Virgin Media O2 submission to Ofcom's ALF review

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INTRODUCTION AND EXECUTIVE SUMMARY

This paper is Virgin Media O2 (VMO2)'s submission to the first phase of the ALF review that Ofcom launched earlier this year. It is timely for Ofcom to launch its review as our internal review identified there is material misalignment between ALFs and the underlying values of 900 and 1800 MHz spectrum, in particular. This misalignment has grown since 2018 with ALFs rising in line with inflation yet spectrum values falling over the same period. Moreover, recent UK 5G auctions (in addition to validating the fall in spectrum values) mean that benchmarking can be improved whilst the very high inflation from 2021-23 has shown the limitations of inflation indexation.

The primary objective of our paper is to explain why it is appropriate for Ofcom to revisit its approach to inflation indexing ALFs. We show that the combination of very high inflation and the enduring fall in spectrum values has led to divergence between ALFs (when indexed from historical price points) and underlying spectrum values (as evidenced by recent European and UK auction prices). Given current trends, this mismatch between the payments that are due and the observed spectrum values will only get worse. We propose the introduction of a CPI-X approach (which is well known in relation to indexation of utilities), where historic values and ALFs are adjusted by CPI-X, with X set by Ofcom. We demonstrate that X can be set in a way that reduces the risk of ALFs being set well above spectrum values. Going forward application of CPI-X will avoid future divergence. A clear advantage of CPI-X is that it would retain the principle of a CPI-informed indexation whilst making it possible to account for evidence on changes in spectrum values. More important than the precise value of X (we propose X=CPI for this review) is the recognition that the current approach to indexation must not be continued and that alternatives exist.

This paper's secondary objective is to set out our views in relation to other matters relevant to the ALF review. This includes benchmarking for which we asked NERA to prepare a report that reviews the options for benchmarking and that makes clear recommendations to guide the changes that Ofcom could implement. We agree with the assessment and recommendations put forward by NERA. For transparency, we explain what we regard to be the main recommendations made by NERA for the purpose of the current review.

Part 1: Recent inflation and spectrum value developments mean that Ofcom's approach to indexation in setting ALFs no longer looks credible and must be adapted

Ofcom to date adjusts for inflation through backward and forward application of CPI: the former involves adjusting the prices of relevant UK and international benchmark auctions up to when Ofcom determines the lump-sum values based on which it sets ALFs, the latter adjusting ALFs by CPI from when they are set.

Ofcom decided on this approach to inflation in setting 900 and 1800 MHz ALFs in 2018 and has retained it in subsequent regulatory decisions. As Ofcom put it at the time, this approach allows "*taking account of changes in the economy-wide value of money over time"*. It presumes that changes in spectrum values are correlated to the economy-wide price changes captured by CPI. When such correlation is present, adjusting for CPI ensures that ALF levels remain aligned with the market value of spectrum. But justification of CPI adjustment requires evidence that supports this correlation: both evidence that CPI and spectrum values move in the same direction and evidence that changes are of a similar magnitude.

In adopting this approach in 2018, Ofcom noted that mobile revenues had been flat in real terms, that real EBITDA across the four MNOs was at least as high in 2018 compared to 2013, and that MNOs increased their contract prices by RPI (so above CPI) over the period 2013-2018.[1] Furthermore, it accounted for specific technical or commercial developments that may have affected real spectrum values through its interpretation of benchmarking evidence.[2]

Ofcom considered at the time that "*this approach is more appropriate than holding values constant in 2013 nominal terms, which would constitute a largely arbitrary real terms adjustment that is unlikely accurately to reflect the magnitude of market developments*".[3] Whilst this consideration was reasonable in 2018 when inflation was low and the fall in spectrum values nascent, it does not provide a basis to support continuing this approach at this time. CPI has been much greater in recent years compared to the level of CPI that Ofcom likely had regard to in 2018 and evidence on the fall in spectrum values is strong. This change in circumstances means that a thorough review is required of the rationale for and the evidence that can support a decision on inflation indexation. Such review should not limit itself to full CPI adjustment. Alternatives exist and must be considered. In other

[1] Para 4.17 of Ofcom's 2018 Statement on 900 MHz and 1800 MHz ALFs.
[2] Para 4.18 of Ofcom's 2018 Statement on 900 MHz and 1800 MHz ALFs.
[3] Para 4.18 of Ofcom's 2018 Statement on 900 MHz and 1800 MHz ALFs.

regulatory contexts, Ofcom has set regulated charge controls at a given point and then adjusted them by CPI+/-X to reflect expected efficiencies (or inefficiencies) over time.

