Vodafone Response to Ofcom Consultation:

"Proposed annual licence fees for 2100 MHz spectrum"

Executive Summary

Vodafone welcomes the opportunity to respond to Ofcom's consultation on the Annual Licence Fees (ALFs) payable for 2100MHz spectrum.

ALFs based on auction outcomes do not improve incentives to use spectrum efficiently, indeed we present evidence that they have impaired the efficient trading of spectrum. Even if they did enhance spectrum efficiency, the siphoning of £300M+ from an industry which is seen as key to the nation's post-Brexit economic future is not conducive to encouraging investment. The fees represent a regressive tax on UK mobile users, with potential to widen the digital divide. The whole concept of levying fees based on a slanted view of market value needs looking at afresh. If the outcome of that review is that auction price-based ALFs are beneficial for spectrum efficiency (we disagree), then at the least the proceeds should be recycled into the industry to facilitate investment and reduce the digital divide.

It is questionable how long Ofcom's approach to setting ALFs can be sustained. The process is reliant on comparing auction outcomes that will become increasingly historic, meaning it is difficult to determine whether differences in pricing are (as Ofcom would wish) due to the underlying relative value of spectrum bands, or instead are due to the changes in the value of all spectrum, or are due to specific circumstances that affected the values at an individual auction. This uncertainty will only become more acute as the time between the auctions being compared widens and the auction data becomes more historic as a whole.

Within the specific benchmarks used by Ofcom in this consultation, Germany and Slovenia are outliers that should be treated as Tier Two in the analysis. In both cases, the difference in 700MHz and 2100MHz auction pricing are more likely to be as a result of specific circumstances relating to the auctions than being indicative of the underlying relative value of the bands. This results in a more robust lump sum value for 2100MHz paired spectrum being £7.9M/MHz.

Ofcom has erred in basing the annualisation calculation on BT's cost of capital, as this is not reflective of the wider mobile industry. Using a more suitable mobile industry beta, combined with more up-to-date data on the cost of debt, yields an annualisation rate of 5.21%. Given this annualisation rate is substantially below that used in the calculation of 900/1800MHz ALFs, we request that the existing ALFs be reviewed to provide a consistent methodology across all bands.

Using the most robust lump sum valuation and annualisation rate means an appropriate ALF for 2100MHz paired spectrum should be **£0.386M/MHz**.

Introduction

Vodafone welcomes the opportunity to comment on Ofcom's proposed fees for 2100MHz spectrum.

The usage of spectrum has evolved. Whereas historically spectrum bands were typically used for specific technologies – e.g. 2100MHz was 3G, 800MHz was 4G – operators are increasingly refarming spectrum between technologies to use it most efficiently. This means that technology-specific characteristics of spectrum that affected its valuation – e.g. 800MHz had a price premium as it was the only sub-1GHz band capable of supporting 4G/LTE – have fallen away. Instead, the relative value of spectrum is driven by its propagation characteristics, and as spectrum supply has increased, there has been a reduction in the unit price yielded at auctions. This evolution emphasises the need for Ofcom to use the most recent data in assessing market value (but simultaneously it challenges the sustainability of Ofcom's current approach as new auction data will become increasingly scarce). As such, we support Ofcom's usage of auction data relating to 700MHz, 3400MHz and 3600MHz, but care must be taken when comparing these benchmarks with increasingly historic 2100MHz auction results.

Within the framework established by Ofcom, we believe that the analysis in the consultation is fair, other than we disagree with the inclusion of two benchmarks (Germany, Slovenia) within Tier One, and recommend that Ofcom updates the annualisation data to reflect the latest market data and company asset betas of all mobile operators rather than focussing narrowly on BT. We elaborate on these points in our answers to Ofcom's questions.

More widely, Ofcom needs to examine whether Annual Licence Fees (ALFs) are achieving the policy goal of maximising efficiency. As we set out below, there is now a significant body of evidence to suggest that they inhibit the smooth trading of spectrum rather than encourage it. Further, we do not believe that Ofcom's impact analysis has sufficiently addressed the impact of ALFs on vulnerable customers or on investment. We consider that there is a compelling case for ALFs to either be lower, or for the funds raised to be recycled back into the mobile industry in furtherment of Ofcom's policy goals.

