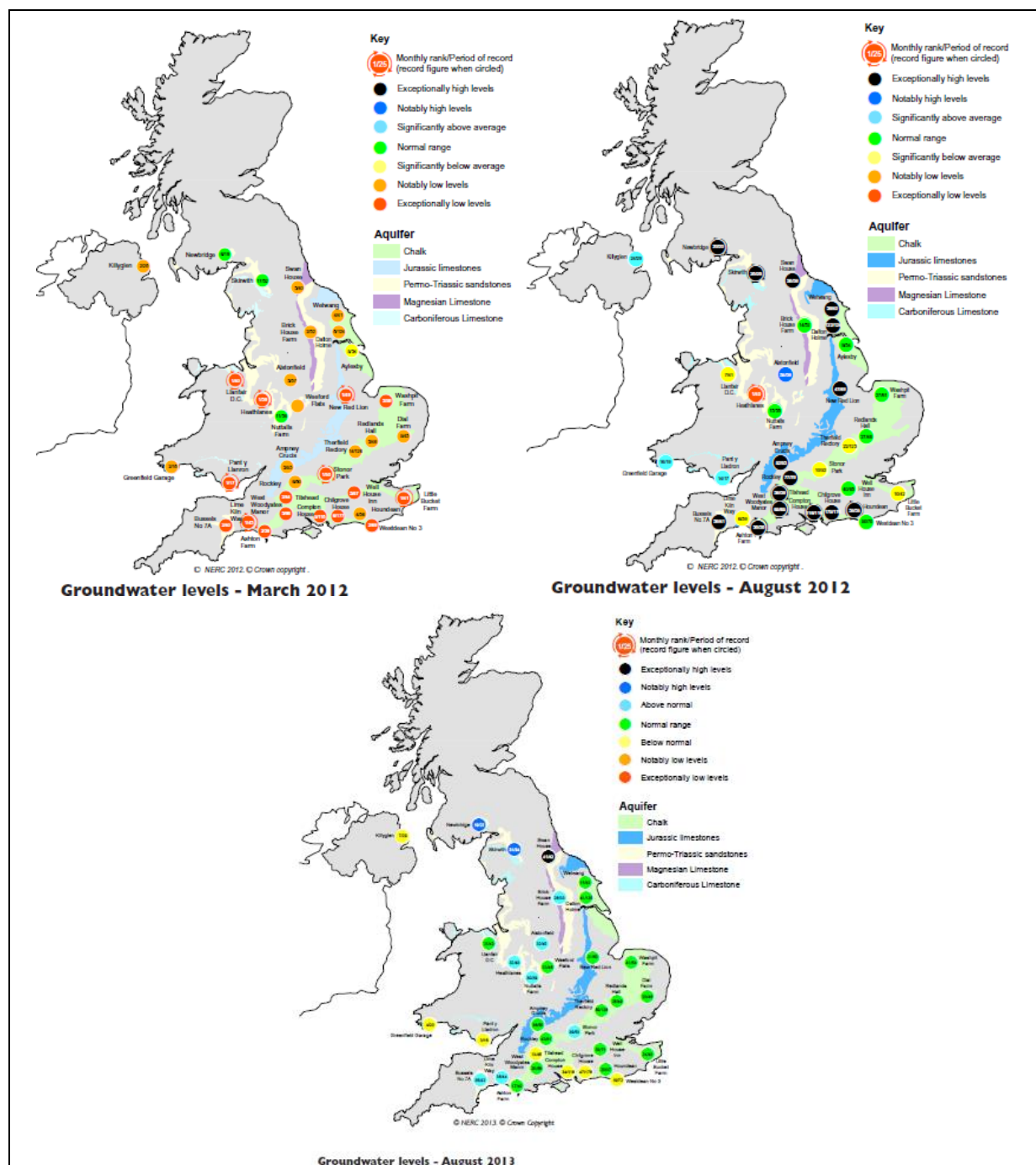
166. Arguably this period of drought is as extreme (or more so given its two year duration) than the rainfall of 2012. However the extreme dry conditions observed during 2010 and 2011 were largely benign in relation to telecoms compared to the extremes experienced in terms of rainfall in 2012 and continuing into 2013. This has strong implications for the understanding and prediction of fault rates in the external Openreach network. As Ofcom also note in their analysis rainfall patterns have a direct effect on groundwater levels, which in turn are directly implicated in the level of fault rates for underground network. In this respect circa two-thirds of the Openreach access network is underground and hence directly affected by rainfall and subsequent groundwater levels⁴⁶.

⁴⁵ <http://www.metoffice.gov.uk/climate/uk/interesting/2012-drought>

⁴⁶ The direct impacts of rainfall and high groundwater and soil saturation levels on telecoms networks is covered in more detail in the report by Cranfield University attached at Annex E.

167. The exceptionally dry period resulted in UK groundwater levels reaching near record lows during 2011/12 rising, and recovering to above normal in 2012. In 2013 we currently stand at higher than normal levels heading into the autumn and winter periods.

Figure 17: Groundwater Levels 2012-2013



Source: Natural Environment Research Council (Centre for Ecology and Hydrology)⁴⁷

168. The latest data available shows a picture for 2013 much more in line with 2012 than 2011. Groundwater levels are in aggregate above normal across England with some areas described as 'notably' or 'exceptionally' high, and some 'below normal'. Given this is just prior to the

⁴⁷ http://www.ceh.ac.uk/data/nrfa/nhmp/monthly_hs.html

autumn/winter period expectations must be for levels to be raised significantly above normal during the remaining months of 2013/14.

169. Again this has direct implications for the charge control and service targets. In our view, there is no case for Ofcom using 2011 data as the 'base case' for setting forward looking minimum service levels and incremental costs. Ofcom should be using the latest available data on which to make forward looking projections, (which would be fault rates, service achievement levels etc. from 2012 and available 2013 data to date). Additionally it is also clear that weather conditions in the period preceding 2012 are not representative of the likely peak challenges and levels of geographical and seasonal weather volatility we will face over the next control period. The UK weather will remain subject to a range of factors driving it towards more extreme and unseasonal events during the control period 2014 to 2017.
170. Regardless of these factors, it is clear that conditions in 2011/12 are not a good representation of the challenges Openreach could reasonably be expected to face throughout the forthcoming control period. We fully expect these to be more in line with our experience in 2012 and 2013, and this is supported by a wide range of evidence and observed long term trends for precipitation in the UK and particularly trends over the recent decade where there has been a series of very high annual rainfall years and also abnormally wet summers.

4.9 Conclusion

171. For the next review period Ofcom must take these factors into account when setting minimum service standards and assessing the appropriate incremental costs. Openreach will need to make additional investment and incur additional costs to protect its network, to respond to extreme and unpredictable events and to cope with backlogs produced; plus the extra logistical costs of moving people between service patches and permanently increasing resource to meet these needs. Ofcom needs to take significant account of the latest available information from 2012/13 and the latest up to date data from 2013/14. Cranfield University summarise the key issue as follows:⁴⁸

"In the short term, it is climate variability that most affects the day-to-day operational risks and costs, e.g. the number of breakdowns, overhead cable damage or flooded cabinets and underground infrastructure. The gradual changes in average conditions due to anthropogenic climate change are unlikely to be significant yet. However, any increases in weather variability and more extremes, some perhaps due to other causes and/or natural cycles, would be a problem for Openreach and the wider telecoms sector. Data on observed trends is of most use in analysing risk short-term. Where conditions are variable and changing, it is important that any cost data used for forward planning takes account of this."

172. In our view Ofcom must take full account of the most likely costs and service challenges Openreach will face over the next control period. The most robust starting point for this is the most recent evidence on fault rates for 2012 and 2013, the latest observed weather trends and their implications for increasingly unpredictable and unseasonal weather forecasts for the next charge control period and beyond.

⁴⁸ Cranfield University Report, page 4 (see Annex E).

5 Glass Ceilings

5.1 The 'Glass Ceiling' for repair and provision service on the day

- 173. Even with sufficient funding and a very much improved industry and Openreach ability to anticipate demand from unforeseeable events, rapidly changing circumstances and random incidents, an upper threshold for the best possible Openreach service on the day or "glass ceiling" will always exist.
- 174. There are a number of factors outside, and a few within, Openreach's control that prevent 100% task or job completion on the day.
- 175. Openreach carried out a detailed analysis of operational outcomes on the day to determine the glass ceiling, for both provision and repair jobs, and identify the factors responsible.

5.2 Methodology

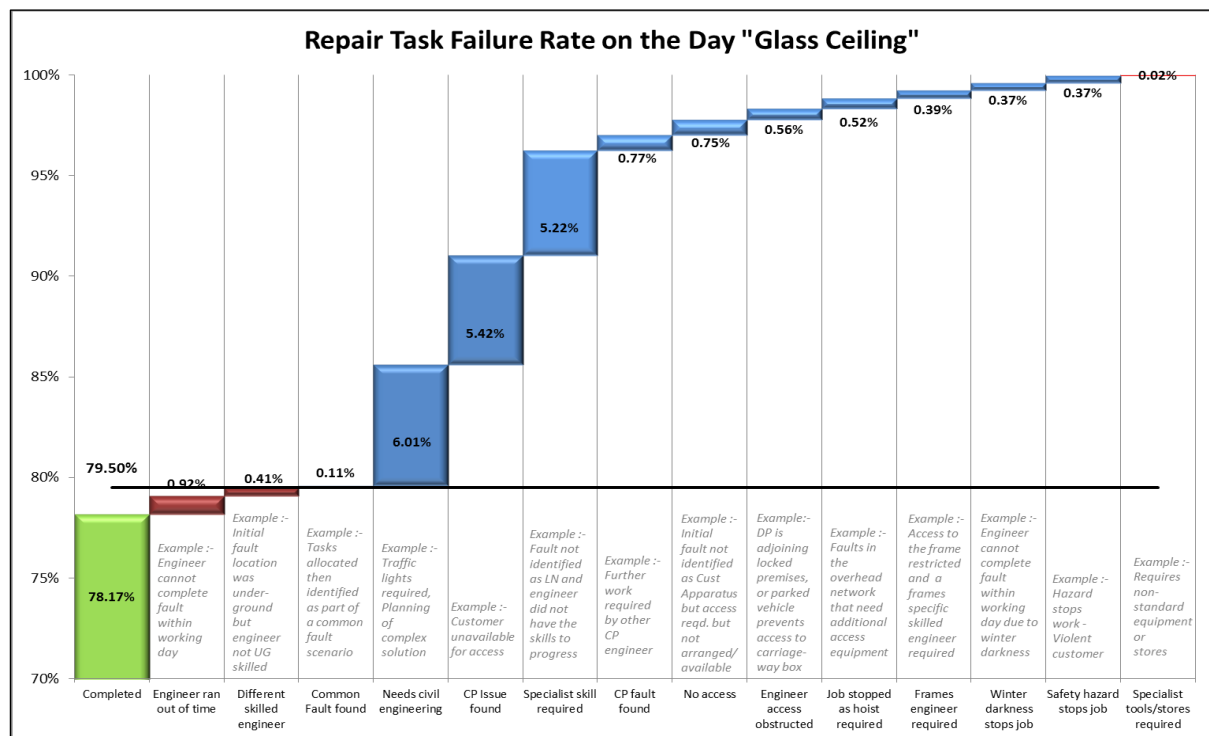
- 176. Openreach analysed all repair tasks, excluding SFI2 and BBB that were issued to Service Delivery engineers between 1 September 2012 and 31 August 2013. This equates to approximately 5.3 million repair tasks. The analysis identified whether each task was completed on the day, and if not, why it was not complete.
- 177. Openreach also undertook the same analysis for provision which analysed 4.5 million provision tasks.
- 178. Openreach identified all the various categories that prevented on the day completion and then reviewed which issues were within Openreach's current ability to address or improve, based on the information known to the engineer known prior to the engineer attending the end user premise for provision or repair.
- 179. Based on this analysis, a "glass ceiling" line was drawn for both repair and provision.

5.3 Conclusions

5.3.1 Repair

- 180. The waterfall in Figure 18 below shows that for repair the current glass ceiling limits Openreach on the day achievement to 79.50%. The various factors that determine this upper limit, are shown in the chart below and explained more fully in the table.

Figure 18: Repair Task Failure rate on the Day "Glass Ceiling"



Source: Openreach

181. Table 5 below details the types of activities attributed to each category referred to in Figure 18 above.

Table 5: Detailed Definition of Repair Task Failed Establishing the "Glass Ceiling"

Repair Activity	Description
Completed	Task is completed on the day.
Engineer ran out of time	Engineer did not have sufficient time to complete the task.
Different skilled engineer	The fault was diagnosed as an underground fault but the engineer did not have the necessary skills to complete and therefore had to return for an appropriately (U/G) skilled engineer.
Common fault found	Tasks that were allocated to an engineer but were subsequently identified as part of a common fault scenario that had not been identified when the fault was raised.
Needs civil engineering	<ul style="list-style-type: none"> No line plant is available to resolve the fault and subsequently the task is passed to planning to deal. Job requires a Planning Survey to assess work required to resolve an issue. Second stage repair activity is required – for example duct work or maintenance dig type work. Temporary service has been provided but additional work or stores are required to enable the fault to be cleared permanently. Payphone faults needing contract work to resolve. Includes a range of tasks not covered by other codes – for example traffic lights, water pumps, generators, gully suckers, tree cutting, roof ladders, long ladders.
CP Issue found	<ul style="list-style-type: none"> No Access - faults where the engineer has no access to the customer premises or where there is access to the premises but the customer or their

	<p>representative, are not available.</p> <ul style="list-style-type: none"> • The customer is not ready for the work to be carried out. • There is no customer at the premises indicated. • Tasks that cannot be progressed as customer is querying service status.
Specialist skill required	<ul style="list-style-type: none"> • The report was not identified as in the underground network and the engineer dispatched did not have the skills to progress. • The fault was proved onto the fibre optic network but the engineer did not have the necessary skills. This was not diagnosed at time of the fault being raised. • Issue with local network serving payphone sites.
CP fault found	<ul style="list-style-type: none"> • Faults that are proved onto CP maintained exchange equipment and therefore need action by CP engineer, including: <ul style="list-style-type: none"> o Proved Exchange Optics o Proved Tie Optical o No Dial Tone faults
No access	<p>Faults proved to customer domain that engineer is not able to progress due to access to premises. This was not known when the job was reported.</p>
Engineer access obstructed	<ul style="list-style-type: none"> • Faults where the engineer was unable to complete a task due to issues preventing access to BT plant which is outside the customer's premises or control – for example a parked vehicle prevents the erection of a ladder, a parked vehicle prevents access to a carriageway box, newly constructed public street furniture obstructs access to BT plant, etc.
Job stopped as hoist required	<ul style="list-style-type: none"> • Faults in the overhead network that cannot be progressed as additional access equipment and/or assistance is needed
Frames engineer required	<ul style="list-style-type: none"> • Reports proved to the frame in the exchange where the engineer was not skilled for frames work. • Access to the frame was restricted and required a frames specific skilled engineer to be allocated.
Winter darkness stops job	<p>Engineer cannot complete task due to hours of winter darkness.</p>
Hazard	<p>All faults that involve a safety related hazard – for example low wires, asbestos, medical reasons, hazardous environment, dangerous dog, abusive/violent customer, etc.</p>
Specialist tools/stores required	<p>Tasks that require specialist tools or stores to restore service that could not be identified prior to engineering visit.</p>