Ofcom said in 2018 that "*MNO profits are likely to be a better indicator of value for mobile spectrum licences than revenue".*[4] We agree. ALFs must be set to reflect the marginal value of spectrum. This relates to the avoided network costs when an operator is not able to use spectrum and less to the revenues it can generate through selling mobile connectivity. Revenue and prices relate to the latter yet bear no relation to avoided network costs. We caution against using headline prices as an indicator of rising spectrum values as the contractual price rises that operators commonly applied to mobile tariffs did not result in equivalent increases in revenue and profits. Hence, it would be wrong to regard these price rises as an indicator of increasing spectrum values when not at the same time accounting for what happened with profits and revenue.

Operator profitability and direct observations on spectrum values (ie, as captured by auction prices[5]) are the more relevant indicators of spectrum values. Limited evidence on contractual price rises and revenue do not support concluding that continuation of the current approach to indexation would be appropriate. Such a conclusion would require evidence on high and improving operator profitability and direct observations to validate a rise in auction prices.

Consideration of Ofcom's approach to date

It is instructive to consider how Ofcom used its approach to set 900 MHz ALFs (with a similar commentary applying to how 1800 and 2100 MHz ALFs were set) as it allows to introduce the distinction we make between backward and forward application of inflation

- *Backward application* – The lump-sum value on which 900 MHz ALFs are set was determined in April 2018 price terms based on the prices from the UK 800 MHz auction in 2013 and those of international auctions of 800 and 900 MHz from the 2011-2015 period. These prices were expressed in real terms by adjusting for CPI to determine the 900 MHz value in April 2018. The impact of CPI adjustment on the 900 MHz lump-sum value was moderate as the UK 800 MHz price increased only by 7.3% from when spectrum was auctioned in 2013 to when Ofcom set 900 MHz ALFs in 2018.
- *Forward application* – The 900 MHz ALFs have been annually adjusted for CPI since they were set in 2018. The very high inflation of 2021-23 means that this application had a major impact on today's ALFs which are 21% higher in 2024 than they were only three years before

[4] Para 4.17 of Ofcom's 2018 Statement on 900 MHz and 1800 MHz ALFs.
[5] Indeed, auction prices are likely to be based on current profitability and expectations of future likely profits from the economic use of spectrum as a production factor.

and 27% higher compared to the level they were set in 2018. The increase of ALFs has been much steeper than if ALFs had grown in line with average historic inflation.

If this approach was adopted today, the outcomes would not align with observed data or intuition:

- The further in the past benchmarks are, the more prone CPI adjustment is to over report spectrum prices in real terms. Observed prices over the past years (as we discuss below) shows that spectrum values have declined in nominal terms. Applying CPI to historic benchmarks would lead to real lump-sum values that are substantially at odds with prices from recent auctions.
- Going forward, even if ALFs are set in a way that avoids the above distortion, there is a further risk that indexation to CPI would lead to rising ALFs year on year, in an environment where the observed trend is for spectrum prices to continue to fall in nominal terms.

Considering these limitations, we consider that it would not be appropriate to continue the current approach to indexation as it would lead to ALFs materially exceeding the spectrum values they are intended to reflect. As an alternative, we propose that a CPI-X approach is used to set ALFs. Whilst this approach can be applied backward and forward, we describe the risk of ALFs being set too high when the current approach is continued and how CPI-X mitigates this risk separately for backward- and forward application.