Answers to questions

Question 1: Do you agree that mobile services are the highest value use for both the paired and unpaired 2100 MHz spectrum? If not, please provide evidence to support your answer

Vodafone agrees that mobile services are the highest value user for paired spectrum, and most likely the highest user for unpaired spectrum. However, we do question the ongoing approach adopted by Ofcom: the goal in incentivising efficiency is to charge an ALF that is reflective of the utility lost by the next highest value user in being excluded from that spectrum. We question whether, at a macro level, auction pricing truly provides information on the value to the excluded user. Whilst it is true that auction pricing represents the *market value* for that band, it does not necessarily reflect the *loss of utility caused by incumbency* of the band.

In the UK, according to Ofcom's own analysis[1], all mobile operators have sufficient spectrum to maintain market credibility. However, it is the mix of spectrum in the various individual frequency bands that varies between operators, driven in large part by the circumstances of when spectrum was acquired. For example, EE was able to refarm its 1800MHz holdings to LTE technology, so had a lower value for 800MHz than Vodafone and Telefonica; on the contrary Vodafone having the potential to refarm 9000MHz to 5G NR meant it had less value for 700MHz than the other operators. However, whilst operators are "excluded" from specific spectrum bands, taken as a whole each network operator has sufficient spectrum to provide service – they are not excluded from possession of mobile spectrum overall. By salami-slicing the analysis and looking at which mobile operator was excluded from a specific band, it gives an unrealistic view of the deprivation caused to the excluded operator: whilst operator A may have excluded operator B in one band and caused them £X loss of value, operator B will have excluded operator A in another band and caused them a corresponding £Y loss of value. Is it therefore correct to use £X alone to determine the Administered Incentive Price (AIP) of the spectrum?

There is a case to say that Ofcom should not be looking at the market/auction value of spectrum, but instead it should examine the amount that a bidder excluded from securing *any* spectrum was prepared to pay, i.e. those who would have sought to become a mobile operator but were denied, or indeed those who had an alternative usage for the spectrum. Such an approach would yield that the excluded user was not even prepared to pay as much as the reserve price in the recent 700MHz/3600MHz auction (as there were no applicants other than the mobile operators). Similarly, in the 2013 auction there were no non-mobile operator bidders for 800MHz and paired 2600MHz spectrum, and HKT(UK) pulling out of the bidding for 2600MHz unpaired spectrum at around £10M represented the value to the highest entity excluded from

[1] Ofcom statement "Award of the 700MHz and 3.6-3.8GHz spectrum bands" March 2020, para 4.316, https://www.ofcom.org.uk/__data/assets/pdf_file/0020/192413/statement-award-700mhz-3.6-3.8ghz-spectrum.pdf

mobile spectrum. By taking the auction clearing price, there is thus a high chance of Ofcom overstating the value loss experienced by users that cannot access mobile spectrum.

We do not assert that Ofcom should re-run the analysis taking this aspect into account – it would require detailed analysis of bidding in all of the European benchmark auctions and we acknowledge that it may be that alternate users failed to bid based upon an expectation of being outgunned by mobile operators. We do, however, question whether Ofcom could achieve the same desired outcome with respect to spectrum efficiency while "levelling down" ALFs. The policy goal is not to raise money for the Exchequer, rather it is to ensure that mobile operators use their spectrum efficiently. This could be accomplished by charging holders of spectrum more, only to the extent that they use more spectrum than others. So, taking this approach, the operator with the least spectrum subject to ALFs would only pay an administrative fee, while those operators using more spectrum subject to ALFs would pay for their excess usage. In practical terms this would mean that once 2100MHz ALFs are introduced, Telefonica would pay based upon an administrative charge, and the other operators for their usage in excess of Telefonica's; for example Vodafone would pay £5M/yr[2] (increasing when 1400MHz was subject to fees in 2023).

Such a scheme would provide equal incentives to spectrum efficiency as the current approach, because any divestiture of spectrum would reduce ALFs by the same amount as it would occur today[3] . It would be competitive neutral because everyone's ALFs would be reduced by the same amount. However, it would prevent £300M+/yr being taken from the industry with the consequent impact on investment and consumers.

Question 2: Do you agree with our proposed market value for the paired 2100 MHz spectrum? If not, please provide evidence to support your view

Vodafone is pleased to see that Ofcom's analysis incorporates more recent market data than was used in previous ALF assessments. On the whole, we consider that, all things equal, more recent data provides a better proxy for current market value. We do, however, question how sustainable Ofcom's approach is. There has been a raft of auctions over the last decade, providing Ofcom with a rich, if at times inconsistent, seam of data. However, in the future there are likely to be less relevant auctions, so the current approach to ALFs will be reliant upon increasingly historic data. It is already difficult to determine whether auction price differences are due to the different values placed on specific bands, or are an artefact of when the spectrum award took place – this issue will become more pronounced as data becomes more historic. This points to ever more reliance on "regulatory judgement". Vodafone has the utmost respect for Ofcom as an expert

[2] Telefonica's fees are currently £49M, increasing to £61M when 2100MHz ALFs are introduced. Vodafone's fees are currently £49M, increasing to £66M when 2100MHz ALFs are introduced. If fees were "levelled down", £61M would be used as the baseline, and Vodafone would pay for its usage of spectrum in excess of that, i.e. £5M.