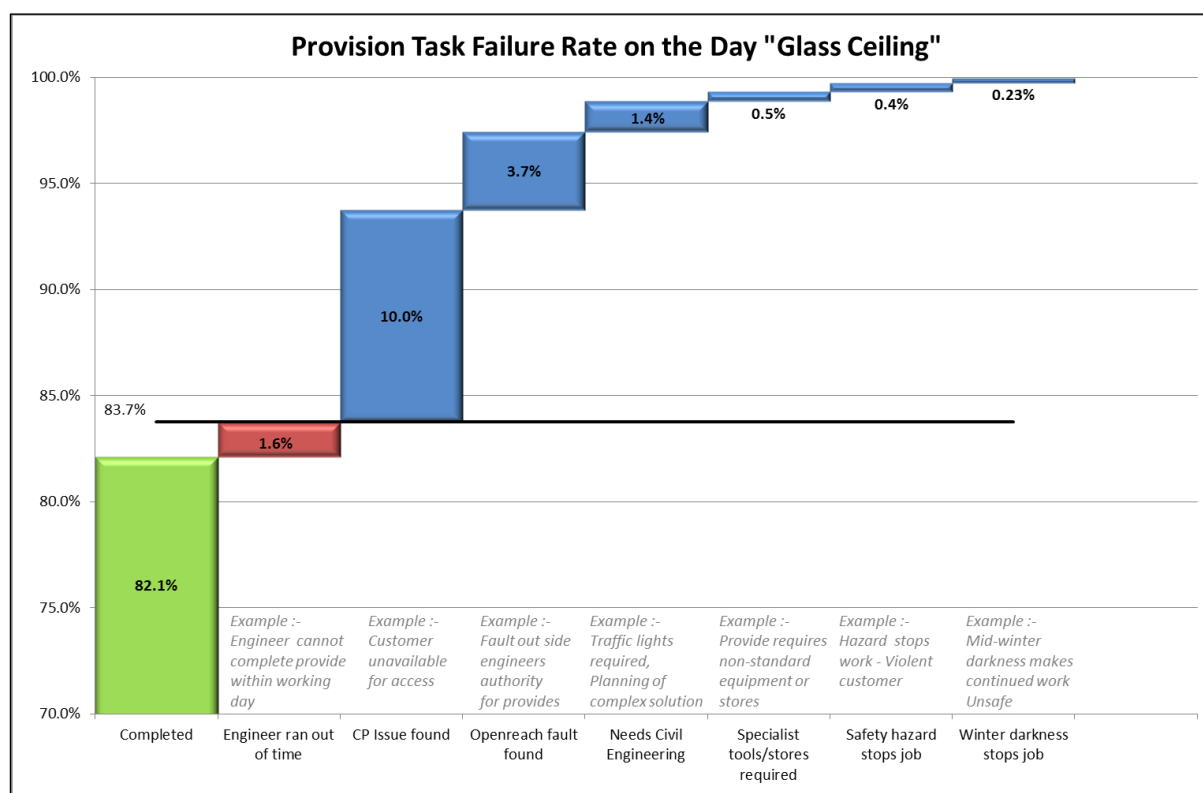
Source: Openreach

182. A failure to complete an MPF repair task on the day will inevitably result in a failure against the SLA (end of next working day repair). In some cases, for WLR, a failure to complete a task on the day may be recoverable within the SLA lead time by completing the job on the following day.

5.3.2 Provision

183. For provision, the chart in Figure 19 below shows the current glass ceiling at 83.7%. This also includes – below the glass ceiling - the “Engineer ran out of time” category where it could be within Openreach's control to allocate more time to the job.

Figure 19: Provision Task Failure Rate on the Day "Glass Ceiling"



Source: Openreach

184. Table 6 below details the types of activities attributed to each category referred to in Figure 19 above.

Table 6: Detailed Definition of Provision Task Failures Establishing the “Glass Ceiling”

Provision Activity	Description
Completed	Tasks completed on the day.
Engineer ran out of time	Engineer did not have sufficient time to complete the task.
CP Issue found	<ul style="list-style-type: none"> • No Access - faults where the engineer has no access to the customer premises or where there is access to the premises but the customer or their representative, are not available. • The customer is not ready for the work to be carried out. • There is no customer at the premises indicated. • Tasks that cannot be progressed as customer is querying service status.
Openreach fault found	<ul style="list-style-type: none"> • The solution was not identified as in the underground network and the engineer dispatched did not have the skills to progress further. • D-Side plant identified to engineer to fulfil the order is faulty. • E-Side plant identified to the engineer to fulfil the order is faulty. • There is no dial tone detected as awaiting frames to be completed. • Faults where engineer was unable to complete a task due to issues preventing access to BT plant which is outside customer's premises or control.
Needs Civil Engineering	<ul style="list-style-type: none"> • No line plant is available to resolve the fault and subsequently the task is passed to planning to deal. • Job requires a Planning Survey to assess work required to resolve an issue. • Second stage repair activity is required – for example duct work or maintenance dig type work. • Includes a range of tasks not covered by other codes – for example traffic lights, water pumps, generators, gully suckers, tree cutting, roof ladders, long ladders.
Specialist tools/stores required	Tasks that require specialist tools or stores to restore service that could not be identified prior to engineering visit.
Safety hazard stops job	All faults that involve a safety related hazard – for example low wires, asbestos, medical reasons, hazardous environment, dangerous dog, abusive/violent customer, etc.
Winter darkness stops job	Engineer cannot complete task due to hours of winter darkness.

Source: Openreach

6 Service-cost modelling

6.1 The relationship between service performance levels and costs

185. As Ofcom points out in paragraph 5.6 of LLU/WLR Charge Control consultation, the projections of Openreach costs set out in those consultation proposals, on which Ofcom's charge control proposals are based, assume that the service standard is at the level supported by the resources available to Openreach in that base year.
186. In paragraph 5.8 of the LLU/WLR Charge Control consultation, Ofcom anticipates that if a standard of service higher than that achieved in the charge control calculation base year is to be mandated, the additional costs expected to be incurred in raising the service levels to the required standard, would need to be reflected in the charge control in order to ensure that Openreach is able to recover the efficiently incurred costs that are expected during the charge control period.
187. Openreach strongly agrees that this would need to be the case.
188. If Ofcom mandates that Openreach needs to achieve higher average standards of service through a given period, this means that the percentage of repair jobs which are completed, and/or the percentage of provision appointments which are made available, within the relevant SLA lead times, will need to be increased. Given that the "arrival" into Openreach, of provision and repair jobs can happen with very considerable volatility, with "spikes" of work volumes area by area and region by region, achieving the SLA lead times more frequently inevitably increases the frequency of these local peaks of work. In turn, this requires more resource to be deployed to meet demand for work to be executed – given the unpredictable nature of which locations and at which times these local peaks occur.
189. Therefore, and as Ofcom set out in the consultation document, it is essential to establish the relationship between the service standard expected to be achieved, and the level of cost Openreach is allowed to recover through the charge control.

6.2 The Service-Cost relationship is not linear

190. As Ofcom also observes in paragraph 5.9 of the LLU/WLR Charge Control consultation document, the relationship between service levels and Openreach costs is non-linear. This means that the additional unit costs required to increase service levels would increase, the higher the level of service performance contemplated. As Ofcom also observes, this non-linearity is to be expected in such operational queuing systems.
191. This particular non-linearity is also likely to be significantly exacerbated in the case of the UK telecommunications network. The cables, ducts, joint-boxes, etc. that make up the network are in dispersed and disparate locations across the UK, with a wide variety of different conditions which affect the ability of Openreach engineers to take action, either to provide new service or to fix faults. Some provision and repair jobs will inevitably be more challenging to complete than the average, and inevitably take longer to execute. This will also be impossible to accurately predict on a job by job basis, before the engineer arrives on site. Against that background, if Ofcom propose to mandate higher percentages of all jobs to be completed within the standard lead times, inevitably this becomes harder and more costly, the higher this percentage level is set at. The higher Ofcom set the required level, the more Openreach will need to be resourced to complete a much higher proportion of difficult and time-consuming jobs within standard timescales.

192. To quantify the relationships between engineering resource levels and service performance levels against provision and/or repair, Openreach has worked with external consultants Ernst & Young to carry out a modelling exercise – using a “discrete event simulation” (DES) methodology. The initial results of that modelling exercise are described here.
193. Should Ofcom proceed with proposals to mandate higher levels of service performance going forward, it will be absolutely critical that Ofcom includes estimates of the additional costs which would be incurred in raising levels of performance above the base year. By sharing this modelling work with Ofcom as part of the FAMR and LLU/WLR Charge Control consultations, Openreach intends to support Ofcom by enabling an explicit relationship between product costs and service levels to be developed.

6.3 Background:

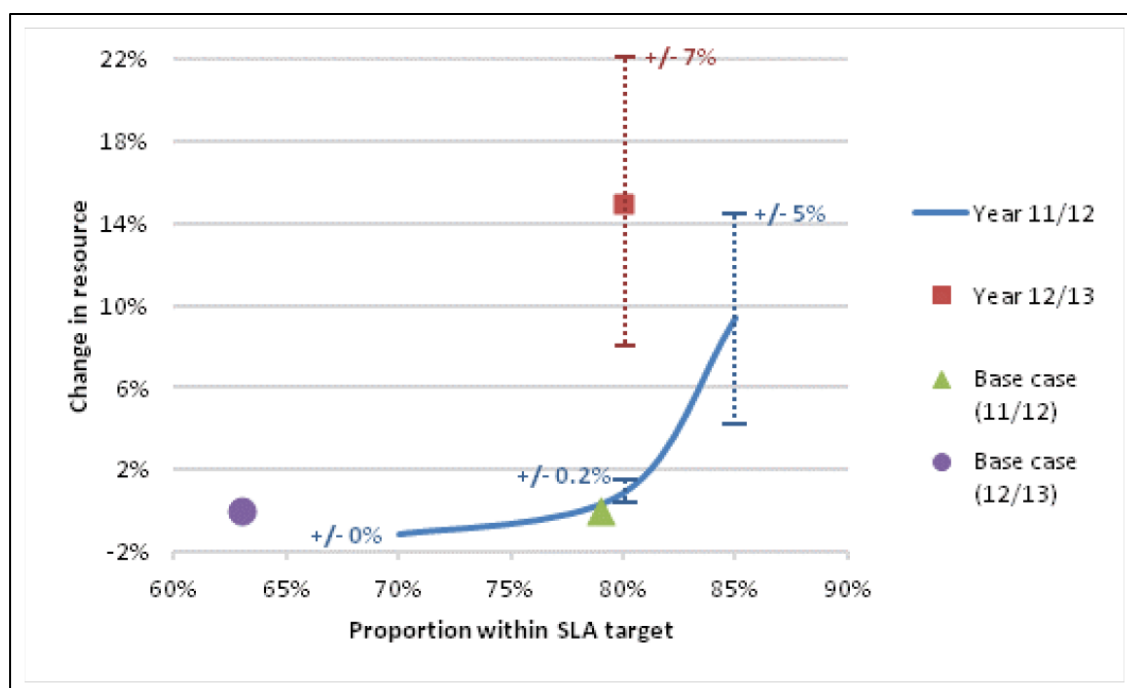
194. Service quality levels are a function of range of factors, including but not limited to the volume and volatility of demand and the availability of resources, with the right skills, in the right location and within a given timescale, to meet this demand.
195. It is important that modelled results are considered within a wider service context, and that a number of other factors, including (but not limited to) those listed below, are kept in mind:
- Service is impacted by many different factors, for example, the increase in frequency of extreme weather events. This trend is expected to continue.
 - The increasing pressure under which the network is placed; for example, technology is driving ever increasing customer expectations. Therefore, the sensitivity of broadband services provided over copper lines to certain types of line imperfection is leading to an increase in fault rates overall, and specifically an increase in types of fault or customer issues which are not faults, which are more difficult to diagnose and resolve.
 - The current trend for the migration of lines away from WLR to MPF; the increase in proportion of Care Level 2, compared to Care Level 1 faults, results in increased volatility and pressure on resources.
196. Despite these factors, which are discussed in more detail elsewhere in this response document, over recent years Openreach has driven significant improvements in its service delivery and will continue to do so. Openreach cannot, however, drive improvement in a vacuum. It is important that Openreach's customers also contribute to improvements by improving their forecasting accuracy (by geographic area), by adopting standard approaches to testing and diagnostics and by reducing cancelled appointments. Even so, improving service performance will require increases in engineering resource for the reasons outlined in this response.
197. The level of funding available through the MPF and WLR charge control settlement is therefore crucial to achieve the appropriate level of service and cope with volatility in demand and faults.

6.4 Initial model results

198. In order to establish an appropriate estimate of what additional resource would be required, compared to the base year, in order to deliver a specified increase in service levels, it is first necessary to consider the base year itself. Over time, various key factors are changing, which heavily impacts Openreach's operations. It is essential that Ofcom base their considerations on the most recent period for which data is available.

199. In this case, Ofcom must base estimates of the additional costs to raise service levels, upon a base year of 2012/13. Not only is this the latest year for which financial data is available, but also, compared to previous years, 2012/13 better reflects the latest status of physical and commercial factors influencing the way in which service performance is impacted. Specifically, a comparison between the 2011/12 and 2012/13 years would show a number of significant differences in environment – not least the different patterns and volumes of weather-driven fault types, and the continued increase in proportion of repair jobs requiring “end of next working day” fix under Care Level 2.
200. As described in the Ofcom consultation document, Openreach has applied the DES model to the base data from the full 2012/13 – as well as some initial test runs against earlier 2011/12 base data. This base data is a file of data regarding each provision and repair job performed across the UK by the Openreach Service Delivery engineering team during the year (including all WLR and MPF jobs) with specific job type information, “arrival times” and locations of the work. The base data therefore implicitly reflects the geographic mixture of work of all types executed by the Openreach field force – reflecting the mix of care levels and job types.
201. Initial results (summarised in figure 5.2 of Ofcom's LLU/WLR Charge Control consultation – reproduced in Figure 20 below) indicate that, in that 2011/12 base year, it is estimated that an increase in the Service Delivery workforce of approximately 9% (or approximately an extra 1080 engineers) would have produced, all else being held constant, an increase in repair performance to roughly 85%, compared to the 79% average actually achieved in that year. Of course, in 2011/12, there was a much lower proportion of repair jobs requiring fix to be completed by the end of the next working day than will be the case in future years, as well as a fault arrival profile based on benign weather conditions likely to be less typical of the forthcoming charge control period. Therefore, these verification results using 2011/12 base data should be regarded as much less of an indication of the forward-looking estimate, as would be the results of applying the DES model to base data from 2012/13.