We propose CPI-X is applied backwards

If Ofcom continues to set ALFs based on benchmarking, it must decide which inflation adjustment, if any, to apply to the prices of the UK and international auctions that are used to determine the lump-sum values of spectrum for which it must set ALFs.

UK auctions available for benchmarking include (auction year in brackets): 800 MHz and 2.6 GHz (2013), 2.3 and 3.4 GHz (2018) and 700 MHz and 3.6 GHz (2021). Distribution of these auctions over time means that there are different periods between auctions and when ALFs are re-set in 2025 (which we assume for the purpose of our analysis). The impact of CPI adjustment would differ significantly between, 12 years for the 800 MHz derived benchmark compared to just 4 years for the 700 MHz derived benchmark. Accordingly, the sensitivity of ALFs to CPI adjustment is smaller when using more recent auctions: CPI adjustment increases the 700 MHz price by 12% less compared to the 800 MHz price when using these prices to re-set 900 MHz ALFs.

This, in addition to the fundamental point of recent auctions being better indicators of today's spectrum values (as explained by NERA), means that we favour the use of recent 5G auctions in benchmarking and the retirement of 4G auctions from more than a decade ago. To date Ofcom has

relied on just one UK low band auction benchmark to set the 900 MHz value. For this review, we recommend that the 900 MHz value is determined based on a more recent single UK low frequency benchmark, the UK 700 MHz auction price. In this way Ofcom would act in a consistent manner with its previous decisions whilst accounting for the proximity of a new benchmark that provides a better indicator of 900 MHz value.

All UK auctions available for benchmarking pre-date the very high inflation of 2021-2023. Inflation was much lower in the preceding years in which the UK auctions took place and ALFs were initially set. Nor would an inflationary spike have been factored into bidder valuations for any of these benchmarks. The very high inflation in recent years means that adjusting auction prices for CPI when re-setting ALFs would greatly increase the lump-sum values (and by extension ALFs).

This very high inflation cannot be avoided as all UK auctions occurred in 2021 or earlier. Adjusting auction prices for CPI to determine lump-sum values in line with Ofcom's approach to date thus requires strong evidence that spectrum values increased steeply between when auctions took place and when ALFs are re-set. Otherwise, CPI adjustment would result in ALFs being set materially above market value even when using informative benchmarks to determine lump-sum values.

The strength of evidence on changes in spectrum values in recent years must be commensurate to the impact that indexing UK auction prices would have. This impact will be multiple times greater when re-setting ALFs in 2025 compared to when Ofcom set ALFs in 2018: 7% cumulative CPI when Ofcom used the 800 MHz price to set ALFs in 2018 compared to +20% cumulative CPI when the 700 MHz price is used to re-set ALFs in 2025. This means that evidence to justify backward CPI adjustment must meet a higher bar at this review compared to when Ofcom first set ALFs in 2018.

Such evidence does not exist. As we discuss below, there has been a marked and enduring fall in the values of low band and lower mid-band spectrum over the past decade which aggravates our concern in relation to continuation of Ofcom's approach to inflation to date.

Ofcom will want to look at a range of evidence when reviewing spectrum values. But foremost of that evidence must be direct observations on auction prices over time. When auction prices fall this provides a strong indication that spectrum values declined (unless there is a good explanation that changes in prices did not reflect changes in market valuations). It is for this reason that we focus on auction prices at this stage. Other evidence can be informative but largely as an addition to the picture that emerges from auction prices. It can, for instance, help to assess the scale of a trend identified based on auction prices.

Figure 3 of the NERA report presents the development of three-year moving average prices in European spectrum auctions for low, lower mid-band and higher mid-band spectrum. It covers the period from 2010 onward, comprising the 4G and 5G eras, and it captures the set of countries that Ofcom typically has regard to in its benchmarking. We can see from Figure 3 that the prices of low band and lower mid-band spectrum fell over the last decade (from 4G era peaks in 2014 and 2015), with the decline particularly strong for low band spectrum. It is the latter fall that has driven convergence of spectrum prices across differing bands. The development of lower mid-band prices is less marked: there was an initial fall in 2015-2018 but a more mixed evolution thereafter. But even then, the price for this spectrum has come down substantially from its 2015 peak.