[3] We do not envisage an operator ever having negative ALFs; if an operator divested spectrum such that it became the holder of least spectrum, ALFs would be rebaselined such that they paid an administrative fee and the other operators paid ALFs for spectrum in excess of that.

regulator, but matters amounting to a third of a billion pounds per year in fees are deserving of more than educated estimates, however experienced the expert making those estimates. Nonetheless, we believe that for this narrow exercise of determining the lump sum value of 2100MHz spectrum, there is just about sufficient, if at times contradictory, data.

Vodafone has commissioned expert economists Frontier to review Ofcom's analysis, and we present their report as Annex A to this consultation response. On the whole, we are comfortable with Ofcom's approach to determining the lump sum value, with the exception of the inclusion of Germany and Slovenia as Tier One benchmarks. In both cases, there is evidence that the relative pricing of 2100MHz and 700MHz is rooted in specific local circumstances rather than being reflective of the intrinsic value of the bands that can be read across to the UK market.

- Germany should only be considered as a Tier Two benchmark. The data from Germany suggests that 2100MHz is worth more than 700MHz, which is clearly at odds with 700MHz having superior propagation characteristics. Frontier's research, with which we agree, suggests that this is due to a combination of factors distorting any analysis that compares the auction outcomes;
    - the 2100MHz auction was held at a time of four active players in contrast to there being only three active bidders at the time of the earlier 700MHz auction, with the new entrant particularly needing 2100MHz spectrum,
    - competition in the 2100MHz auction being further intensified as it involved spectrum that had already previously been awarded, hence incumbents had high intrinsic values to protect their sunk network investment, and
    - set aside of spectrum in the 3.6GHz band for industrial use leading to constrained supply hence abnormally high pricing.

  The 2019 German auction raised some €6.6 bn, almost double that anticipated by industry analysts. We believe that the outcome in Germany was largely down to local factors, and cannot be taken as a reflection of the relative values of spectrum bands more generally.
- Slovenia should only be considered as a Tier Two benchmark. As with Germany, the outcome of the Slovenian auction suggests that 2100MHz is worth more than 700MHz, which is at odds with conventional wisdom, and indeed is at odds with what the Slovenian regulator believed when they set the eligibility point requirement for 700MHz well above that for 2100MHz in the auction rules. It appears that the outcome arose because of the auction rules around switching demand between the two bands led to bidders becoming inadvertently stranded on 2100MHz when its price outstripped that of 700MHz. Further, the 700MHz spectrum was accompanied by onerous coverage obligations[4], which may have been difficult to achieve on the part of the smaller operators,

[4] https://www.akos-rs.si/fileadmin/user_upload/dokumenti/Javna_posvetovanja_in_razpisi/2020/IM_multiband_10082020.pdf

thus focussing their demand on the 2100MHz band. Finally, it seems that caps were applied to sub-1GHz spectrum that had the effect of constraining demand from larger operators. These are local issues that are not reflective of more generic pricing of the bands.

We note that under Ofcom's current methodology, no countries fall into Ofcom's Tier Two grouping. As Tier Two is supposed to be used to provide a cross-check the results from Tier One benchmarks and to ensure a conservative outcome, this is a significant gap. Moving Germany and Slovenia into Tier Two better reflects the local specific issues and provides Ofcom with the required Tier Two cross-check.

Placing less emphasis on Germany and Slovenia reduces the average lump sum value to £9.3M/MHz, showing that Ofcom's proposal of £10.5M/MHz is far from conservative. Vodafone considers that a figure of £7.4M/MHz, representing the bottom quartile of Tier One benchmarks, is consistent with Ofcom's objective to set the ALF conservatively.

Question 3: Do you agree with our proposed market value for the unpaired 2100 MHz spectrum? If not, please provide evidence to support your view.

As Vodafone is not a licensee of unpaired 2100MHz spectrum we are not a direct stakeholder in this analysis. Nonetheless, we note Ofcom's research on the long-term value of this spectrum. Further, if there is impaired value in the short term due to a lack of ecosystem, this would be better reflected via a transition period for the introduction of fees rather than manipulating the lump sum value, as the latter would be grandfathered into the ALF instead of applying on a temporary basis.