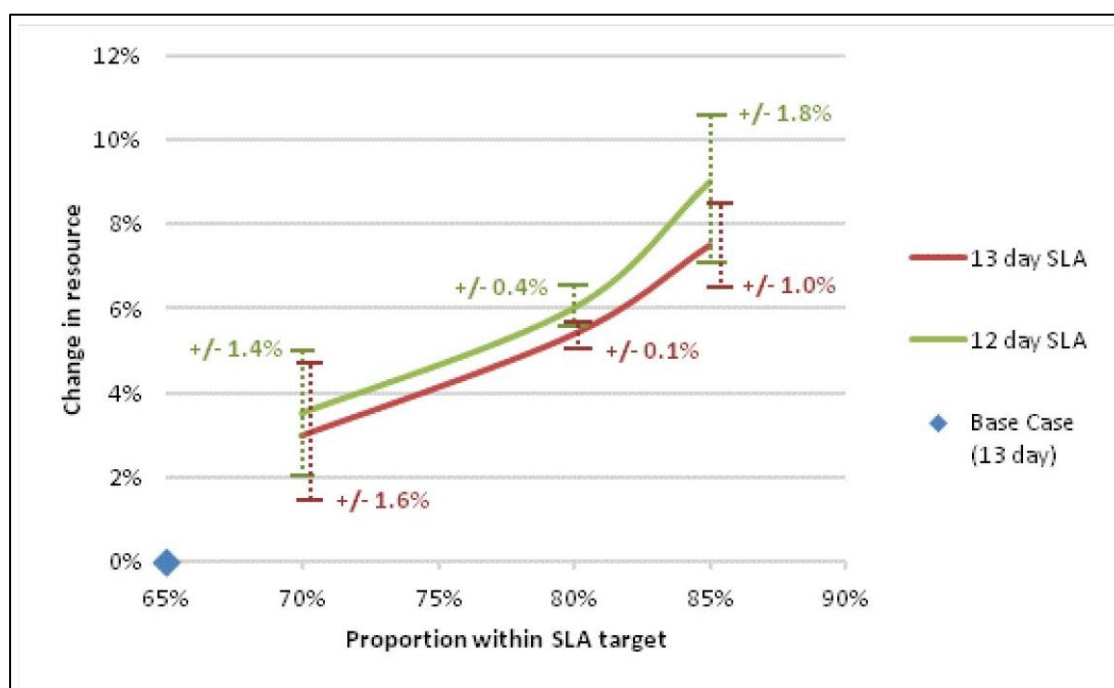
Figure 20: Indicative resource increments required to improve repair performance



Source: Ofcom, figure 5.2 in the LLU/WLR Charge Control consultation (data provided by Openreach)

202. Considering how these results might differ in light of changes in environmental factors over time, we note that running the DES model against 2012/13 data, provides an estimate that in order to have lifted repair performance to 80% from the actual 63% average achieved in that year, this would have required an additional 15% Service Delivery engineering resource (approximately an extra 1,800 engineers) – holding all other factors constant.
203. Similarly, considering provision performance, and running the model against 2011/12 base year data, it is estimated that if total Service Delivery engineering resource had been increased by around 5%, then performance in that year against a 13 day “earliest available engineering appointment for provision” SLA would have been around 80%, rather than the approximately 65% performance that was actually achieved. Openreach also estimates that a further increase of roughly 1% in resource, or approximately an extra 720 engineers in total) would have supported also a reduction of lead-time from 13 to 12 days (at 80% performance against SLA). This is summarised in figure 5.1 of Ofcom's LLU/WLR Charge Control consultation (reproduced as Figure 21 below).

Figure 21: Indicative resource increments required to improve provision performance



Source: Ofcom, figure 5.1 in the LLU/WLR Charge Control consultation (data provided by Openreach)

204. Openreach looks forward to setting out the analysis more fully in context of Ofcom's subsequent consultation on these issues. Specifically, Openreach has been working closely with Ofcom to ensure the detail of the modelling methods and application to these questions is fully understood by Ofcom. We will ensure appropriate transparency to enable stakeholders to have confidence in the way the DES techniques can be applied to quantify the relationship between service levels and product costs.

7 SLA/SLGs, KPIs and service standards

205. We set out Openreach's views on these important subjects in our responses to questions 10.2 to 10.21. We also set out further detailed arguments relating to KPIs in Annex I to this response.

7.1 SLAs/SLGs

206. In our response to the questions 10.2 to 10.9 we assert that, in particular:

- It is right for Ofcom not to intervene in order to modify the existing arrangements. It is also right that Ofcom allows future modifications to be managed via a process of commercial negotiation between Openreach and CPs, with appropriate facilitation if necessary;
- Openreach already has the most comprehensive set of wholesale SLA arrangements in Europe, as shown in the independent benchmarking reports from Analysys Mason and Ernst & Young that are included as annexes to this response. There are no obvious gaps and no case for regulatory intervention to either add SLAs or deepen existing SLGs (or add new ones);
- From the recent dispute between Openreach and TTG relating to MPF New Provides Ofcom developed a methodology to assess the "reasonableness" of the level at which the SLG should be set (in the case of the dispute the CAA SLA/SLG). Employing this method to assess the reasonableness of some other existing SLA/SLG arrangements (specifically the "on-time" provision SLGs for WLR and MPF) raises real concerns that existing SLGs are set well beyond what is reasonably required – and are in effect punitive. This needs to be addressed as part of Ofcom's review;
- Ofcom would be wrong to mandate the introduction of an appointment availability SLA/SLG for GEA. The proposal appears to be inconsistent with Ofcom's wider proposals relating to the process for modifying SLA/SLG arrangements, is not addressing a known issue, and is likely to have unintended consequences including diversion of scarce resources that could be better employed to meet market priorities. Ofcom's proposal also appears to be at odds with its comments in the MPF New Provide dispute determination, where Ofcom clearly refer to the importance of "*an industry wide view that there is a need for such arrangements*" (emphasis added) in specifying SLGs⁴⁹, and
- A better option is available to Ofcom – which is to use the industry process set out as Ofcom's preferred approach for modifying SLA/SLGs, to debate the need for such an SLA/SLG. This approach would also have the benefit of allowing the development of an SLA with full industry participation and for the SLA to be launched with the necessary integration of a CP forecasting process, in line with the existing CAA SLA/SLG.

7.2 The treatment of KPIs

207. We set out Openreach's views in relation to Ofcom's KPI proposals in our responses to questions 10.12 to 10.16 and also in more detail in Annex I to this document. We argue in particular that:

⁴⁹ Ofcom, *MPF New Provide Dispute Determination*, 15 August 2013, paragraph 3.27. Available at: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01098/Dispute_between_TalkTalk_Te1.pdf

- Openreach supports the need for transparency, and indeed already provides the most detailed set of reports relating to service performance of any operator in Europe, the majority of which are provided on a voluntary basis following discussion with stakeholders;
- We are however concerned that Ofcom has not sufficiently thought through its proposals in respect of KPIs. In particular it is not clear in a number of cases what issue the additional KPI proposals are aiming to remedy, what the needs of the audience are and how these needs will be met by further KPI reporting mandated by regulation;
- For example in Ofcom's KPI proposals to cater for end users, no learning appears to have been taken from a previous (failed) exercise in the "Topcomm" scheme;
- In consequence we believe that the current Ofcom proposals are disproportionate. For example, taking the "non-discrimination" KPIs in isolation, Ofcom's proposals represent an eight-fold increase when set against the number of reports currently required under SMP regulation, and even this understates the true increase as Ofcom is also seeking further reports to cover MBORC, end user stakeholders and to make further additions to provide reporting that includes high levels of geographic granularity;
- Some of Ofcom's proposals are not clear (for example how product type is defined in the context of FTTC and FTTP), and will need to be more clearly specified as a matter of urgency if Ofcom presses ahead with the existing approach;
- Other approaches are available to Ofcom and should be explored:
 - **Option 1.** Openreach already provides a very large number of the reports being asked for by Ofcom on a voluntary basis (for example in the monthly service packs that have been published since summer 2012, along with reports provided to the OTA2 and EAO), and would be happy to work with Ofcom, OTA2 and CPs to discuss further expansion of this voluntary reporting to meet genuine need. As testified to in independent reports from Analysys Mason and Ernst & Young, Openreach is already (by some distance) the most transparent operator in Europe when it comes to reporting on service. Ofcom can and should explore meeting the requirements of transparency via voluntary means rather than via regulatory imposition. This approach is will better enable the reports to evolve as required with changing stakeholder need, whereas imposition via SMP regulation will mean that the reports will remain static until the next review; or
 - **Option 2.** If Ofcom still concludes that SMP regulation is required to specify the KPIs Openreach should report on, it should adopt the approach used previously when setting the existing "non-discrimination" KPIs which is to consult further on the specific KPI proposals. This approach will have the benefit over the current proposals of allowing a more detailed consultation in relation to a subject where by definition detail is important. Such an approach could feasibly be conducted within the existing timescales for the FAMR, or alternatively this consultation could take place after the publication of the FAMR statement, as in the case of the 2004 KPI direction.⁵⁰
- Irrespective of the approach taken, the opportunity to rationalise existing reporting should be explored to ensure that a focussed approach is being taken where reporting is clear, consistent and there to meet genuine need.

⁵⁰ Ofcom, *Requirement on BT to publish Key Performance Indicators*, 23 September 2004. See http://stakeholders.ofcom.org.uk/binaries/consultations/bt_kpi/statement/statement_directions.pdf

7.3 Minimum Service Standards

208. We set out our views in respect of minimum service standards in our responses to questions 10.17 to 10.21. We will also be providing a more detailed response to Ofcom in respect of this important area when we respond to Ofcom's forthcoming consultation on Openreach service. Based on an initial assessment of the subject, we contend in particular that:

- It is not necessary at this stage to impose minimum standards. Openreach is already sufficiently incentivised to provide good levels of service, while the key enabler for providing the levels of service that the market needs (and is willing to pay for) going forward will be via getting the levels of funding inherent within the charge control settlement right, not by imposing additional SMP remedies;
- Any imposition of a minimum standards approach would be untested, Ofcom should be cautious in the method and scope of such an approach – extension beyond WLR and MPF is not warranted;
- Ofcom's principle that targets need to be achievable by Openreach is right. In line with this, Ofcom's proposals need to account for practical issues such as the glass ceiling effects and demand volatility that place an upper limit of what level of performance can be realistically achieved by Openreach. As noted, a realistic assessment of the maximum level that could be realistically achieved on a national level (and assuming suitable funding exists), is estimated to be around 75%;
- If Ofcom press ahead with these proposals, any minimum standards evaluation should be conducted at a national and annual level. If Ofcom seeks to evaluate Openreach at a more granular level, it also needs to recognise: (a) the additional costs associated with greater granularity; and (b) the need to set targets at a lower level in any sub-national / sub-annual evaluation. A more granular approach would also increase incentives on Openreach to make inefficient investments purely to hit minimum targets, and would also require a more complex administrative mechanism – both of these are good reasons to avoid such an approach; and
- *Force majeure* (also referred to as Matters Beyond Our Reasonable Control or MBORC) is by its nature volatile and difficult to predict. Therefore, although we support Ofcom's proposal to include an allowance for force majeure as part of the minimum standard formulation, a reasonable / flexible approach needs to be taken in specifying the level allocated in order to recognise this volatility (much of which cannot be mitigated solely by Openreach).

8 Responses to questions in Ofcom's consultation document: *"Fixed access market reviews: wholesale local access, wholesale fixed analogue exchange lines, ISDN2 and ISDN30"*

8.1 SLAs and SLGs

Question 10.2: Do you agree with our conclusion not to seek to modify SLAs or SLGs as a mechanism for quality of service improvement? If not, how would you modify the SLAs and or SLGs and on what basis and how would you ensure that such changes did not have unintended incentive consequences? Specifically do you consider that the existing SLA for provisioning appointments (12 days from next year) is adequate? Please provide reasons in support of your views.

Summary

209. Openreach agrees it is correct not to impose additional or more stringent SLAs or to deepen existing SLGs via regulation. In summary:

- **Openreach already provides the most comprehensive set of wholesale SLAs in Europe.** We have also continued to develop the arrangements via discussion with CPs, often via OTA2 facilitation. Further regulatory intervention at this stage is not warranted, and Openreach considers it would be counterproductive and disproportionate.
- **Some existing SLGs are set at punitive levels and need to be reviewed.** Ofcom is also right to highlight the negative consequences that further modification of the SLAs and SLGs could bring, and to be concerned that any deepening of the SLGs risks making them punitive. Indeed, using the methodology employed by Ofcom to assess the reasonableness of the Openreach CAA SLG in the recent dispute with TTG concerning MPF New Provide⁵¹, we are concerned that a number of the existing Openreach SLGs, for example the "on-time" provision SLGs for WLR and MPF are at high and possibly punitive levels, and hence potentially unenforceable under English law. Accordingly, a review of this situation is warranted and Ofcom should take the opportunity to review the current SLG levels set as part of the 2008 SLA Direction⁵².
- **Openreach and CPs should be incentivised to deliver good service.** SLA and SLG arrangements are just one component in creating the right conditions for good service to be delivered. The end user service experience is influenced not only by underlying Openreach performance, but also by CP performance and by the way in which CPs interact with Openreach processes and systems. For example, the Openreach and CP process improvements exemplified in the "OTA2 Tasks,"⁵³ have delivered real incremental benefit to all parties including end users. It is therefore right that Ofcom puts a framework in place that incentivises CPs, in addition to Openreach, to take responsibility for delivering good service.

⁵¹ Ofcom, *MPF New Provide Dispute Determination*, 15 August 2013. Available at: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01098/Dispute_between_TalkTalk_Te1.pdf

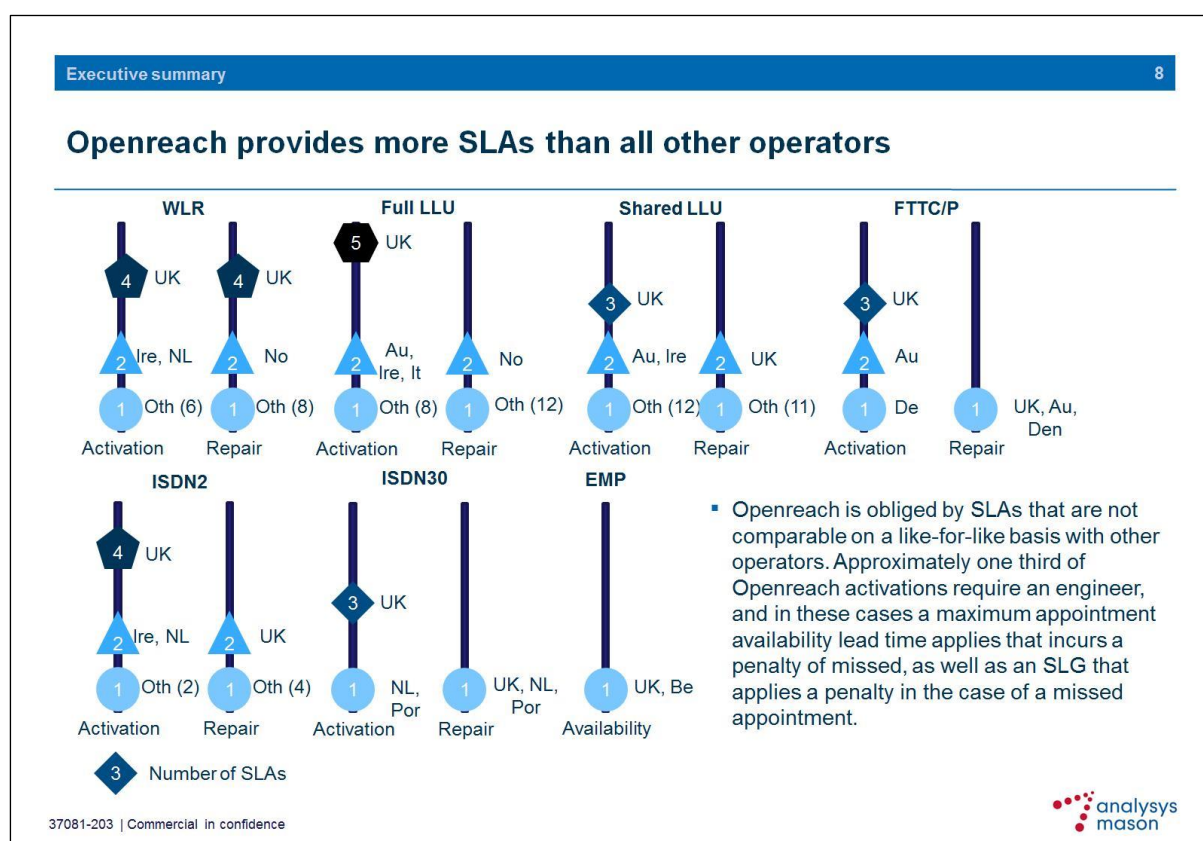
⁵² Ofcom, *Service level guarantees: incentivising performance*, 20 March 2008. See <http://stakeholders.ofcom.org.uk/consultations/slg/statement/>

⁵³ A series of tasks agreed between Openreach, OTA2 and CPs that focussed on delivering process efficiencies.