NERA discusses the factors underlying the observed decline and convergence in auction prices. It explains these developments involve a combination of supply and demand side factors. On the supply side, there has been a major increase in the amount of mobile spectrum (3.6 GHz spectrum in particular) available for mobile use thus alleviating the 4G era concern that operators would not be able to keep up with growing demand because of spectrum scarcity. Moreover, the more varied spectrum that operators hold now mean that the marginal value of spectrum can have reduced even when total valuation of spectrum has remained at the same level. On the demand side, industry weakness, a relative slowdown in data growth, and technological advances (including MiMo availability across differing bands) have reduced operator valuation of spectrum. The role of spectrum in a band has in delivery of connectivity is another relevant factor. It has moved from bespoke (ie, 800 MHz used to deliver 4G) towards integration of spectrum in adjacent bands, eg, 700/800/900 MHz bands can be deployed from the same platform. This has driven functional and value equalisation across segments of low band and lower mid-band spectrum, but also convergence between low band and lower mid-band spectrum.

NERA finds that the fall in low band and lower mid-band spectrum values will likely continue over the coming years as the underlying factors driving the fall to date remain present. This accords with our understanding that demand growth has slowed and that technological changes have made it easier to use spectrum of differing bands for the same purpose and from a similar hardware base. Figure 3, in our view, provides strong evidence of a fall in low band and lower mid-band spectrum values in recent years and it supports our expectation that this decline will continue over this review period.

The observed fall in European spectrum prices aligns with UK auction outcomes. The price of 700 MHz auctioned in 2021 was less than half of the price of 800 MHz spectrum auctioned in 2013, and

3.6 GHz spectrum was sold at a much-reduced price in 2021 compared to 3.4 GHz spectrum auctioned in 2018. These UK auction prices of spectrum that is broadly equivalent indicate that the European trend of declining spectrum values extends to the UK.

Whilst we understand that the NERA figure must not be over-analysed at the level of individual price points (as these are sensitive to the limited number of auctions they are based on), we used Figure 3 to 'estimate' the average rate at which prices fell between 2015 and 2023. The low band price fell from 0.84 to 0.37, the lower mid-band price from 0.49 to 0.26. This means that the price of low band spectrum more than halved whilst that of lower mid-band nearly halved over this period. Such price changes mean that large average year-on-year price reductions occurred which we estimate at 10% for low bandwidth and 8% for lower mid-band spectrum. We do not portray these as precise estimates of the scale of the fall in UK spectrum values, but they provide a useful marker for our discussion below.

We propose backward application of CPI-X

Considering the very high inflation in 2021-23 and the fall in spectrum values both in real and nominal terms, adjusting for CPI in determining lump-sum values would result in ALFs being set well above recently observed spectrum values and for this to endure until ALFs are re-set. The CPI adjustment increases the prices of historic auctions used (and thus lump-sum values) and goes contrary to the fall in spectrum values over that same period. ALFs set too high would be a detrimental outcome in terms of the efficient use and allocation of ALF-carrying spectrum. As an illustration, if Ofcom sets the 900 MHz value based on the CPI-adjusted 700 MHz auction price, the adjusted 900 MHz value in 2025 would exceed the 700 MHz auction price by more than 20%.

CPI adjustment would aggravate the risk of too high ALFs whilst what is needed is an approach that mitigates this risk. We propose that a CPI-X approach is adopted where X is set to account for observed changes in spectrum values and with regard to Ofcom's objectives. In this case, an adjustment is required to deal with the observable disconnection between the changes in general inflation and the demonstrable trend in spectrum values.