We note that Ofcom can probably afford to be slightly less conservative in valuing this band than in other bands, because the consequences of overstating the ALF are lower. If Ofcom overstates ALFs, at best licensees overpay compare to the market worth, and at worst there is a risk that licensees are inefficiently incentivised to release spectrum in order to avoid the ALF (either via trade, or by returning to Ofcom). In other bands, this is particularly dangerous as the spectrum is well utilised, meaning that licensees would either not be readily able to release the spectrum, or would incur costs in doing so (which inherently would be inefficiently incurred, because the properly-set ALF would not be causing the licensee to release the spectrum). In contrast, unpaired 2100MHz spectrum is not currently used, so if the ALF was too high then there would be no inefficiently incurred clearance costs. At the extreme, a licensee who felt that the ALF was too high could release the spectrum back to Ofcom, then acquire it at the correct lump sum market value when it was subsequently auctioned[5]. For the avoidance of doubt, we don't suggest that Ofcom should seek to use a high lump sum value for unpaired 2100MHz spectrum, instead we simply note that Ofcom doesn't need to build in as much headroom to mitigate the risk of overstatement.

[5] Obviously, this would be a high-risk strategy, as Ofcom might not choose to re-award the spectrum for high power mobile usage.

Given the similarities in technical characteristics of unpaired 2100MHz spectrum and the 2300MHz band, *prima facie* using 2300MHz market value seems a reasonable proxy. However, the pricing of 2300MHz at auction in 2018 was reflective of Telefonica acquiring a 40MHz block of spectrum, in contrast to unpaired holdings in the 2100MHz band being of smaller bandwidth. Vodafone has repeatedly stressed to Ofcom how important contiguous spectrum is, and the consequent difference in per MHz value when compared to fragmented spectrum – it is incorrect to assume the value of spectrum increases linearly with bandwidth. As such, we would observe that usage of the 2300MHz benchmark is likely to over-state the value of unpaired 2100MHz spectrum, however the incumbent licensees of the spectrum are best-placed to comment on the details of Ofcom's consultation proposals.

Question 4: Do you agree with our proposed annualisation rate? If not, please provide evidence to support your view.

Vodafone agrees with the overall approach adopted by Ofcom, but we consider that it has been over-reliant on BT Group data, which is not representative of the mobile market.

Cost of capital

In its report attached as Annex A to this response, Frontier has examined the cost of debt using the most recent information. Ofcom set the nominal pre-tax cost of debt based on a 12-month average yield on 10-year BBB bond index for the period October 2019 to October 2020, giving a value of 1.9%. However, updating this analysis to cover the period from August 2020 to August 2021 removes a blip in the data caused by the first COVID lockdown, yielding a value of **1.64%**; this should be built into Ofcom's WACC calculation.

Further, Ofcom has based its WACC calculation on BT's asset beta. This is not appropriate;

- BT represents only part of the market,
- Its customer base is a mixture of fixed and mobile, with the former being more prevalent, and
- BT's beta value is likely to be affected by company-specific issues (for example BT's pension deficit).

As set out in the Frontier analysis, BEREC has estimated asset betas for all major mobile operators in Europe, demonstrating that all have a lower value than BT – see Table 1 below.

Table 1: BEREC peer group 2021, Asset beta[6]

Company	Asset beta
Vodafone Group plc	0.52
Deutsche Telekom AG	0.48
Elisa Oyj	0.41
Koninklijke KPN N.V.	0.49
NOS	0.57
Orange S.A.	0.44
Proximus S.A.	0.50
Tele2AB	0.52
Telecom Italia	0.42
Telefónica S.A.	0.56
Telecom Austria AG	0.47
Telenet Group Holding N.V.	0.41
Telenor	0.33
Telia Company AB	0.48
Average	**0.48**

Vodafone believes that Ofcom should use an asset beta in line with the average of the UK mobile operators, i.e. 0.55. We consider that the ALFs would unfairly penalise Vodafone if a figure of significantly more than our own asset beta of 0.52 was used.

Factoring in these two aspects, we consider that the correct WACC to use in the annualisation calculation is around 2.97%, rather than the 3.6% that Ofcom has used.

If both the cost of debt and the asset beta adjustments are implemented, the real post-tax discount rate falls from 0.2% to -0.10% and the associated annualisation rate is 5.21%. Frontier calculate that building this into the calculation of 2100MHz ALFs, together with the lower lump sum as set out in our response to Question 3, yields an ALF of £0.386M/MHz, as set out in Table 2.