Openreach is subject to the most comprehensive SLA regime in Europe

210. When compared against a broad set of European countries⁵⁴ the existing Openreach SLAs are the most comprehensive. This is true both in terms of the breadth of portfolio covered, and in terms of the number of provision and repair process scenarios covered.
211. Furthermore, Openreach also makes SLG payments in 100% of cases where these SLGs are payable (i.e. liability arises on a job-by-job basis for each individual job), whereas payments in less than 100% of cases are commonplace in other European countries.⁵⁵
212. As shown in Figure 22 below, Openreach provides more SLAs than all other operators, with multiple provision and repair SLAs in place for WLR, MPF, SMPF, GEA-FTTC, GEA-FTTP, ISDN2 and ISDN30. Furthermore, Openreach is one of only two operators (along with Belgacom) to offer a platform based SLA⁵⁶ above and beyond the product specific arrangements.

Figure 22: Summary of SLAs provided by European fixed incumbents



Source: Analysys Mason Benchmarking Report (see Annex C).

213. The more comprehensive nature of the Openreach provision and repair SLAs is true across WLR, LLU and GEA. For example, looking at provision/activation SLAs for MPF, Openreach offers four SLAs (each with an accompanying SLG):

⁵⁴ The countries are: Austria, Belgium, Denmark, France, Germany, Ireland, Italy, the Netherlands, Norway, Portugal, Spain, Sweden and the United Kingdom.

⁵⁵ See Analysys Mason, *Final Report for Openreach. Fixed Access Market Review* (23 May 2013) and Ernst & Young, *Regulatory Benchmark of SLA/SLG applicable to WLR and LLU services provided by European incumbent fixed operators* (September 2013).

⁵⁶ Analysys Mason Benchmarking Report, page 70 (see Annex C).

- An appointment availability SLA covering provision orders that require an engineering visit;
 - An on-time SLA covering all order types;
 - A missed appointment SLA covering all orders that require an engineering visit; and
 - A dead on arrival SLA covering all order types.
214. Furthermore, these SLAs are not mutually exclusive. It is quite possible that multiple (potentially all) SLAs will be in play in a given provision scenario, with attendant SLG payments applicable for each and every SLA breach.
215. As shown in Figure 23 below, most other European countries offer only a single SLA covering MPF provision/activation, with only Portugal and Ireland offering two.

Figure 23: Summary of MPF provision SLAs across European fixed incumbents


Full LLU activation

27

Full LLU /MPF activation: most of countries are comparable for activation SLAs but only a couple comparable for other services SLAs

Country	Number of products	Activation/order types					
		Activation delay	Transfer delay	Maximum appointment availability lead-time (engineer required)	Missed appointment (engineer required)	Dead on arrival	Other
UK	Three (service level 2, 3, 4)	✓	✓	✓	✓	✓	
Austria	Three	✓	✓				
Belgium	One	✓					
Denmark	One	✓					
France	Three	✓					
Germany	One	✓					
Ireland	One	✓	✓				
Italy	One				✓		
Netherlands	Two	✓					
Norway	One	✓					
Portugal	Four	✓	✓				
Spain	One	✓					
Sweden	Two	✓					

37081-203 | Commercial in confidence

The logo for analysys mason, featuring a stylized red and black dot pattern to the left of the company name in a sans-serif font.

37081-203 | Commercial in confidence



Source: Analysys Mason Benchmarking Report (see Annex C).

216. A further independent assessment by Ernst & Young confirms that Openreach's SLAs are the most comprehensive:

“Openreach’s SLA targets appear to be more extensive in specification than most other European providers; e.g., Openreach has four different SLA targets for repair activities, ranging from a maximum target of 3 working days to a minimum of 6 hours. In a number of other countries, (e.g., Portugal) there is just one service level.

Openreach SLA targets relate to a greater number of stages of each process compared to all of the other European operators in the sample. For example, for LLU provision, there is an “on-time” SLA target, a “lead time” SLA target for provisions that require an

engineering visit, an SLA target relating to whether the engineer arrives within a specified time slot and an SLA target relating to whether the circuit is delivered in a fully functional state. Our analysis has shown that, for all the operators in the sample that we have reviewed, there is not the same breadth of SLA targets.⁵⁷

217. Furthermore, in many cases the stringency of the individual Openreach SLAs (and SLGs) is either comparable to or higher than the average overall. For example, Analysys Mason found that for WLR provision “Among operators that have 100% achievement targets, Openreach has the highest penalties” and that for WLR repair “Openreach is stricter than the average for repair SLAs and penalties.”⁵⁸ In conjunction with the comprehensive (and non-mutually exclusive) nature of the Openreach SLGs (as set out in more detail in paragraph 218), this represents a very robust overall regime.
218. The non-mutually exclusive nature of the Openreach SLAs is illustrated by the following scenario (and Table 7 below) relating to an MPF provision activity. In this scenario the CP orders an appointed MPF provide with Openreach (i.e. requiring an Openreach engineering visit). The earliest date the engineer is available is in 17 days, and the CP places an order to have service provided on day 17, selecting an “am” engineering visit slot. In the event the Openreach engineer is not able to successfully make the slot for reasons that are Openreach’s responsibility, and the service is subsequently delivered successfully on day 20. In this scenario Openreach will pay the CP £85 (more than 100% of the annual rental price for MPF⁵⁹), made up as follows:

Table 7: Example of SLGs in MPF provision activity

Copper appointment availability SLA/SLG (4 x £4)	£16
On time provision SLG (3 x £8)	£24
Missed appointment SLG (1 x £45)	£45
Total SLG payable	£85

Some existing SLGs are set at punitive levels and need to be reviewed

219. SLGs are a form of liquidated damages and there is a very well-established body of English law to guide their reasonableness and enforceability.
220. Their primary purpose is to provide a commercial and pragmatic way to resolve claims in respect of minor breaches of contract, such as late completion or delivery, which do not give rise to the ability to rescind or terminate the contract because the breach is not serious enough. Their function is to compensate at an agreed pre-estimated level, which does not require proof of loss, for those minor or non-fundamental breaches which otherwise would have to be remedied by way of a claim in which breach, loss and damage need to be proved.
221. Liquidated damages are not designed to cover the actual loss suffered by a party. They are intended to reflect a genuine attempt to estimate in advance the likely loss to be suffered. They must be forward looking and without the benefit of subjective hindsight of actual losses to assess what should have been payable for a breach of obligation that has already happened. However this should not preclude a review and resetting of SLG payments on a forward looking, pre-estimate basis using more up to date data to inform and help assess what that

⁵⁷ Ernst & Young Benchmarking Report, page 2 (see Annex D).

⁵⁸ Analysys Mason Benchmarking Report, page 7 (see Annex C).

⁵⁹ Based on the MPF annual rental price of £84.26 in force from 1 May 2013.

forward looking pre-estimate should be, particularly where the parties are in a long term relationship.

222. Numerous decided English law cases show that the attempt to calculate liquidated damages must be a serious rational exercise, not a token or perfunctory effort. These principles were developed almost 100 years ago and have been consistently applied by the courts ever since. They were restated in 2003 in the Court of Appeal and in further more recent cases.⁶⁰
223. These confirm that if it cannot be shown that an amount represents a genuine and reasonable pre-estimate of the likely loss, for example where it is set arbitrarily, it will constitute an unenforceable penalty unless it can be shown that the amount was genuinely commercially justified and the predominant purpose was not to deter breach.
224. The developed case law, has further clarified that the payment fixed in the contract should take account of the claiming party's duty to mitigate and its ability to offset the harm suffered against any benefits it gains arising out of that breach.
225. In summary, SLGs (as a form of liquidated damages) are subject to the application of fundamental legal principles that determine their enforceability under English law.
226. Ofcom is therefore right to be concerned that any modification and/or increase to the existing Openreach SLG levels run the risk of making them punitive (or more punitive) and in consequence legally unenforceable.
227. In Openreach's response to Ofcom's first Provisional Conclusions relating to the MPF New Provide dispute with TTG, we set out a detailed methodology for calculating the SLG, based on the following four components of damages that a CP would potentially incur in the event of Openreach breaching the SLA: lost profit, customer cancellations, lost sales and additional service costs.
228. While accepting the basic structure proposed by Openreach, in its determination Ofcom made some changes to the final equation it used to calculate if the Openreach SLG fell within the range suggested by the equation (and hence set at a level that was reasonable).
229. This approach can also be used to assess and validate the reasonableness of other SLG arrangements, where the same principles of liquidated damages prevail, and where there is commonality of the class of losses that should be included as part of the SLG construction. To this end, in Table 8 below, we have used as far as possible⁶¹ the Ofcom formula set out by Ofcom in its dispute determination and re-run analysis of what range is implied for the existing Openreach "on-time" provision SLAs/SLGs for MPF and WLR. This should be viewed as a starting point. In due course we consider that this approach could be more widely applied to existing SLG arrangements. We set out our detailed analysis that underpins the implied reasonable SLG range for the "on time" SLGs (including all assumptions used) in Annex H to our response.
230. From this analysis, the output of which is summarised in Table 8, an appropriate SLG range of [x<]. Even accounting for a potential uplift arising from the use of Average Margin Per User (AMPU) less avoidable costs (Ofcom's preferred method as specified in the MPF New Provide

⁶⁰ See Openreach response of 11 April 2013 to Ofcom's first provisional conclusions in the MPF New Provide dispute (http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01098/responses/Openreach_s_response_to_the1.pdf).

⁶¹ We have not been able to calculate lost profit using the AMPU method since there is no publicly available relevant information that Openreach can use. We have therefore calculated lost profit using publicly available ARPU and EBIT data.

Dispute Determination) rather than EBITDA x ARPU to calculate lost profits, the range is so far below the current SLG range for these SLAs (£8.00 and £7.77 for MPF and WLR respectively) as to raise real concerns that the existing SLGs are actually punitive.

Table 8: Daily SLG range for on-time provision SLA (WLR and MPF)

SLG Components	Lower end of range	Upper end of range
	£ per day	£ per day
Lost revenues	[<]	[<]
Cancellations	[<]	[<]
Potential sales	[<]	[<]
Customer care	[<]	[<]
Overall daily SLG	[<]	[<]

Current provision SLGs per day	
MPF on time	£8.00 per line
WLR Basic on time	£7.77 per line

Source: Openreach


231. Having developed a more detailed method for assessing the “reasonableness” of SLGs, we therefore think it is incumbent on Ofcom to assess if the existing SLGs have been set at punitive levels and to reassess the levels on a forward looking genuine pre-estimate of loss basis. As Ofcom rightly points out, there is a real risk that overly onerous SLA/SLG arrangements undermine incentives for CPs to productively engage in delivering good service, whilst placing an undue burden on Openreach alone.

Openreach and CPs should be incentivised to deliver good service

232. Delivering good service to end users needs to be addressed by all of industry working with Openreach. CPs have a key role to play in this. Indeed, Ofcom recognised this in the early stages of the industry negotiation that took place when the new Openreach CAA SLA/SLG was being developed. At the time, Ofcom proposed a set of “framework principles” in order to advance the discussions. The full list of framework principles are set out in Figure 24 below. Ofcom rightly recognised in the list of framework principles that CPs in addition to Openreach have a role to play in delivering good service:

- “Openreach and its customers should assume joint responsibility for delivering good standards of service to end users”;
- “Openreach and CPs should have appropriate incentives to help achieve the target delivery dates”;
- “Improved forecasting/order commitment processes will be integral parts of the final SLA/SLG framework”;
- “CPs should also have incentives to forecast accurately”.

Figure 24: Ofcom Framework Principles CAA SLA/SLG



Recap - Framework principles. No change

1. **Openreach and its customers should assume joint responsibility for delivering good standards of service to end users**
2. Delivery times – for LLU and WLR services -should be restored and sustained at “pre-crisis” levels
3. This objective should be supported appropriate backstop SLAs (such as target time + 2 working days)
4. **Openreach and CPs should have appropriate incentives to help achieve the target delivery dates**
5. **Improved forecasting / order commitment processes will be integral parts of the final SLA/SLG framework**
6. CPs should receive SLGs where delivery fails to meet agreed SLAs
7. **CPs should also have incentives to forecast accurately**
8. Openreach should be publishing actual performance against the target SLAs, and will agree format and how this is done with the OTA
9. Openreach and CPs, supported by the OTA, should agree on the characteristics of the new SLA/SLG framework no later than 1 September 2011
10. Openreach and CPs, supported by the OTA, should agree to commence delivery of the new SLA/SLG framework from 1 October 2011

9/28/2011
4

Source: Openreach slides at CPCG, setting out Ofcom's framework principles. Emphasis added.

233. Given that the Openreach SLA/SLG regime is already comprehensive and in places onerous, it is therefore right that Ofcom focuses on promoting the development of other factors that will deliver better service to end users, such as cross-industry end to end process improvements.
234. The “OTA2 tasks” focussed on a set of ordering processes between Openreach and CPs that involved the use of Openreach engineers. Through this programme of work it was found that sub-optimal use of existing processes by CPs combined with inefficiencies in existing process were directly leading to a large number of “appointed” (i.e. those involving an Openreach engineer visit) order types being placed unnecessarily. This led to inefficient use of Openreach engineering resource that could otherwise have been more productively employed, with increased cost and negative knock-on service implications that affected all parties.
235. For example, one of the OTA2 task workstreams looked at the adoption of “Working Line Takeover,” (WLTO) an Openreach ordering process available for both WLR and MPF that does not require an engineering visit and was developed to cater for the home mover market. The workstream accelerated the adoption of WLTO by large CPs that had previously used new provides (i.e. driving an engineering visit) in home-mover ordering scenarios, and also ensured focus was given to “best practice” use of the process.
236. These benefits would not have been delivered in the same timescales without focussed effort from Openreach, OTA2 and CPs. Given that Openreach does not have access to unlimited engineering resources, it is therefore key that such focussed programmes form a cornerstone

of the strategy to deliver consistently good service going forward. Ofcom should explicitly recognise this in its final statement.