The use of a CPI – X approach is well established in UK regulation. For example, in its 2018-2021 Mobile Call Termination Market Review, Ofcom adopted a CPI-X inflation indexed charge control cap on Mobile Termination Rates. Ofcom's stated that an inflation index charge control "*provides a degree of certainty and stability to all industry players during the charge control period, and protects*

the regulated firm and customers from inflation forecast error."[6] There is also precedent for the adoption of a CPI – CPI approach in Ofcom's 2019 Physical Infrastructure and Business Connectivity Market Review.[7] Ofcom capped price increases for various services at CPI – CPI to ensure price stability and promote investor confidence. In these instances, Ofcom adopted inflation index charge controls to cap prices that regulated entities can charge their customers in the future. In the context of spectrum licensing, UK operators are effectively customers of Ofcom, as the monopoly primary provider of spectrum, so an analogy may be drawn that Ofcom could similarly assist operators in managing the uncertainty and burden of inflation by capping future spectrum fees in a similar manner to which it caps future fees that regulated entities can charge.

The benefit of CPI-X is that Ofcom would retain the principle of inflation adjustment whilst it can account for the special circumstances present at a review, being the very high inflation in 2021-23 and the marked fall in spectrum values in recent years.

Considering the circumstances present currently, we consider that a firm correction in the form of CPI-CPI as backward adjustment is appropriate at this review. This would keep values constant in nominal terms thus avoiding applied increases in value driven by inflation. Whilst this would mitigate against the risk of too high ALFs, operators would not be fully compensated for the fall in spectrum values over the past years. The CPI-CPI would be applied to neutralise what would be otherwise be an undesirable effect of inflation in the current circumstances.

Retaining CPI in principle means that Ofcom will have the option to revise its CPI adjustment by changing the X in case it would deem that a different correction is appropriate at a future review, for instance because of evidence on changing spectrum value or the relation between spectrum values and CPI.

We also propose forward application of CPI-X

In a similar vein, and again assuming a benchmarking approach is used, Ofcom must decide if and how to adjust ALFs for inflation from when they have been re-set. It was the forward CPI adjustment which because of the very high inflation in 2021-23 led to the unreasonable steep rise in ALFs that we discussed above. This experience shows that the current approach to inflation indexation can trigger ALF rises that bear no relation to how market values for spectrum evolved.

[6] Ofcom, 2018, Final Statement: Mobile Call Termination Market Review 2018-2021.
[7] Ofcom, 2019, Promoting competition and investment in fibre networks: review of the physical infrastructure and business connectivity markets (Volume 3: Leased Lines Charge Control (LLCC)).

Forward adjusting ALFs for CPI *without any correction* can be justified if spectrum values can be expected to increase (or decrease) in line with CPI. But when spectrum values continue to decline (as is the likely scenario), this means that ALFs would increase materially compared to underlying spectrum values. This risk will depend on how ALFs are set compared to spectrum value (which depends on benchmarking and backward CPI adjustment), and how spectrum values evolve relative to CPI from when ALFs are re-set. We focus on the latter here.

The additional challenge when deciding on forward CPI adjustment is that future CPI and changes in spectrum values are uncertain. Each of these factors, which we consider below, are (more) certain in the case of backward CPI adjustment.

- The reasonable prospect for future CPI is that it will increase by on average 2% as that would be in line with average historic inflation and the Bank of England's 2% inflation target. Whilst actual CPI may deviate from this projection because of unforeseen macro-economic and/or political events, this would be a reasonable expectation.
- Predicting future changes in spectrum values involves material uncertainty. But based on the observed fall in the values of low band and lower mid-band spectrum and the factors that contributed to this fall remaining present, we deem it likely that spectrum values will continue their fall albeit with uncertainty around the scale.

Our projections mean that CPI and spectrum values would move in opposite directions: the economy-wide price level would rise moderately whereas spectrum values would fall. In such circumstances, adjusting for CPI *without further correction* would increase divergence between ALFs and spectrum values thus greatly increasing the risk that ALFs are too high. The scale of divergence would be more limited when outturn CPI is moderate but it would increase in the rate at which spectrum values fall and be amplified if ALFs are set too high to start with.