Table 2: Frontier conclusions

Scenario	Annualisation rate	Lump sum value, £ per MHz	ALF, £ per MHz
Ofcom's consultation	5.40%	10.5m	0.567m
Frontier recommendation	5.21%	7.4m	**0.386m**

[6] BEREC Report on WACC parameter calculations according to the European Commission's WACC Notice of 6th November 2019. BEREC, 2021, Table 6. https://berec.europa.eu/eng/document_register/subject_matter/berec/reports/9977-berec-report-on-wacc-parameter-calculations-according-to-the-european-commissions-wacc-notice-of-6-november-2019

Implications for existing ALFs

We recognise that Ofcom has previously stated that in the interests of regulatory certainty it would not expect to review existing ALFs until at least December 2023, unless there were exceptional circumstances. The annualisation rate proposed by Ofcom for 2100MHz spectrum is materially different to that adopted for existing ALFs, and if our point raised above are addressed, will be even more so, leading to a difference in annualisation rate of 9.4%[7] . This is a significant issue, impacting Vodafone's 9/1800MHz fees by almost £5M per year. This represents discrimination in spectrum fees according to the mix of spectrum held by a licensee, and could lead to inefficient usage of spectrum with choice of band potentially being driven by arbitraging the ALFs rather than driven by which spectrum is most efficient to utilise. Further, it suggests that the existing ALFs overstate market value, with all the regulatory risks that been discussed at length in previous ALF consultations. **Vodafone therefore requests that the existing 900/1800MHz ALFs be recalculated to align with the annualisation rate used in the 2100MHz fees.**

Question 5: Do you agree with our provisional conclusion that fees set based on our estimates of market value is in line with our statutory duties?

As with previous ALF consultations, Vodafone has concerns that Ofcom treats the regulatory impact assessment as a bolt-on to the analysis, rather than carrying out an impact assessment of each stage of the analysis. Notwithstanding this, we have a series of concerns about Ofcom's assessment.

The impact of spectrum fees on the industry

We believe that the mobile industry is unique amongst critical national infrastructure in being charged for inputs that form its lifeblood. The water industry is not charged for rain, nor is the fixed telecommunications sector charged for the ground through which cables run (other than business rates applicable to all enterprises). Whilst accepting the laudable aims in setting spectrum fees according to market value, it cannot be ignored that the approach takes over £300M/yr from the pockets of mobile consumers. Such a gargantuan sum of money has ramifications that we don't believe Ofcom's impact assessment properly considers.

Impact on consumers

With the expansion of ALFs to the 2100MHz band, mobile consumers will be paying more than £300M/yr in spectrum fees, i.e. more than £5 per capita per year. Given these fees are likely recovered equally across all consumers – the ALFs apply to coverage bands used by all, rather than capacity bands utilised predominately by heavy users – ALFs effectively represent a regressive tax on mobile users.

[7] 900MHz annualisation rate is 5.75%, we consider the 2100MHz annualisation rate should be 5.21% based on latest data, difference between the two is 9.6%.

It is notable that the increased fees will be applied at a time when following the pandemic, the communications industry is being encouraged to provide social tariffs. Vodafone is playing its part – we have launched the Buy One Give One initiative[8], partnered with Barnardos via The Great British Tech Appeal to improve access to smartphones and tablets[9], and recently launched the charities.connected initiative that allows UK charities to provide connectivity to tackle digital exclusion[10]. However, we cannot afford to absorb nearly £70M's worth of spectrum fees, and inevitably this will be passed through to customers, affecting vulnerable customers disproportionately. We also note that the increased spectrum fees coincide with the commencement of fixed PSTN switch-off and consequent loss of line powering, meaning that consumers will become more reliant on mobile services to provide access to 999. In effect consumers are being pushed to take a mobile service, at a time when Ofcom's policies challenge the pricing of that service.

For Ofcom to dismiss price increases as being acceptable because they are economically efficient is simply not good enough: we would expect a proper analysis to consider the impact of increased prices on vulnerable consumer groups, and whether any price elasticity will cause societal issues such as widening the digital divide.