The principle of linking CP forecasting and SLG payment should be extended

237. Openreach service benefits from accurate CP demand forecasting, since this improves Openreach's ability to anticipate future workloads, and have the right levels of resource in place in the right geographies to meet customer needs.
238. The importance of accurate and regular CP forecasting (based on the accepted principle that CPs are best placed to forecast their own future demand), and its linkage to Openreach service delivery has been explicitly enshrined (and accepted by all relevant parties) in the terms of the Openreach CAA SLA/SLG that was developed between Openreach and CPs, with OTA2 and Ofcom facilitation. As set out in Figure 24 above, the need for such forecasting was also set out as one of Ofcom's framework principles that helped to guide industry negotiations during the development of the SLA.
239. The forecasting process developed by Openreach in association with the CAA SLA/SLG was also found by Ofcom to be fair and reasonable in its recent determination for the MPF New Provide dispute between Openreach and TTG. In particular, Ofcom correctly noted that both parties accepted in principle that it was reasonable for an SLA regime to include a forecasting arrangement, while TTG also accepted that *"...better industry forecasting benefits the entire industry and as such we agree that forecasting accuracy is relevant..."*⁶²
240. We therefore consider that Ofcom should extend the linkage between CP forecasting accuracy and SLG payment, particularly where SLAs include the use of Openreach engineering resource. This would create a more balanced set of industry incentives that will deliver better service outcomes. While this principle should be tabled via the appropriate industry forums, Ofcom should explicitly deal with updating the 2008 direction to allow the linkage between CP forecasting accuracy and SLG payment⁶³. In particular, the creation of a new GEA appointment availability SLA would require CP forecasting to be an integral part of the SLA if it is to be fair and effective.

The CAA SLA of 12 working days is a reasonable standard and further reductions are a premium proposition

241. The CAA SLA was originally set at 14 working days. The approach taken by Openreach and industry in setting the SLA, with Ofcom and OTA2 facilitation and input was as follows:
- Two of the Ofcom framework principles (see Figure 24 above) were that:
 - *"Delivery times – for LLU and WLR services – should be restored and sustained at "pre-crisis" levels"; and*
 - *"This objective should be supported by an appropriate backstop SLA (such as target time + 2 working days)"*
 - Openreach assessed the "pre-crisis" level had been at around 13.3 working days;

⁶² Ofcom, *MPF New Provide Dispute Determination*, 15 August 2013, paragraph 3.185. Available at: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01098/Dispute_between_TalkTalk_Te1.pdf

⁶³ Ofcom, *Service Level Guarantees: Incentivising Performance*, Statement and Directions (20 March 2008). Available at: <http://stakeholders.ofcom.org.uk/consultations/slg/statement/>

- Using the Ofcom framework principle, this suggested an SLA of 15 working days (13.3+2) would be appropriate but to move discussions forward Openreach elected to set a more demanding launch SLA of 14 working days from January 2012.
242. The SLA has been subsequently reduced to 13 working days (on 1 November 2012) and is set to fall further to 12 working days from 1 November 2013, with the latter reduction in line with the Ofcom/OTA2 facilitated agreement in December 2012.
243. In summary, Openreach strongly believes that a reasonable process has been used to set the SLA, and that Openreach has already made a number of concessions relating to improvement of that SLA. To impose any further reduction to the SLA through regulatory intervention would be wrong.
244. We also note from the recent MPF New Provide dispute determination, in which Ofcom explicitly considered the reasonableness of the CAA SLA/SLG arrangement, that TTG raised no issues in respect of the SLA, nor did Ofcom deem it appropriate to assess the SLA (then at 13 working days) as part of its assessment of the reasonableness of the regime. We therefore contend that it would be highly perverse for Ofcom to find through the FAMR that any further reduction to the 12 working days SLA is warranted, or that modifications should be mandated via regulatory intervention.
245. As part of the December 2012 agreement, Openreach also committed to a tightening of the SLG level from £2 per day, to £4 per day in situations where the SLA was missed by 3 working days or more. We would be very concerned that any amendment to the existing arrangement would create a punitive (legally unenforceable) settlement.
246. As we will show in more detail in response to Ofcom's forthcoming consultation on Openreach service, delivering an improved CAA SLA, or high performance against the existing SLA, would drive greater costs and require funding above and beyond that which Openreach is able to recover under existing arrangements. As such, any change to the SLA would need to specify a mechanism by which Openreach could recover its additional efficiently incurred costs. Ofcom must not mandate any change at this stage without proper consideration of the cost implications involved in further reducing this SLA.
247. Finally, an alternative approach is already available. Openreach remains open to discussing the specification of an improved SLA further with CPs, but this would be on the basis of any further reduction coming in the form of a value-added proposition that Openreach would fund by charging CPs a higher price. This approach has the benefits of allowing better CP input to any development, whilst being consistent with Ofcom's (correct) approach to adopt a proportionate approach for service levels beyond the "core" proposition. Willingness to pay (in terms of both CPs and end users) is a key consideration, as Ofcom also rightly points out.

Question 10.6: Do you agree with our proposals regarding requirements on BT and KCOM to publish a reference offer? Please provide reasons in support of your views.

248. Openreach agrees with Ofcom's proposal in paragraph 10.152 of the consultation to require the publication of a Reference Offer (RO), including the requirement to require publication of a RO for wholesale network access products in each of the wholesale fixed access markets.
249. Openreach also agrees Ofcom's proposals in paragraph 10.154 of the consultation to continue to apply the additional RO requirements in relation to LLU services and Openreach's Physical Infrastructure Access portfolio.

250. Openreach agrees with Ofcom's proposal in paragraph 10.156 of the consultation that where the RO has been published on the relevant BT website (the Openreach website in this instance) there should not be a separate requirement to send ROs to Ofcom.
251. Finally, Openreach notes that in Ofcom's draft legal instrument:
- draft Condition 8.2A(f) (Annexes, page 198) should refer to "**LLU** Co-Location" rather than just "Co-Location"; and
 - draft Condition 8.2F(b) (Annexes, page 202) should refer to "8.2**F**(a)(i) to (a)(vii)" rather than "8.2**E**(a)(i) to (a)(vii)".

Question 10.7: Do you agree with the proposal to specify the services for which BT is to provide SLA/SLGs? Also do you consider that we have identified all appropriate services that should be subject to an SLA/SLG requirement at this time? If not, please set out what services should be included and provide reasons in support of your views

Specification of services for which BT is to provide SLA/SLGs

252. Openreach agrees that it would be helpful for Ofcom to specify the services for which SLA/SLGs must be provided as clarity is important.
253. However, we continue to have concerns, as set out previously in our response to Ofcom's first provisional conclusions relating to the MPF New Provide dispute with TTG⁶⁴, that the approach taken by Ofcom in assessing Openreach's SMP compliance should not "cherry pick" narrow aspects, but rather look at any agreement as a whole. We are therefore concerned that Ofcom's approach here, while aiming to provide greater clarity, should not open up the possibility of inappropriate future dispute submissions. Openreach would therefore also welcome Ofcom's confirmation that taking this approach will not undermine its ability to assess SMP compliance in a dispute situation using a broad and robust analytical framework.
254. It is also important that this process aligns with Ofcom's central proposal that any modification to existing Openreach SLA/SLG arrangements should be via commercial negotiation between Openreach and CPs, and not via regulatory intervention (e.g. the approach set out here should not set any greater burden on Openreach than any terms and conditions agreed directly between Openreach and CPs).

Services that are subject to an SLA/SLG

255. As noted in our response to question 10.2 above, Openreach already has the most comprehensive set of SLAs in Europe; there is no objective basis for adding to them at this point and in our view regulatory intervention to do so would be disproportionate and unconstructive.
256. We disagree with Ofcom's proposed intervention for the development of a GEA appointment availability SLA/SLG, as set out in detail in our response to question 10.8 below.
257. Ofcom makes reference at paragraph 10.164 of the consultation to some CPs having concerns in respect of an apparent lack of SLA/SLGs relating to LLU point of presence (PoP) build. We

⁶⁴ See Openreach response of 11 April 2013 to Ofcom's first provisional conclusions in the MPF New Provide dispute (http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01098/responses/Openreach_s_response_to_the1.pdf).

agree with Ofcom that it should not impose further obligations in this area, but in addition note that:

- Openreach actually does offer a provision based SLA/SLG for PoP build associated with delivering service to Contractual Delivery Date;
- Openreach also offers an SLA/SLG relating to additional tie cable provision into PoP sites; and
- Openreach offers comprehensive provision and repair SLA/SLG arrangements for the Openreach provided Ethernet/LLU services that CPs use in conjunction with their PoP sites.

258. We also note that Openreach has developed the PoP SLA/SLG arrangements with customers without the need for any regulatory intervention, and that these have been developed over time and discussed (including recently) at the appropriate industry forums.

259. Openreach will separately confirm to Ofcom details of the PoP SLA/SLG arrangements (as mentioned in paragraph 257) as it is not correct to state that none exist. However, Openreach agrees with Ofcom that further SLA/SLG obligations should not be imposed in this area via regulation. The processes and relationships already exist to further develop these arrangements as required via a process of commercial negotiation – regulatory intervention is not needed.

Question 10.8: What are your views on whether you consider a need for Ofcom to require BT to offer an SLA in relation to GEA appointment availability? Please provide reasons in support of your views.

260. Openreach disagrees with Ofcom's proposal to impose, at this point via regulation, a new GEA appointment availability SLA. In particular, we consider that:

- there is no clear evidence that an issue exists here that needs to be fixed by regulatory intervention, nor have CPs raised this issue as a priority;
- the basis for Ofcom's proposal is not sufficiently strong to warrant regulatory intervention in this particular instance and at this stage of GEA's development;
- such an imposition could bring unintended consequences (such as consumption of scarce development capacity that could be otherwise be used for more pressing product development purposes) that need to be considered ahead of any decision; and
- this specific proposal runs contrary to Ofcom's broader (and in our view, correct) underlying approach which is that the modification of existing SLA/SLGs (including the creation of new SLAs) will be best managed via facilitated commercial negotiations and not regulatory imposition.

261. Moreover, an alternative approach exists that is more consistent with Ofcom's general approach in relation to the development of Openreach SLA/SLGs. This is to table the need for a GEA SLA/SLG as an early item for formal discussion using the OTA2 facilitated commercial process that Ofcom is proposing as a central part of its proposals relating to the future modification of Openreach SLA/SLG arrangements. Taking this approach would enable a broader discussion on the potential issues/consequences and choices implied by creation of a new SLA/SLG than would be possible via regulatory intervention, and would also enable the development of a CP forecasting process as an integral part of the new SLA (whereas it is not clear how this could be facilitated via an SMP remedy).

Introducing a new appointment availability SLA/SLG for GEA is unwarranted

262. We consider that Ofcom has not clearly demonstrated that there is a need for an additional GEA SLA at this stage and in consequence, the existing proposal is disproportionate. We are concerned that this proposal is motivated by a desire for regulatory “tidiness” between different products that are actually at very different stages in their lifecycle.
263. As Ofcom itself acknowledges, this is not something that CPs are lobbying for in the context of modifications to Openreach SLA/SLG arrangements, nor do we consider that there is any demonstrable issue with the underlying Openreach provision service performance for GEA. There is no harm to be addressed here aside from the (hypothetical) position that in future Openreach performance may fall below levels that are acceptable (where the acceptable level has not at this stage been defined). This approach also appears to be at odds with Ofcom's comments in the MPF New Provide dispute determination, where Ofcom clearly refer to the importance of “*an industry wide view that there is a need for such arrangements*” (emphasis added) in specifying SLGs.⁶⁵
264. Openreach already has very strong incentives to deliver a successful GEA product at good levels of service:
- The success of GEA is a critical strategic objective for Openreach and BT;
 - There are high levels of scrutiny in terms of product performance, including in BDUK areas and more general deployment; and
 - GEA is in direct competition with alternative fixed broadband, 4G and cable offerings.
265. Openreach has developed (without regulatory intervention) the most comprehensive SLA/SLG framework for GEA-type products in Europe, including SLA/SLG arrangements covering activation on the date agreed with the customer, missed appointments and disconnection in error.⁶⁶ Furthermore, Openreach is open to discussing further modifications to these arrangements with customers based on need and appropriate timing in view of where the product is in its lifecycle.
266. Openreach also continues to develop the GEA product in ways that will increase the choices that CPs have in terms of delivery process, including options to purchase managed installs and, in the near future, the ability to deliver service using a “wires only” approach that is less reliant on Openreach.

The consequences of introducing a new GEA appointment availability SLA/SLG need to be more fully considered

267. The introduction of a new GEA appointment availability SLA/SLG would not be straightforward from a time/cost perspective for either Openreach or for CPs adopting the new SLA. For example:
- FTTC and FTTP have different installation processes, and require different engineering skills;
 - As Ofcom points out in the consultation, there are a number of GEA installation scenarios (e.g. when GEA is delivered in addition to a copper product) where the

⁶⁵ Ofcom, *MPF New Provide Dispute Determination*, 15 August 2013, paragraph 3.27. Available at: http://stakeholders.ofcom.org.uk/binaries/enforcement/competition-bulletins/closed-cases/all-closed-cases/cw_01098/Dispute_between_TalkTalk_Te1.pdf

⁶⁶ See Analysys Mason Benchmarking Report, page 50 (see Annex C).

proposed SLA would not be appropriate, meaning that very specific process scenarios would need to be isolated;

- FTTC and FTTP are not ubiquitous national products at this stage. It is therefore, for example, not clear how the proposed SLA would operate in BDUK deployments; and
- any incremental SLA would also need to be accompanied by an extension of formal CP forecasting obligations that would need to be developed and bedded in.

268. These factors create complexity. Based on an initial evaluation, we estimate that deployment of a new appointment availability SLA/SLG for GEA would cost in the region of [£<], would represent a “high” complexity deployment, and would take up capacity in at least two EMP releases. We estimate it could take at least 9-12 months to fully implement the Openreach solution, and would even require existing future commitments to be moved in order to make space for this development. These indicative costs and timescales do not take account of the costs and time associated with the development and integration of a CP forecasting regime that would need to accompany the launch of the new SLA.

269. We are concerned that at this relatively immature stage of GEA's life, the imposition of a new appointment availability SLA/SLG as described would force Openreach to change existing GEA development plans in order to accommodate a development of this complexity. We consider that this is not what the market needs (or wants) at this stage, and should be subject to further discussion between Openreach and CPs.

270. In particular we would urge Ofcom to continue to take the balanced approach that it has taken to fostering investment in Superfast Broadband, which in our view has been the right approach to take and has created the right environment for Openreach to be very innovative in its approach to GEA product development, to benefit of CPs and end users.

This issue can be addressed via commercial negotiation

271. As noted above, an available option that Ofcom could consider would be to table the question as to whether a GEA appointment availability SLA is required at this stage as an early item for OTA2 facilitated discussions between Openreach and industry. Such an approach has the benefit of enabling a thorough discussion/evaluation between Openreach and CPs of the likely implications (practical and otherwise) or introducing such an SLA, whilst also aligning better with Ofcom's broader approaches in relation to the modification of Openreach SLA/SLGs and in relation to setting the regulatory framework for Superfast Broadband, both of which have been successful.