An illustration of the dynamic form of this risk may help. Let's presume that ALFs are adjusted by CPI once re-set and that Ofcom has set ALFs conservatively at 10% below spectrum values. For 2% CPI and a 3% annual fall in spectrum values (which is low compared to our estimates of average decline in prices over the past years), ALFs would rise to the level of spectrum values within two years and ALFs would exceed spectrum values by +10% within four years with greater divergence in later years.

This illustration shows that the risk of too high ALFs is real and warrants mitigation but also that the scale of risk and the need for mitigation depend on how ALFs are re-set initially. The risk is smaller if ALFs are set more conservatively as that gives more headroom until inflation-driven ALFs catch up with spectrum values.

At this stage of the review, it is important for Ofcom to recognise that continuing the current approach would be inappropriate and that an alternative approach must be considered. Ideally, an alternative approach allows to reflect for evidence on the decline in spectrum values. CPI-X allows Ofcom to do that. It would retain the principle of CPI adjustment and allow Ofcom to set a value of X that best meet its objectives and as a function of evidence on how the fall in spectrum values is projected to evolve. Ofcom could potentially set a different X for backward and forward application if, for instance, evidence on the observed fall in spectrum values is stronger compared to a more uncertain future trend.

Ofcom said in 2018 that "*there was a greater risk to optimal use of spectrum from setting fees too high than too low*" and that this was a factor in it adopting a conservative approach to setting 900 and 1800 ALFs.[8] We assume this remains a factor that Ofcom has regard to. The introduction of CPI-X would increase Ofcom's flexibility in this regard as it could, for instance, set a slightly higher X to mitigate the greater adverse effects of setting ALFs too high. This discretion is more hidden in Ofcom's approach to date which involved a binary judgement with an opportunity for Ofcom to apply discretion at the point of setting ALFs as opposed to dynamically over time.

We deem it likely that spectrum values will continue to fall. This projection is highly relevant to how the X could be set for a forward adjustment. We consider that it would be reasonable for X to be set at CPI for this review. That would keep ALFs constant in nominal value until ALFs are re-set and potentially a different X is set at a future review as a function of evidence on spectrum values at that point. Setting X=CPI would mitigate (though not remove) the risk of ALFs exceeding spectrum values over this review. It helps to neutralise the effect of inflation at a time when it is not appropriate for that effect to be passed through. The additional advantage of CPI-CPI is the continuity and transparency in how ALFs are adjusted for inflation backward and forward.

[8] Paragraph 5.19 of Ofcom's June 2018 Consultation on 900 and 1800 MHz ALFs.

Part 2: Our initial thoughts on benchmarking and other aspects of Ofcom's approach to setting ALFs

The second part of our note presents our thoughts in relation to matters other than inflation indexation. This includes benchmarking but also the value differential between low band and lower mid-band spectrum, and the annualisation rate.

Benchmarking

The NERA report contains a robust analysis of benchmarking options and presents clear recommendations on how Ofcom can use benchmarking to determine the values of 900, 1800 and 2100 MHz spectrum. We asked NERA to conduct this analysis as we anticipated that the fall in spectrum values and the move from 4G to 5G era imply that a revision of benchmarking is both required and possible. NERA's recommendations confirm this whilst also showing that there is an opportunity to simplify how values are set with a more intuitive relation between the lump-sum values set and the UK auction prices they are based on.

We agree with the NERA recommendations, but we want to describe our own views in relation to benchmarking.

A natural starting point concerns the selection of UK auctions as benchmarks. We agree with the need to retire the UK 4G benchmarks that underpin how 900 and 1800 MHz ALFs were set in 2018. UK 5G benchmarks that provide much better indicators of current day values of spectrum have become available. UK 4G benchmarks date from when spectrum was more valuable than it is today and when value differences across bands and segments differ from what they are today. Already in 2018, Ofcom acknowledged that the UK 800 MHz auction price overstated the value of low band spectrum. This was a key factor that drove the substantial reduction in 900 MHz value from first consultation in 2015 to final decision in 2018. UK 4G benchmarks should not be used especially now that more recent benchmarks have become available that offer better indications of current values.