Impact on investment

It is widely accepted that the rollout of 5G technology will be a key enabler of the post-Brexit economy. However, this will require significant network investment against a backdrop of a highly competitive industry that has led to profitability challenges, and a backdrop of a financial community that is sceptical of the case for infrastructure investment. The telecoms industry is the poorest performing stock market sector over the last five years – see Figure 1. When Vodafone announced modest dividend cuts to enable infrastructure investment, the market reacted adversely resulting in our capitalisation reducing by £4Bn[11]. ✂[12]. This has an impact on investment: investors in the sector know from history that the potential for sector investment to yield future returns is threatened by regulatory practices that levy unpredictable costs on the industry.

[8] https://www.vodafone.co.uk/mobile/everyone-connected/buy-one-give-one
[9] Vodafone and Barnardo's launch 'The Great British Tech Appeal', https://newscentre.vodafone.co.uk/press-release/vodafone-and-barnardos-launch-the-great-british-tech-appeal/
[10] "Calling all UK charities! Vodafone offers free connectivity to help not-for-profit organisations tackle digital exclusion", https://newscentre.vodafone.co.uk/press-release/calling-all-uk-charities-free-connectivity-to-tackle-digital-exclusion/
[11] "Vodafone plans multimillion-euro investment for network expansion" Financial Times May 2021, https://www.ft.com/content/ce91932b-5496-4c76-b659-622b1dfff775 ; Vodafone share price fell from 141p prior to announcement to 126p after.
[12] Average return on equity (ROE) in the technology and telecommunications sector in Western Europe from 2019 to 2021, by industry https://www.statista.com/statistics/1044049/return-on-equity-in-the-technology-and-telecommunications-in-europe/

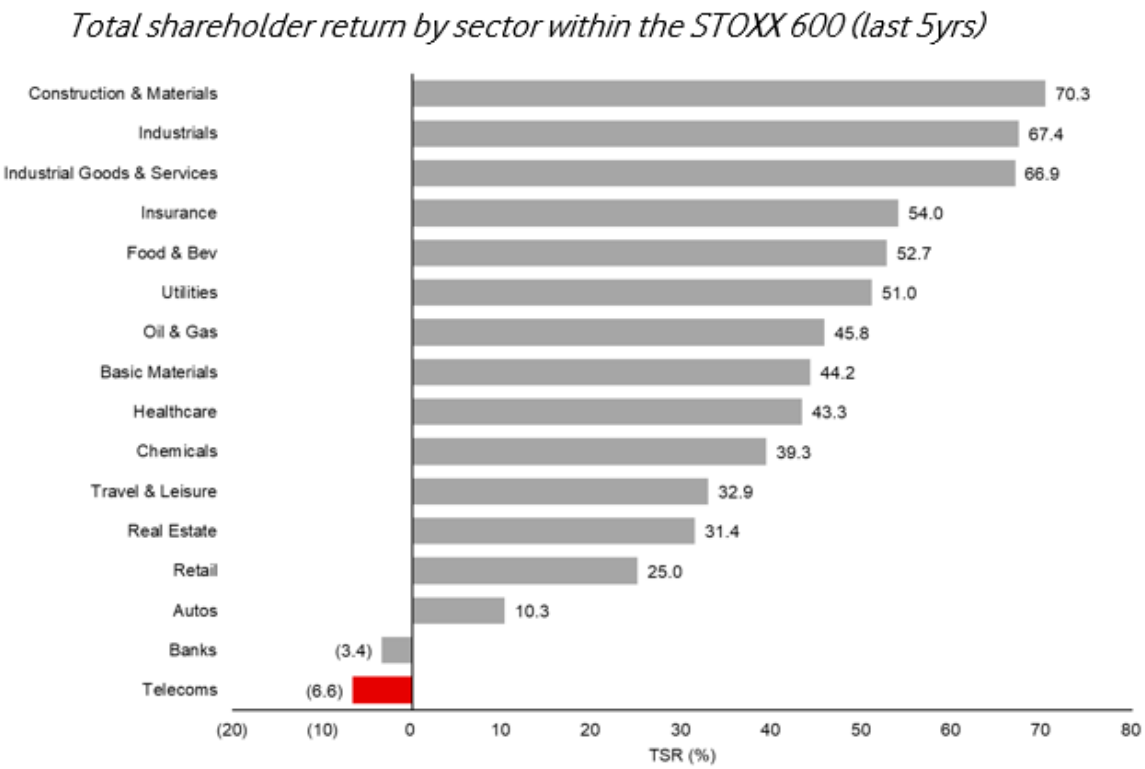

Figure 1 – Shareholder return

An economic purist might argue that spectrum fees are a sunk cost that have no bearing on future investments, as these investments will be considered on their own forward-looking merits. However, this is not the case in practice; the market is prepared to invest only a finite amount in the industry, and a pound spent in funding spectrum is a pound which is unavailable for network investment. More practicably, Vodafone's UK business competes with other Vodafone businesses for funding, and the share we receive has to cover both regulatory fees and future network investment. If one rises, the other falls. We cannot speak for competing mobile operators, but would be surprised if they operated in a different environment with unconstrained spend.