Question 10.9: What are your views on the principles for negotiations on SLA/SLGs? Please provide reasons in support of your views.

272. Openreach supports Ofcom's central proposal that any modification to Openreach SLA/SLGs should be managed via facilitated commercial dialogue between Openreach and CPs, and not through regulatory imposition. We also consider that the OTA2 is well placed to act as an effective facilitator for such negotiations, and that the principles set out by Ofcom will address concerns relating to the relative market power of negotiating participants.

273. Furthermore, and as discussed in more detail in our response to question 10.2, Openreach consider that there is a real need to review existing SLGs, some of which may be set at punitive levels, and also to discuss how the forecasting principles enshrined in the CAA SLA/SLG can be extended in order to improve their effectiveness in delivering good service to end users. It is

imperative that any process used to review existing/future arrangements for Openreach SLA/SLG allows for these items to be progressed.

274. However, as noted in our response to question 10.2, Openreach considers that it already offers a comprehensive set of SLAs, and that we also have real concerns that some of the existing SLGs are potentially set at a punitive level and that this needs to be addressed. As such, there should not be any assumption, irrespective of the process used, that there is a pressing need for "more SLAs" or "deeper SLGs" or that this should be the sole agenda of any OTA2 facilitated process. It is also critical that the process allows for discussion on how existing SLA arrangements can become more effective/balanced in other ways by, for example, extending the forecasting principle inherent within the CAA SLA/SLG.
275. It is also important that Ofcom takes broad account of the lessons to be learned from the CAA SLA/SLG negotiations. In addition to the need for negotiation to be time bound, any future process also needs to ensure that all parties are incentivised to negotiate in good faith, and that any contractual commitments entered into are binding on all participating parties.

Commentary against Ofcom's proposed principles for SLA/SLG negotiation process

276. Openreach has the following comments in respect of Ofcom's proposed negotiating principles:
- **Principle 1** is sensible in that it allows all affected parties to contribute in the negotiation process, which is necessary for any decisions to have legitimacy in the eyes of a broad range of stakeholders. However it is not simply down to Openreach and the OTA2 to ensure broad/continued participation. If CPs want to influence negotiations, they should also be encouraged to commit appropriate time and resources to the process.
 - **Principle 2** will need to be monitored as the "devil is likely to be in the detail" for example in how the OTA2 carries out its initial assessments of whether requests for new or amended SLA/SLGs are broadly appropriate. This raises fundamental questions about the role of the OTA2, and the status of any apparent decisions or recommendations that come from this process. Openreach would be concerned if OTA2 outputs were simply adopted or rubber-stamped without due and proper consideration by Ofcom of whether the proposal was proportionate and likely to deliver incremental benefit.
 - **Principle 3** is sensible, although there should be circumstances in which the 6 month cut off is relaxed, for example, if the negotiating parties agree that more time is reasonably required to reach an acceptable outcome.
 - **Principle 4** is right since it provides legal certainty as to which prevailing terms and conditions are in place between the parties during time when negotiations are underway but have not concluded.
277. In summary, we support the Ofcom approach and the principles outlined. However, we are concerned that Ofcom is creating an expectation that the existing SLA/SLG arrangements need to be reviewed/changed, and that the outcome of such a process would be more stringent SLA/SLGs. As explained in response to question 10.2, Openreach considers that it already offers a comprehensive set of SLAs, and that we also have real concerns that some of the existing SLGs are potentially set at a punitive level and that this needs to be addressed.
278. It is therefore key that the eventual process enables a balanced development of SLA/SLG arrangements to occur, and does not merely facilitate a one-sided mechanism for the expansion/tightening of existing arrangements. It may be that further Ofcom involvement will be required to facilitate discussions on dealing with punitive SLGs and extending forecasting principles beyond the CAA SLA/SLG.

8.2 Quality of Service information and KPIs

Question 10.12: Do you agree with our proposal to impose conditions on BT for the provision of information for quality of service purposes in each of the WLA, WFAEL, ISDN30 and ISDN2 markets excluding the Hull Area? Please provide reasons in support of your views.

279. Openreach agrees with Ofcom's proposal to continue imposing conditions for the provision of information for quality of service purposes in each of the WLA, WFAEL, ISDN30 and ISDN2 markets excluding the Hull Area where BT has been found to have SMP.
280. However, Openreach makes specific comments about the information to be provided in relation to specific services in the remaining questions relating to Ofcom's KPI proposals, and also in Annex I.
281. Openreach also notes that in Ofcom's draft legal instrument:
- Annex C, para. 3 (Annexes, page 260) should refer to "KPIs (i) to (xi)" rather than "KPIs (i) to (xi)".
 - Annex C, para. 4 (Annexes, page 260) should refer to "KPIs (vi) to (vii)" rather than "KPIs (vi) to (vii) and (xiii) to (xvi)".

Question 10.13: Do you agree with our proposal to extend the direction for specific KPIs to LLU and GEA services? Please provide reasons in support of your views.

282. Openreach does not agree with Ofcom's proposal to extend via SMP remedy the direction for specific KPIs to LLU and GEA services. We support the need for transparency (as testified to in the level of transparency that Openreach already provides on a voluntary basis), but consider that Ofcom's concerns could be better addressed by either extending Openreach's reporting requirements via voluntary means, or by conducting a more thorough specific consultation relating to KPIs, in line with the approach taken by Ofcom in 2004.
283. The concerns expressed by Ofcom at paragraph 10.258 (and used to justify the need to extend the direction for specific KPIs to LLU and GEA services) i.e. that "*the lack of a consistent set of metrics across access products where such products are potential substitutes raises competition and non-discrimination risks*" have, to a large extent, already been addressed by the voluntary publication by Openreach since July 2012 of an Ofcom and OTA2 agreed industry service pack that provides a consistent set of performance indicators and associated volumes across Openreach copper products. As Ofcom will be aware, Openreach also produces a further set of reports on a voluntary basis across a variety of products (the so called "Z-Tests"), that relate in particular to equivalence.
284. Although these KPIs do not cover all of the existing mandated KPIs for WLR, ISDN2 and ISDN30, they cover a wide range of provision and repair performance indicators and volumes, some of which Ofcom is proposing to mandate as part of the extended set of KPIs with in most cases little or no justification for the proposal (see Annex I for the concerns that we have on the detail of Ofcom's current proposals). The KPIs covered in the Ofcom and OTA2 agreed industry

service pack provide a consistent minimum set of high level KPIs⁶⁷ across the copper products and should meet Ofcom's justification for extending the direction for specific KPIs to LLU.

285. It was agreed at the time the industry service pack was introduced that a process of evolution would be followed in order for the content to keep pace with reporting requirements, and indeed the pack has expanded in content since its creation. Openreach is willing on a voluntary basis to further extend the industry service pack where appropriate, and therefore this does not need to be included in SMP conditions.
286. With regard to the proposal to extend the direction for specific KPIs to GEA services, Openreach notes that these would in practice apply to GEA-FTTP as well as GEA-FTTC. The GEA-FTTP installed base as at June 2013 was [3<] lines split across 10 different product variants ([3<]) and Openreach does not believe that it would be appropriate or proportionate to impose specific KPIs to such a low volume product. The requirement for specific KPIs for the GEA-FTTP product (on a voluntary or mandated basis) should be subject to the product having reached a minimum installed base to be agreed with Ofcom (e.g. between 100k and 500k lines at aggregate level) and showing appropriate provision and fault volumes (low and fluctuating provision and fault volumes could result in highly fluctuating performance results).
287. There is also a lack of clarity in a number of areas as to what Ofcom is actually proposing in terms of the KPI reports (for example in terms of the GEA product variants covered). In Annex I we set out the numerous areas where Ofcom needs to provide greater clarity in terms of what is being proposed/sought.
288. In summary, and as detailed further in Annex I we are concerned that Ofcom's proposals have not been sufficiently thought through or discussed, and would benefit from a more thorough review with stakeholders (including Openreach and CPs), such as was conducted the last time formal KPIs were set in 2004. Alternatively, Ofcom should explore the option of meeting the need for more KPIs by extending the voluntary reports already produced by Openreach via discussion with Openreach and CPs, potentially via OTA2 facilitation.

Question 10.14: Do you agree that it is appropriate to include a common core set of KPIs across WLR analogue, LLU and GEA given the competition between these services? Please provide reasons in support of your views.

289. Openreach agrees that it is appropriate to have a common core set of KPIs across WLR analogue, LLU and GEA and as mentioned in our response to question 10.13 above, this is reflected in a common set of KPIs for the Openreach copper products that is published monthly in the Ofcom and OTA2 agreed industry service pack and on a voluntary basis.
290. By asking this question, Ofcom is, however, not consulting on whether the proposed set of KPIs is the right set of KPIs to implement. Indeed, Ofcom stated in paragraph 10.252 of the consultation document that "*there was no specific discussions of the general quality of service transparency requirement or the specific KPIs*" in the FAMR call for inputs.
291. As noted in our response to question 10.13, Ofcom's proposed KPIs have not been fully thought through and with regard to the existing non-discrimination KPIs that Ofcom had

⁶⁷ In paragraph 10.623 of the FAMR consultation document, Ofcom states that "*we consider that it is important that there is a consistent minimum set of high level KPIs across all access services where such services can act as alternative options for the provision of a given service e.g. WLR and SMPF, MPF and GEA*".

previously mandated for WLR, ISDN2 and ISDN30, Ofcom's proposal amounts to the following two things:

- Introduction of new KPIs with little or no justification resulting in the eight-fold increase of the mandated number of KPIs that would need to be reported on.
- Changes to the existing set of mandated KPIs mainly by way of changes to the definitions but also by changes or extension to the actual requirements (e.g. requirement to report by forecasting region). These changes have not been discussed or justified in the consultation document (i.e. the problem/need that these reports are aiming to meet has not been clearly substantiated) and will significantly increase the complexity and the associated costs of the reporting on Openreach.

292. Ofcom indicate at paragraph 10.279 that its proposal meets the requirement of section 49 of the Communications Act 2003. However, Ofcom has not justified the need for the additional specific KPIs or for the changes to the existing ones. Ofcom also states in paragraph 10.279 that its proposal is proportionate in that "*BT is already supplying such data and therefore has systems and procedures in place*". As shown in our response to question 10.15 below, this is not the case for all the additional KPIs or for changes to existing non-discrimination KPIs Ofcom is proposing to mandate. Furthermore, whether Openreach already reports on a particular KPI is not a sufficient reason to justify the mandating of that particular KPI.
293. If Ofcom is minded to direct a specific and common set of KPIs for each of the products in each of the FAMR markets (WLR, LLU and GEA), Ofcom should consult on what the KPIs should be. The existing set of mandated KPIs was imposed on BT following consultation in September 2004⁶⁸ and has not been reviewed since. By the time the fixed access market reviews are completed and the SMP conditions and associated directions come into effect, these KPIs would have been in place for almost 10 years.
294. Alternatively, Openreach is willing to work with Ofcom, the OTA2 and CPs to get the industry service pack KPIs extended where appropriate within an agreed timescale and on a voluntary basis (as stated in response to question 10.13 above) in to provide a consistent set of KPIs across the relevant products. If Ofcom is minded to take this approach, it should also take this opportunity to revoke the existing KPI direction that applies to WLR, ISDN2 and ISDN30 resulting in the mandated KPIs being superseded by the industry service pack KPIs. Maintaining both sets of KPIs could lead to confusion among CPs.
295. In summary, we believe that Ofcom should either consult further on these proposals, so that a more thorough and proportionate set of reports can be specified that clearly meet the needs of the market, or Ofcom should explore extending the existing Openreach voluntary reporting using existing channels. If Ofcom does press ahead with its existing proposals, and remedy should allow a reasonable period of time for implementation in cases where new reports need to be developed and tested.

Question 10.15: Do you agree with our proposals to include a record of the number of services affected by MBORC in the KPIs? Please provide reasons in support of your views.

296. Openreach understands that there are CP concerns about the use of MBORC declarations by Openreach as it results in SLG payments not being paid where MBORC declarations have been made and the service provision or fault repair has failed its SLA commitment.

⁶⁸ See http://stakeholders.ofcom.org.uk/binaries/consultations/bt_kpi/statement/statement_directions.pdf for details.

297. However it is not clear that reporting on the number of services (installations or repairs) impacted by MBORCs as Ofcom is proposing will provide visibility of any trends or biases in its use as Ofcom suggests (at paragraph 10.265) it will do.
298. This is because the volume of services affected by MBORC over a given reporting period will ultimately depend on a number of factors:
- the number of MBORCs raised;
 - the causes e.g. extreme weather, vandalism and cable theft and other damage caused by third parties;
 - duration;
 - the severity of the specific circumstances; and
 - the extent of the issue (geographic area and number of end users affected).
299. The impact on CPs will also depend on their geographic footprint, which could lead individual CPs to experience a particular impact which differs from what the aggregate industry figures might suggest.
300. Discharging this requirement would require system development, and so will consume resource that could otherwise be used in more pressing developments. If Ofcom presses ahead with this requirement, any remedy must allow a reasonable period of time for any new report to be developed, tested and rolled out in order to be proportionate.
301. As to the scope of the requirement, Ofcom has identified it should apply to both repair and provision activities. MBORC declarations apply almost exclusively to repair activities and extremely rarely to provision activities (for example, only one MBORC declaration impacting both repair and provision activities has been made since the beginning of 2013) and on that basis, it would not be proportionate to mandate the publication of the volume of installations affected by MBORC declarations.
302. We also note that Openreach are already transparent with its customers both in terms of the process that it uses for the application of MBORC, and in terms of reporting where MBORCs are being applied.⁶⁹
303. In summary, we are concerned that the Ofcom proposal will not solve the issue that is alleged, nor does it take sufficient account of the current transparency provided by Openreach. We also consider that the lack of virtually any historic MBORC declarations for provision means that the existing Ofcom proposal is not proportionate.

Question 10.16: Do you agree that it is appropriate to require Openreach to prepare some of these KPIs for presentation in the public domain? Do you consider that there are any issues with this publication that we should be aware of? Do you agree that the OTA2 website is the best location for such publication? Please provide reasons in support of your views.

304. Openreach does not have any objections to some of the proposed mandated KPIs being published for the benefit of consumers, however, Ofcom's proposals again do not appear to

⁶⁹ MBORC application and removal is transparently reported via regular CP updates. Openreach also publish the process for the management of MBORC application. Available at: <https://www.openreach.co.uk/orpg/home/newlogin.do?smauthreason=0&target=http%3A%2F%2Fwww.openreach.co.uk%2Fforpg%2Fcustomerzone%2Fupdates%2Fserviceupdates%2Fnotificationsandmborc%2Fandm%2Fdownloads%2FMBORCGuidanceAugust2013.pdf&fromMasterHead=1>

have been thought through properly or address issues identified in the 2009 Ofcom review of the Topcomm scheme⁷⁰ which had on the face of it similar intent as the current proposals.