NERA identifies the 700 MHz auction price as an *excellent* benchmark of 900 MHz value and recommends setting 900 MHz value based on this price and without reference to other bands. This would follow the precedent of Ofcom setting 3.x GHz ALFs based on the 3.4 GHz auction price. The value equivalence reflects that spectrum across bands has become interchangeable in terms of how they deliver capacity and coverage for modern technologies. Ofcom acknowledged previously that the best possible benchmarks come from "*directly relevant UK auction evidence*". The availability of

the 700 MHz auction price as a direct benchmark means that Ofcom can set the 900 MHz value on what it regards as the most relevant evidence. We agree with NERA's assessment of and recommendations on 900 MHz benchmarking with a note of caution that the ongoing fall in low band values may mean that the 700 MHz auction price overstates the current or future value of 900 MHz.

We agree that a single lump-sum value must be determined for 1800 and 2100 MHz as spectrum in these bands is functionally equivalent. The 35% difference between 1800 and 2100 MHz ALFs for what is functionally equivalent spectrum was likely a major factor in EE's request for a review of 1800 MHz ALFs based on material misalignment. This large difference in fees is untenable given the equivalence in function and thus value we expect for spectrum in these bands. The virtual absence of pricing differentials between 1800 and 2100 MHz spectrum, as shown by NERA, further validates our view on value equivalence.

We acknowledge that the assessment of the appropriate value for lower mid-band spectrum is complex and nuanced. Recent UK auctions indicate that the relevant bounds for the value of lower mid-band spectrum have changed: the UK 700 MHz price (less than half of earlier UK 800 MHz price) as upper bound, and the UK 2.3 and 3.6 GHz auction prices as lower bound. Downward movement of these bounds is consistent with a material reduction in the value of lower mid-band spectrum compared to when 1800 MHz ALFs were set. The value of 1800 MHz spectrum when ALFs were set in 2018 was nearly identical in nominal terms to the 700 MHz auction price in 2021. This, on its own, provides a strong indication that current 1800 MHz ALFs are set too high.

Based on these bounds and some other evidence, NERA recommends setting the 1800/2100 MHz value within the £8.0-£10.6m/MHz range with the distance method supporting a value of £9.3m/MHz albeit with the recognition that this involves a non-trivial margin for error. It also concludes that a 25% premium for 900 MHz over lower mid-band spectrum could be appropriate and can be considered in determining final values for 900 MHz and lower mid-band spectrum. For instance, this could suggest that the 900 MHz value is too high relative to the lower mid-band value when the former is based on the nominal 700 MHz auction price and the latter on the £9.3m/MHz point.

Value differential between low band and lower mid-band spectrum

When we presented our initial thoughts to Ofcom in August, we identified the possibility that 900 MHz value could be determined by setting a generic value for 1800 and 2100 MHz and then adjusting for the 'rural' cost advantage inherent in 900 MHz. We suggested the latter advantage

would be no more than ~ £0.3/MHz/year differential that Ofcom established as part of its spectrum liberalisation work in 2010.

The benchmarking work of NERA suggests that there remains a value differential between 900 MHz vs 1800/2100 MHz spectrum. Based on a comparison of auction prices across the two bands, NERA concludes that 25% could be a reasonable estimate of a potential 900 MHz premium albeit recognising that, in monetary terms, it has come down from a higher level previously. This aligns with our understanding and expectations of what would be found if an exercise to empirically estimate the difference would determine – ie, that the absolute quantum of the value difference has decline since it was last measured.

Annualisation rate

We reserve our position on the annualisation rate, until the formal consultation. We only make two limited observations at this stage. First, the Covid crisis and the ongoing conflict in Ukraine and the Middle East conflict triggered significant macro-economic uncertainty which is likely to endure. It seems plausible that elevated uncertainty has a bearing on the risk in relation to future ALF payments that mobile operators are exposed to. Secondly, if Ofcom commits to periodic ALF reviews this would reduce the likelihood that ALFs diverge from spectrum values for longer compared to the situation before this review where it was materially uncertain when Ofcom would conduct an ALF review.