Higher prices for spectrum affect the internal funds that operators can make available for investment, meaning the only recourse is to either reduce investment or seek external funding – with evidence pointing to the first of these outcomes being the norm. Further, a company that can rely on its own cash flows to fund investment and avoid raising costly external finance can be expected to invest more because it does not have to increase its debt levels, which inevitably leads to a cycle of increased risk requiring an increased return which increasingly makes large scale infrastructure investment more challenging. The higher cost of external funding can be expected to lead to operators not undertaking investments where the expected return is less than the cost of the additional capital[13], in contrast to an operator that could finance its

[13] J. Lewellen and K. Lewellen. Aug. 2016. "Investment and Cash Flow: New Evidence", Journal of

investments purely from internal funding. Research has shown that countries with high spectrum costs absorbing available internal funds tend to suffer from lower investment in mobile networks[14]. Ofcom's impact analysis should therefore build in the consequences for the economy if network investment is prevented or delayed by the need to pay higher spectrum fees.

Although a decision for Government rather than Ofcom, there needs to be a debate about whether taking over £300M/yr out of the mobile industry is compatible with encouraging investment. If ALFs continue at such a high level, then consideration needs to be given as to whether the proceeds continue to be sent to the Consolidated Fund, or instead are used to facilitate Ofcom's statutory duties of furthering the interests of citizens & consumers, and encouraging investment. We believe there is a logic in part, or all, of the ALF proceeds being used to facilitate funds to lessen the digital divide, to support rollout where it would not otherwise be economically viable (especially 5G), and to provide assistance to achieve Government aims such as supplier diversification. We will return to this theme in Ofcom's review of mobile markets, but in the meantime highlight that while Government may be the decision maker on this topic, it is incumbent on Ofcom to promote ideas that will benefit consumers and investment under its statutory duties.

The potential wider social and economic benefits of 5G, through the industrialisation it can enable, and the technological advancement of the UK society, is reported to be huge by both the industry and Government. Adopting a backwards looking policy, that reduces at source the funds available for the investment that enables these benefits, requires review.

Impact on spectrum efficiency

The theory underpinning annual licence fees is that they lead to increased spectrum efficiency: a licensee that was not fully exploiting spectrum would be incentivised to divest their holding in order to avoid the fee. As has been explored in previous iterations of Ofcom considering ALFs, this is a debatable thesis because even absent fees, the inefficient licensee would still be incentivised to divest spectrum by any cash that they would receive as part of the trade. We note that Ofcom believes that the avoidance of a cash outflow is more likely to incentivise trading than the prospect of a cash inflow. However, we now believe that there is a substantial body of evidence to suggest that contrary to Ofcom's assertion, ALFs represent significant grit in the machinery of spectrum trading:

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Financial and Quantitative Analysis, Vol. 51, No. 4, pp. 1135–1164. https://www.cambridge.org/core/journals/journal-of-financial-and-quantitative-analysis/article/abs/investment-and-cash-flow-new-evidence/0AB12A2DFB5BA19D27615BC0093439B5

[14] "The Impact of High Spectrum Costs on Mobile Network Investment and Consumer Prices", NERA, May 2017, https://www.nera.com/content/dam/nera/publications/2017/PUB_High_Spectrum_Costs_0517.pdf pp-4-6 (note that Figure 2 artificially flatters spectrum costs in the UK due to the timeframe selected)

Given the above evidence, Vodafone believes that there is every reason to believe that market price-based spectrum ALFs are failing to meet their goal of incentivising efficient usage of spectrum. Rather than incentivising efficiency, ALFs act as a barrier to efficient reallocation of spectrum. We consider that the regulatory impact assessment should address this aspect.

Question 6: Do you have further comments that you wish to make in respect of the proposals that we make in this consultation?