305. Ofcom is proposing that over 50% of the proposed mandated KPIs for WLR and MPF are published for the benefit of consumers even though Ofcom recognises at paragraph 10.267 that *"Openreach KPIs will not necessarily map onto the ultimate consumer experience ... and that a consumer's experience will in large part be driven by the actions of his/her retail CP"*. Ofcom did not present any evidence that the current proposals with regard to the publication of a sub-set of KPIs for the benefit of consumers have been researched with either consumers directly or consumer groups to determine whether they properly reflect consumers' interests and concerns with their chosen providers or when choosing a new provider.
306. Research carried out by Ofcom in 2009 in the context of the review of the Topcomm scheme and direction suggested that line reliability and speed of repair were the most important aspects of service when choosing a supplier⁷¹. Ofcom's overall conclusion was that *"it was not clear that the Topcomm scheme used metrics that consumers valued or in a way that consumers could process and understand"*⁷². Without proper consultation, Ofcom is running the same risk here.
307. As an example of this, one of Ofcom's proposals is that Openreach report a number of the KPIs at a forecasting region level. The unit of the forecasting region was developed as part of the CAA SLA/SLG, and will not be a currency that is familiar to CPs outside of those that are required to forecast, let alone to stakeholders that are not familiar with Openreach at all. For the reports to be beneficial to consumers, they must be based on a stronger understanding of what will be of value and intelligible to the audience they are intending to address.
308. Openreach agrees with Ofcom that it would not be appropriate for Openreach to engage in dialogue of any kind with consumers about Openreach published performance or how it relates to their providers' own performance. It should remain CPs' responsibility to make their performance results available to their own consumers, and to explain to their consumers how Openreach performance relates to their own. It is not clear, however, how this dialogue will be facilitated as part of Ofcom's proposals.
309. Apart from considering where best to publish these Openreach KPIs, Ofcom does not appear to have given much thought (beyond stating in paragraph 10.270 of the consultation document that *"it could assist consumers with a link from the Ofcom website"*) to how it would ensure consumers are aware of the publication of Openreach KPIs and how they could be used by consumers to position the experience they are getting from their providers. Indeed one of the main criticisms of the Ofcom Comparable Performance Indicators and their successors (the Topcomm scheme, 2005 to 2009) was that there was no publicity of the scheme, and as a result it had very low usage⁷³ and no real consumer benefit could be derived from it. Beyond deciding on which website the KPIs should be published, Ofcom should give careful consideration to how it can ensure consumers are aware of the publication otherwise this will not achieve Ofcom's stated objective at paragraph 10.267 of *"making consumers aware of Openreach's underlying performance and potentially remove any misconceptions that BT Retail is a "safer" option"*. Ofcom should also consider whether CPs have a role to play in ensuring

⁷⁰ See <http://stakeholders.ofcom.org.uk/binaries/consultations/topcomm/statement/topcommstatement.pdf> for details. The Topcomm scheme was introduced by way of an Ofcom direction in 2005 to provide comparable service information to consumers.

⁷¹ Ofcom Topcomm review statement of July 2009, paragraph 3.18.

⁷² Ofcom Topcomm review statement of July 2008, paragraph 3.37.

⁷³ 1,000 visits per week (paragraph 2.20 of the 2009 Topcomm Review statement) due to *"in large part to a lack of awareness of the Topcomm website"* (paragraph 3.31 of the 2009 Topcomm Review statement).

that consumers are aware of any such reporting (e.g. by publishing their own performance indicators and linking to the OTA2 website for the underlying Openreach performance).

310. In general we are concerned that the existing proposals are disproportionate in the number of extra reports specified, and that Ofcom need to more clearly set out the priority needs/problems that these reports are seeking to address. Learning should be taken from previous attempts to communicate directly with end users about service performance – which strongly suggests that a significant simplification (and reduction) of the current reports proposed is warranted coupled with a better understanding of the needs of the intended audience.

8.3 Service standards

Question 10.17: Do you agree that it is appropriate to set minimum standards for Openreach services? Please provide reasons in support of your views.

311. Openreach does not agree that there is a need for the imposition of minimum service standards. Adequate incentives already exist for Openreach to deliver good standards of service, while the dip in service performance for certain products that was apparent in 2012 was in large part due to factors outside of Openreach's control. Where factors have been within Openreach's control, prompt action has been taken to address these. Given this, along with the exacting nature of the existing SLA/SLG regime that Openreach is subject to, along with the very high degree of performance transparency already provided by Openreach, the regulatory imposition of further SMP remedies runs the risk of being disproportionate and creating an overall settlement that is punitive rather than constructive in nature.
312. Rather than imposing additional remedies, Ofcom should focus on ensuring that Openreach recovers sufficient costs within the charge controls to deliver the levels of service sought. This exercise would need to account for the systemic factors such as the increasing fault rate and fault volumes that are driving up the underlying operational costs that Openreach incurs. Sticking to this approach would allow Ofcom to drive for the outcomes desired within existing, well understood structure without creating a new paradigm, the impact and efficacy of which is untested.

Existing incentives to deliver good service are adequate

313. As noted in our response to question 10.2 above, Openreach is already subject to the most comprehensive SLA regime in Europe. This is also true for WLR Analogue and MPF i.e. the services against which Ofcom is proposing to introduce the additional SMP condition.
314. As shown in Table 9 below, WLR and MPF are already subject to multiple SLA arrangements covering a range of scenarios that are not mutually exclusive. Both the Analysys Mason and Ernst & Young reports have found that Openreach provides a greater range of SLA arrangements than any other European fixed line incumbent, and that the SLGs offered for provision and repair are between the middle to top of the range in terms of their severity. Openreach's SLG liabilities apply on a line by line and fault by fault basis, unlike a number of other European fixed line incumbent which take a different approach, with some only liable to pay SLGs at all if more than a set proportion of jobs breach the SLA⁷⁴.

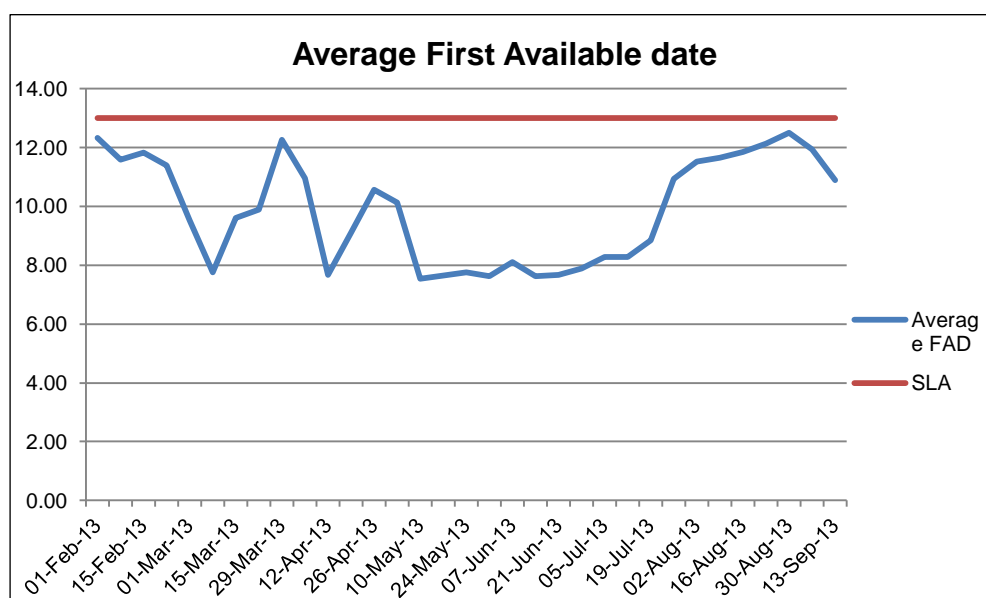
Table 9: Summary of WLR and MPF SLA arrangements

Category	WLR	MPF
Provision SLAs	On-time Appointment availability Missed appointment Disconnection in error	On-time Appointment availability Missed appointment Dead on arrival
Repair SLAs	On-time by service level Missed appointment	On-time by service level Missed appointment

⁷⁴ See Analysys Mason Benchmarking Report (see Annex C) and the Ernst & Young Benchmarking Report (see Annex D).

315. Above and beyond the rigorous SLA/SLG regime, Openreach is also by some distance the most transparent operator in Europe in terms of service KPI reporting⁷⁵.
316. Openreach produces a raft of KPI information, some it driven by regulation, but much of it also produced voluntarily that provides accessible information to both Ofcom and CPs covering multiple aspects of service performance including (list non-exhaustive) for WLR and MPF:
- Provision performance measured by First Available Date (FAD), split by geography;
 - Provision performance measured by average time to install;
 - Provision performance measured by proportion of jobs delivered on time;
 - Repair performance measured by average time to clear;
 - Repair performance measured by proportion of jobs delivered on time by Service Level.
317. In addition, Openreach has delivered other enhancements on a voluntary basis, such as the development of new KPI reports tailored to customers that serve the B2B market as part of the Business Services Market Improvement programme.
318. In summary, the high level of transparency that Openreach already provides (to which Ofcom proposes to add significantly via SMP regulation) already enables high levels of scrutiny by all relevant stakeholders, much of it produced voluntarily, and is a further strong incentive for Openreach to deliver acceptable service.
319. It should also be noted that in the context of a very challenging operational environment, Openreach has delivered sustained improvement to service performance for WLR and MPF. For example, the provision FAD performance for both products has been within SLA since February 2013 (Figure 25 below).

Figure 25: Average First Available Date for copper services



Source: Openreach

320. In view of the rigour of the existing SLA/SLG regime, the high (and growing) level of transparency that Openreach provides to stakeholders and the scrutiny that this affords,

⁷⁵ See Ernst & Young Benchmarking Report, paragraph 4.1.3 (see Annex D).

together with the focus that Openreach has, and continues to take in respect of delivering the best level of service possible, we urge Ofcom to reconsider the introduction of minimum standards, and re-focus on ensuring that the service needed by the market, and that it is willing to pay for, is funded correctly in the regulated prices.

The specification of minimum standards

321. If Ofcom is to set minimum standards for Openreach services, it is critical that service standards are set at levels which are consistent with the cost base on which Ofcom also sets the charge controls for the relevant services. It would clearly be inappropriate for Ofcom to set regulated prices without consideration of how the cost base reflects the level of service quality provided. Essentially, the Openreach service organisation acts as a queuing system – where incoming tasks (fault reports, provision orders, etc.) are assigned to relevant field engineers with appropriate skills and locations, as these become available – and in some instances according to the appointed time for the task. The period during which each task is in the queue (and for repair, the service level that applies to the fault) dictates the speed at which the job is completed – and hence the level of service offered. In order to reduce the average queuing time, it is necessary to add field engineering resource, to reduce the average holding times in the queues.
322. If Ofcom are to set a required service performance level which is higher than that actually achieved during the period from which the base data for the charge control calculation is drawn, then the additional costs need to be factored in to the charge control calculations.

Question 10.18: Do you agree that the minimum standards should only be applied to WLR and MPF provisioning appointment and fault repair? If not what else should be included and why? Please provide reasons in support of your views.

323. Openreach believe that it is inappropriate for Ofcom to introduce minimum standards at this stage. However, if Ofcom is to press ahead with this proposal, given that such a mechanism is untested and prone to unintended consequences, Ofcom should be very cautious about the scope its application, both in terms of products covered and the provision/repair SLAs associated with those products.
324. In setting any such required performance standards, Ofcom should avoid the temptation to define measures which are too detailed to provide meaningful indications, or to set measures for products where there is a higher likelihood of innovation and change in the detailed product specifications or offerings. Therefore, focusing only on basic repair and provision measure for existing standard copper products is the only sensible approach.
325. Ofcom must also ensure that the regime is even-handed in the way products used to compete downstream are treated. There is currently a significant and growing mismatch between the SLAs and SLGs for CPs using MPF as compared to CPs using WLR. Mandated MPF service levels are such that Openreach must guarantee that faults are fixed by end of next working day following receipt of the fault report – whereas for the majority of WLR lines, Openreach are allowed one additional day to complete the repair, before triggering payment of SLGs. Current charging levels for MPF do not reflect this significant advantage – or the significantly higher costs to support such a rapid “time to repair” for the basic product. We strongly encourage Ofcom to treat MPF and WLR equally in respect of service levels – and for all associated service performance regulations and corresponding charge calculations.

Question 10.19: Do you agree that we should incorporate force majeure affected services in the standards? Please provide reasons in support of your views.

326. Force majeure (MBORC in Openreach parlance) reflects conditions affecting the service Openreach offers, which are outside of Openreach control for example associated with extreme weather, vandalism and cable theft.
327. Future levels of MBORC are by their nature difficult to predict. Given this inherent uncertainty, plus the fact that while Openreach can (and does) take reasonable steps to mitigate where possible the effects of MBORC (for example through network renewal, waterproofing vulnerable network elements and continuing to tackle the criminal theft of copper), the impact of MBORC cannot be fully mitigated by Openreach.
328. Extreme weather (in various forms not limited to high levels of precipitation) is a major cause of MBORC, and as covered in detail in Section 4 of this response. Given that experts predict that extreme weather events are likely to become more prevalent in future in the UK, this alone suggests that MBORC will remain a factor that will continue to impact Openreach operational activity and in consequence service levels.
329. Given that MBORC will be a continuing factor that impacts upon Openreach service delivery, it is right that Ofcom recognises MBORC as part of the minimum standards formulation. Ofcom does, however, need to be mindful that MBORC: (a) is inherently volatile; and (b) cannot be fully mitigated by Openreach. Therefore Ofcom must be careful in how it approaches the inclusion of MBORC in the setting of minimum standards and include an appropriate level of flexibility to cater for circumstances that are beyond reasonable control.
330. If Ofcom includes the volume of tasks failing the SLA due to force majeure/MBORC in the measures of failed task volumes, then Ofcom must ensure there is also an automatic relaxation if the volume of MBORC jobs exceeds that predicted when the target was set.
331. In effect, any minimum standards process that includes an allowance for MBORC as part of the process would need to include a mechanism to deal with scenarios where the number of valid MBORC applications exceeds the allowance.
332. Although in recent times the proportion of faults subject to MBORC has numerically been relatively small (running at between 0.6-3.9% per figure A10.22 in the FAMR consultation document) these instances are also inherently variable and by definition unpredictable, both in terms of how many events will occur, and in terms of how severe those events are (e.g. in terms of size of geography affected, level of remedial action needed to remove the MBORC and so forth). As such, the impact of MBORC applications on Openreach's operational resourcing is likely to continue to be disproportionately large, and even more difficult to forecast accurately than the crude number of applications.
333. These factors strongly suggest that Ofcom take a balanced approach to the incorporation of MBORC. It would be impossible to anticipate all MBORCs and therefore even if Ofcom make an allowance for MBORCs, there should be a mechanism by which Ofcom can review performance to ensure the actual level of MBORC events encountered is taken into account. This will avoid penalising Openreach in the event of spikes in the level of MBORC incidents which are not capable of mitigation.

Question 10.20: How should we determine the appropriate standard? How would you assess the trade off of service level and charge increase?

334. Openreach does not believe Ofcom should impose additional regulation of this nature. Please see our response to Question 10.17 above.
335. That said, if Ofcom does proceed with its proposal to do so, Openreach believes that any such minimum standard must only be set at a level demonstrably consistent with the service actually achieved in 2012/13. That is the most recent year for which full financial information is available and Openreach expects that this will be the basis for the calculation of the new charge controls.
336. Any minimum standards imposed on Openreach need to be consistent with the level of funding available through the charge controls, and must be set at a level which is achievable.
337. Therefore, and as Ofcom set out in paragraph 5.8 of the LLU/WLR Charge Control consultation document, the clearest option is that Ofcom set the standard level at that level which was achieved in the most recent year for which data is available, and the year from which base cost data is derived in order to set the charge control itself. Openreach observes that this would be the year 2012/13, rather than the year 2011/12 on which Ofcom's initial consultation proposals are based. If Ofcom choose to go ahead with these proposals, Ofcom should use the service level actually achieved in the year 2012/13 as the basis for any minimum service standard regulation.
338. Ofcom should also consider that even maintaining the base service level through the period to March 2017 will require increased resource compared to the base year. Specifically, the forecast shift of volumes to Care Level 2 with end of next working day fix target, compared to Care Level 1 with end of next working day plus 1 fix, will require extra resource just to maintain a current level of percentage service performance. On top of this, and as well as the effects of normal ongoing factors such as pay cost inflation, Openreach expects continued trends for increased rates of copper line faults caused by long term climate change, and impacts of increased intensity of usage of copper lines for broadband-based applications. These trends are discussed fully elsewhere in this response document.
339. The alternative option that Ofcom also identifies in paragraph 5.8 of the LLU/WLR Charge Control consultation is to mandate a higher level of service than that achieved in the base year. If so, it is obviously critical (as Ofcom suggest) that the costs of achieving the standard chosen are fully identified, and factored into the charge control calculation, to enable recovery of the relevant costs. This will present significant challenges and risks for Ofcom – in identifying what new service standards are actually achievable (especially in the context of significantly increased challenges during the period of the new controls – through to March 2017 – with significant increases in volumes of faults required to be fixed by the end of the next working day and forecast increases in volumes of faults overall and of fault types which are harder to diagnose and fix).
340. In assessing how achievable the minimum standards are, Ofcom also needs to account for the real and growing operational challenges that Openreach faces and the limitations that these impose on potential performance levels within the existing funding envelope. Even with additional funding, Ofcom should also account for the fact that the higher the performance level, the greater the cost to deliver incremental benefit.
341. It is also important that in Ofcom's assessment, it carefully considers the trade-offs between service level, cost, and market willingness to pay for superior service. If Ofcom are to mandate higher standards of service than that achieved in the most recent base year, in order to

determine that the required service levels are “efficient” in a broad economic sense, Ofcom needs to establish that the additional costs to achieve these service levels are matched by end users’ willingness to pay. Ofcom have undertaken a degree of customer survey work in order to start to establish the level of end user demand for service improvement – but this does not yet identify any estimate of the additional value the end users would attach to a higher level of service, compared to the base case level.

Question 10.21: Do you agree with the structure of the standard – yearly, forecast region targets? Please provide reasons in support of your views.

342. As outlined in our response to question 10.17, Openreach believes that it is not right for Ofcom to introduce minimum standards at all at this stage. This is because Openreach already has adequate incentives to deliver good levels of service, while the key enabler to ensuring that service delivery meet what the market needs and is willing to pay for is to ensure that Openreach is appropriately funded. Adding another layer of regulation on Openreach is not the right response.
343. As noted in our response to question 10.20 above, Openreach’s ability to meet any such minimum standards would be influenced by its ability to match resource deployment to demand volatility. The level of demand volatility increases the more local the geography covered (and hence Openreach’s ability to fully match that demand also decreases).
344. If Ofcom presses ahead with minimum standards it should set them annually in advance and at a national geographic level. Any more granular structure, either in terms of timescales for measurement or in terms of geography, will in our view significantly increase the costs associated with achieving a given standard level. It will clearly be more onerous and more costly for Openreach to deliver a certain minimum percentage in all regions simultaneously, rather than meeting the minimum standard on average across the UK. Consider the situation as the year end approaches. Openreach would need to aim at service levels higher than the minimum standard set, in order to avoid the risk that in the likely event of unforeseeable service-affecting events late in the year in one or more regions, this would cause a drop in the yearly average performance that would be unrecoverable. This effect is amplified if Ofcom were to set the requirement to hit the specified standard in all regions simultaneously – and is amplified to a greater extent the smaller those regions are.
345. An additional perverse potential impact if Ofcom were to set regional minimum standard requirements, would be to incentivise Openreach to reduce service levels in better performing areas – essentially Ofcom would be at risk of having increased the incentives on Openreach to make resourcing decisions whose overriding purpose is to meet the minimum standards rather than to maximise the effective use of available resource.
346. In order to avoid this risk, if Ofcom was to set standards at regional level, it would need to perform a calculation that recognises that the more granular the measurement, the higher the funding required to meet the specified percentage target (or conversely the lower appropriate minimum standard would need to be for a given funding level). Only by doing this would a granular scheme work while meeting Ofcom’s (correct) principle that standards must be set in such a way as to be achievable by Openreach within the funding allowed by the charge control. Such a calculation would be inherently more complex and nuanced than a structure based on an annual/national evaluation. This is itself likely to be problematic, particularly bearing in mind that the imposition of an additional minimum standards regime is itself untested.

347. The detailed operation of any new measure of this type would also need to consider a number of specific issues. Developing further the example described above, consider the case where one Openreach patch is proceeding through the measured year at better than target – and then towards the end of the measured year, experiences significant unforeseeable events (which may be events which Openreach have no ability to influence such as a spike in faults caused by “extreme” weather events) which cause overall average performance for the year to drop, with no time or opportunity for Openreach to subsequently raise performance levels in that patch such that the average over the whole year will inevitably fail. This type of occurrence would need a clear mechanism to be put in place by Ofcom at the outset, to manage such an outcome – and exempt Openreach from liability for an apparent “failure” entirely due to circumstances outside its control. With 27 separate forecasting regions, such apparent anomalies will inevitably occur from time to time.
348. Openreach acknowledges Ofcom's concerns in respect of geographic variability of performance. However, we also believe that Openreach is already well placed to best manage variance in performance by geography, and that regulatory intervention as currently proposed here will be counterproductive. In particular, Ofcom should note that:
- Openreach already reports on a regular basis to its customers on provision and repair performance for WLR and MPF by geography. These reports are provided at a GM patch level, which is more meaningful to most CPs than forecasting region level (i.e. the 27 areas proposed by Ofcom). Openreach has done this voluntarily and there is therefore already transparency in respect of performance by geography that inevitably leads to a scrutiny of areas that are hot spots and that need particular attention. It should be noted that this reporting already goes to all relevant stakeholders (CPs, Ofcom and OTA2);
 - Openreach already takes steps in the way it runs its business to deal with geographic hot spots in the most efficient manner possible. This includes use of a mobile engineering work force to tackle problem areas, doing swaps between different operational teams, and using additional overtime (in extremis on a compulsory basis) to cater for problem areas. There has been ample evidence that Openreach took reasonable measures to best balance service in an efficient manner in its response to the operational pressures that arose due to the prolonged (and geographically widespread) period of very heavy rainfall during the summer of 2012.
349. For the reasons outlined above, the only appropriate measurement structure should be annual and national.
350. It is right that the further Ofcom consultation in respect of Openreach service considers the question raised here in more detail – including the likely costs associated with different structures - and that a decision on this subject is only made in the light of more detailed analysis. Failure to adopt this approach runs a very high risk in our view of creating an unworkable system that fails to meet the objectives Ofcom has in mind.

9 Responses to questions in Ofcom's consultation document "*Fixed access market reviews: Approach to setting LLU and WLR Charge Controls*"

9.1 Quality of service review and fault rate effects

Question 5.1: We would welcome the views of stakeholders on our proposed approach to estimating the cost of changes to service levels

351. If Ofcom are to set new requirements for higher standards of service, it is essential that Openreach is able to recover the additional costs which would be incurred in achieving this. In order for Ofcom to establish an estimate of the additional costs to achieve a higher level of service than was actually achieved in the 2012/13 base year, Ofcom need to factor in a number of aspects and environmental factors, which will inevitably tend to increase the cost base from the 2012/13 level
352. Firstly, the relationship between different service levels and the engineering costs to deliver will need to be established, as scenarios of increased service level compared to the base are considered. Openreach, working with consultants Ernst & Young, have developed a simulation model which considers how a higher required service level would drive greater local peaks of work to be executed each day by the Openreach engineering workforce – and on this basis estimates the additional resource level required, over and above the resource in place in the base year. Ofcom will need to include within the charge control calculation the estimated costs derived in this way. Relevant direct overhead costs associated with this additional resource will also need to be factored in. Section 6 of this response document gives further description of the relationship between service level and product costs.
353. One key issue which influences the relationship between service levels and product costs, is a concept Openreach have termed a "glass ceiling" i.e. additional specific factors which have the effect of limiting Openreach's overall performance, especially at higher overall required service levels. Given the disparate and distributed nature of the Openreach network there are a wide range of physical factors, differing by location across the UK, some of which have the effect of making various types of repair or provision activities either physically impossible, or commercially nonsensical to complete within the existing lead-time SLAs. These factors create a kind of "glass ceiling" to the maximum level of performance that is within Openreach's control. By assessing what level the glass ceiling is set at, then making an allowance for the impacts of demand volatility (where the impact is amplified the smaller the geography covered) offers an objective means for setting a stretching but achievable minimum standard. Section 5 of this response describes these "glass ceiling" factors in greater depth. The service cost modelling proposed by Openreach (described in Section 6) factors these issues into the estimated relationship between service levels and product costs.
354. Another key factor influencing this relationship arises from the fact that, under scenarios where Openreach is mandated to hit a high percentage of SLA success, on average across the year, this will inevitably drive higher volumes of localised peaks of work to be executed each day. This in turn, inevitably drives a higher proportion of jobs which need to be done by engineers operating outside of their normal working area – incurring greater costs due to the additional travelling time, etc. This factor is also included in the modelling approach proposed by Openreach.

355. A further factor which Ofcom will need to include in their calculation of appropriate charges, is the additional cost incurred due to an ever-increasing proportion of copper repair jobs required to be executed under Care Level 2, as opposed to Care Level 1. The data included within the Ofcom charge control model (published alongside Ofcom's LLU/WLR Charge Control consultation) shows the forecast volumes for WLR Basic, WLR Premium and MPF. It can be seen from this, that Care Level 2 is forecast to over-take Care Level 1 in terms of volumes of lines by 2016/17 – whereas in the base year of 2012/13, the proportion is roughly 60% Care Level 1, to 40% Care Level 2. Clearly, this trend alone will cause significant additional spikes in required execution volumes. This in turn will require Openreach to recruit additional engineers in the field workforce in order to meet even the same percentage service performance as was achieved in the base year. An additional effect of this issue is that the additional cost to raise service performance from the base level, to any new level mandated by Ofcom, will be higher, as a result of the higher proportion of Care Level 2 jobs. Openreach believes that the same modelling techniques described in Section 6 can also be applied to this cost type. Again, it is essential that these additional costs are included in the Ofcom charge control model, unless Ofcom changes its view on the approach to, or forecast volumes for, different care levels on copper products.
356. On top of these effects, Ofcom should also include in the charge control calculation, the additional costs incurred due to increased overall fault volumes. This increase has a number of causes, each of which is a separate and additional driver and Ofcom needs to consider all of them.
357. Different Openreach products have different fault rates. A more detailed analysis of this issue is set out in the Deloitte Report provided as Annex A to this response. As the growth rates of products with higher relative fault rates, is higher than other products, this will inevitably drive an increase in overall repair costs. Ofcom need to include this clearly in their charge control calculation.
358. Furthermore, the fault rate for certain products is set to rise during the control period. There are a number of different drivers for this. One set of key factors are the expected trends for UK weather, which will inevitably impact on Openreach's network. Openreach analysis and views on this issue are set out in Sections 1 and 4.
359. One aspect of the trends which we foresee in UK weather, is the likelihood of increasing volatility in weather events, and hence inevitably in the volatility of occurrence of faults on the network. In combination with all the factors set out above, especially the increased requirement to fix more faults within one day of receipt of the customer fault report, the volatility of demand for the Openreach workforce at a local level (the level at which Openreach deploy resource) will get more and more pronounced. This inevitably will drive the need for more resource, to be available for rapid deployment, to prevent build-up of backlogs of work – to ensure service performance is maintained, let alone increased.
360. Section 3 of this response sets out our analysis of this demand volatility issue. The demand for both provision and repair varies significantly, with the extent of this volatility being highly dependent on the "unit of geography". Key to note is that it is the volatility at local level, by specific engineer skill type, which is directly relevant to Openreach's resourcing capability on a day by day basis. Therefore, the increasing trend towards more volatility of this demand, will inevitably drive Openreach costs to increase, even to maintain current service levels.
361. It is imperative that Ofcom take account of this increased volatility and its inevitable impact on Openreach costs, when setting the new charge control. The service cost modelling approach described in Section 6 does factor this trend in, but only to an extent – in that when considering

modelled estimates using a base year of 2012/13, this implicitly reflects the fact that the demand in 2012/13 was inherently more volatile than previous years. If Ofcom were not to use 2012/13 base data, and instead use 2011/12, this would inevitably under-estimate the increased volatility significantly. It is therefore important that Ofcom use the most recent available data in calculating their charge control – in this case 2012/13.

362. Furthermore, any mandated increase in overall service performance will incur additional transient costs – such as costs of recruiting, training and equipping the increased workforce. Such costs must also be considered in the context of setting the overall charge control.
363. Finally, the timing of any required service level increase must also be considered. If Ofcom mandate a step improvement in service delivery levels, then it is only fair that Ofcom also mandate a step increase in price to recover the additional costs.

Question 5.2: We would welcome the views of stakeholders on our proposed approach to analysing fault rates. In particular do stakeholders believe that fault rates should differ between MPF, WLR and SMPF?

364. Ofcom should include in its analysis an objective assessment of the available evidence in terms of the apparent fault rates between WLR, SMPF and MPF and the drivers of any apparent differences where they exist.
365. We have provided as part of this overall submission the Deloitte Report that provides a detailed assessment of Openreach fault data and the observable patterns. Ofcom's approach should take account of the approach and patterns observed in the report, in particular that fault levels are influenced by:
- line types and the types of services being carried over the lines (e.g. voice and broadband);
 - the levels of “customer interventions” where a customer intervention is defined as a customer driven provide activity that leads to work being done on the Openreach network;
 - the impact of different types of weather (not limited to levels of rainfall); and
 - differences between CPs.
366. Based on the independent analysis that has been conducted by Deloitte (attached as Annex A), we would also expect Ofcom to conclude that:
- fault rates increase when broadband is provided on the line in addition to voice (the “broadband premium”), and so MPF or WLR+SMPF are inherently “faultier” than WLR only;
 - fault rates in general are increasing, and this is particularly apparent for MPF;
 - the overall fault rates for line types that include broadband (MPF and WLR+SMPF) are similar, and at a consistently higher level than lines types carrying voice only (WLR);
 - other factors can influence fault levels and the challenge Openreach faces in meeting its fault SLA such as differences in the processes used by the largest CPs in terms of fault diagnosis, reporting and submission.