Introduction of ALFs

Vodafone notes the observation of Ofcom that the introduction of ALFs on the spectrum in question should come as no surprise to the licensees, hence there is no justification for an introductory transition period. However, we believe that Ofcom needs to put itself in the position of a spectrum holder and ask how its own accountants would react to the uncertainty to which operators are being subjected. Ofcom's intent is to issue invoices at between £13M and £26M to operators in December, with those operators only having visibility of the sums involved weeks before. The operators were able to predict that Ofcom would be seeking to impose ALFs when budgets for this financial year were set in the autumn of 2020, but we could have no idea of the magnitude…Vodafone may have guessed a fee of £17M, but could equally have expected £10M or £25M. Such uncertainty makes rigorous financial planning impossible. How would Ofcom's financial team react if it was faced with a mandatory demand for £millions mid-year, with only a few weeks' notice? Would Ofcom be happy having to seek extra funds from Government to accommodate this, or to having to cut other budgets to achieve it?

The budgeting cycle means that Vodafone is already well advanced in setting its budget for FY22-23, and at the time of finalising our next FY budget, we will not have certainty on the level of 2100MHz ALFs payable in January 2023, as Ofcom will not have issued its statement concluding on the baseline 2022 pricing. None of this is compatible with a desire for regulatory certainty.

For this reason, we believe there is a case for a transitionary year where ALFs are levied at a discount rate. Taken on a 20yr horizon, the impact on overall collection levels would be small.

Timing of payments

Vodafone already pays spectrum ALFs on 900/1800MHz spectrum and 28GHz spectrum (used for mast backhaul). A single invoice is issued for each, but Ofcom provides the facility to pay in ten instalments, for which we are grateful – in effect this becomes a monthly fee, with two "holiday" months each year where no fees are payable. We would be extremely surprised if the other mobile operators did not make use of this facility.

The 9/1800MHz spectrum operates to an October invoicing cycle[15], whereas 28GHz spectrum operates to an April invoicing cycle[16]. The proposed 2100MHz fees will operate to a January invoicing cycle[17]. From 2023, Vodafone will face further ALFs on 1400MHz and the remaining 28GHz spectrum, each with its own invoicing cycle. This means that each month will be a "payment" or "holiday" month for five different cycles of spectrum invoicing. We are almost at the point of needing a lookup table to determine which fees are payable in each month.

Further, Ofcom doesn't issue invoices each month, instead a single annual invoice is issued, associated with a side-letter setting out when instalments should be made. This means that each payment does not have a unique invoice associated with it – every month our finance team needs to manually load the combination of spectrum instalments needed for payment (according to whether it's a "payment" or "holiday" month for a given band), with the same invoice and staged-payment letter being repeatedly loaded into our systems as evidence to our auditors for what are very substantial payments. It is a setup with high risk of failure, as it is reliant upon the availability of few people who understand the sequence of payments (both on our part, and in the Ofcom team)[18] .

The approach also means that there is an inherent mismatch between company cashflow (reflecting when the payments are made) and profit/loss (reflecting the spectrum costs being smoothed across all months), with this mismatch traversing financial years, hence requiring accruals.

As we set out in our response to Question 5, the approach also acts as a barrier to spectrum trades, hence barrier to spectrum efficiency, because the facility to pay in instalments is withdrawn where spectrum changes hands.

The whole approach is unnecessarily complex. In contrast, Ofcom simply recovers its Network & Services fees as 12 monthly invoices, with the amount reviewed annually.

We understand that part of the motivation for the existing approach is that the liability for the fees arises at the point of invoicing, and the approach allows Ofcom to withdraw the instalment facility should a licensee fail to make a monthly payment. However, such a sanction is not required, because Ofcom has always had the weapon of the ability to withdraw licences, and now even has the ability to fine licensees up to 10% of relevant turnover for breaching the terms of the licence.

Vodafone therefore requests that Ofcom implements one of the following options:

1. (preferred) Migrate to an arrangement per the Network & Services fees, where a single invoice for spectrum ALFs across all bands is issued and paid each month, 12 months per year. Our preference would be for any indexation to be applied at a single point per year, but if Ofcom considers that it

[15] Hence no payment in September and October.
[16] Hence no payment in February and March.
[17] Hence no payment in November and December.
[18] ✂

needs to maintain the existing indexation points meaning the invoice amount changes multiple times per year, we could live with this.

2. (fallback) Implement 2100MHz fees with an invoice date that aligns with 9/1800MHz fees, i.e. October invoice. This would mean that there would need to be a transitional year, in-line with that adopted for 9/1800 when the invoice dates of all licensees were aligned to October. This approach retains the complexity of "payment" and "holiday" months, but at least (once we were beyond the transitional year) the "payment"/"holiday" months would be aligned across all mobile access spectrum bands.

Vodafone UK
September 2021

ANNEX A – "Annual Licence Fee for 2100MHz Spectrum – A report for Vodafone" Frontier Economics