

# Implementing Spectrum Trading

Response of



7 October 2002

## **Introduction and Executive Summary**

1.1 Vodafone is grateful for the opportunity to respond to the Radiocommunications Agency consultation on "Implementing Spectrum Trading".

1.2 Vodafone views the introduction of spectrum trading as an essential step in realising the full economic value of spectrum through market forces. The correction of past misallocations or mis-valuations of spectrum will also have structurally important and beneficial effects for industry.

1.3 On the detail of the consultation paper, Vodafone has answered all the questions posed and identified five key areas of concern to us:

### **Mode of Trading**

1.4 Vodafone has stated its policy on the form that trading should take in its comments to the Independent Radio Spectrum Management Review. That policy is of spectrum trading confined, in the short-term, to trading within the same use and, in the long-term, trading across uses. The former can be pursued now at a domestic level. The latter more fundamental and valuable reform will require international implementation at a pan-EU level.

1.5 The RA can play an important role in shaping the international debate. Other radio regulators are already looking to the RA consultation on trading to help them determine their own policies. Vodafone would support any action the RA might take – potentially through the recently instituted EU Spectrum Policy Committee – to further international spectrum reform efforts particularly with regard to the technical and legal conditions necessary to facilitate trading across uses.

### **Tradability of 3G Spectrum**

1.6 The consultation envisages implementation of trading in waves. Vodafone does not understand why all spectrum should not become available for trading immediately. It is, however, particularly concerned by the proposal that 3G spectrum should be exempt

from trading for a period of three years from the first substantive launch of a 3G network. There is no good reason for this. While it remains debatable whether any of the current operators might wish to trade their spectrum, that they should not be able to do so if they so wished seems perverse. Substantial sums were paid to acquire the spectrum and mobile market must be able to correct for changing valuations. This fact is illustrated in the development of 3G markets in other countries. Vodafone could not support any delay in the implementation of trading to 3G spectrum.

### **Trading and Existing Obligations**

1.7 By and large, obligations acting on spectrum licence holders are of a technical nature to manage the potential for undue interference. Vodafone would expect these conditions to remain, subject to commercial negotiation between traders and affected third parties.

1.8 Some obligations are of a public policy nature. Primarily these are roll-out conditions designed to support widespread service availability. Vodafone believes that roll-out conditions are a distortion. However, the fact is they exist. Bidders took them into account in the 3G auction. Those contesting beauty parades have also been required to meet roll-out obligations and the costs associated with their achievement.

1.9 Trading must not be allowed to descend in to regulatory gaming. If spectrum is traded, the roll-out obligations that apply to the spectrum should be maintained. If a spectrum licence is disaggregated, then the existing and new licence holders should be jointly and severally liable for the fulfilment of the roll-out obligations.

### **Spectrum Trading and Administrative Pricing**

1.10 The consultation considers that the application of administrative pricing to tradable spectrum may be appropriate. Vodafone categorically disagrees. No windfall gains exist – at least not in the mobile market – so the continued application of administrative pricing to negate such gains is otiose. And it is not clear in what way administrative pricing might enhance spectrum efficiency in a market where trading already exists.

1.11 This is an important issue for Vodafone. We want to see the creation of a real market in spectrum. Administrative pricing is a policy for spectrum where it is not possible to introduce market forces. Where such forces can be introduced, it is the responsibility of the RA and, in time, Ofcom to ensure they are implemented in a manner that achieves optimal liquidity.

### **Overlay licences**

1.12 Towards the end of the consultation, there is raised briefly the suggestion that the RA introduce overlay licences. There is little analysis of their potential effect for the market nor of how such licences fit into the Government's long-term vision for spectrum.

1.13 Vodafone does not support overlay licences and believes any discussion of their potential benefits very premature. The emphasis for future RA actions, beyond an initial implementation of trading, should be creating the conditions that permit trading across uses. If that is achieved, then the case for overlay licences disappears. It may be that service categories will still be required once trading is to the widest extent possible and then overlay licences may have a limited re-allocation role, but that position has not been reached. Vodafone notes that the introduction of overlay licences could have disastrous effects for its paging operation in a way that trading would not.

## VARIANTS OF TRADING: MODES

### Question 1:

**Do you have any comments on the proposed modes of trade? Are there others that should be considered ?**

2.1 The implementation of spectrum trading should be viewed as a process. It will be necessary to take transitional steps before an end state is reached.

- **The end state**

2.2 Vodafone views spectrum as an economic asset. Consequently, policy should be directed to ensure that the economic asset is used in an economically efficient manner. This requires the definition of rights of use and the existence of a secondary market. The logical end state for spectrum trading must, then, be the implementation of a secondary market in which any frequency can be used and traded for as wide a range of services as possible. This will mean that the market can allocate a scarce resource in an optimally efficient manner, allowing for corrections in market valuations and the evolution of new technologies.

2.3 Any attempt to introduce spectrum trading across uses and service categories will be bound to fail at this time. No adequate rights of use exist that would safeguard appropriate levels of service. While the economics of markets are understood, it is less apparent that the necessary technical and legal analyses have been done to understand the logical extreme of a secondary market.

2.4 The Aegis/Indepen report<sup>1</sup> produced for the Independent Radio Spectrum Management Review, considered the interference issue without reaching any conclusions. It did, however, illustrate the difficulties that must be overcome if trading is to be across a multitude of uses or technologies. It is valuable to consider these, albeit briefly. There are in-band issues that may be remedied by boundary interference

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<sup>1</sup> "Implications of international regulation and technical considerations on market mechanisms in spectrum management"; Aegis Systems Ltd and Indepen Consulting Ltd, 6 November 2001

conditions. However, these conditions may simply put out of use significant areas of spectrum unless interference conditions can be renegotiated. Out of band interference is also not easily contained. The use or otherwise of directional antennas will influence the ease of finding optimal interference conditions. There are also considerations of permissible power levels and initial trade-offs between more sites vs increased risk of interference. Aligned to reducing interference concerns are visual amenity regulations that act on antenna heights.

2.5 The technical and public policy issues that arise from reform of spectrum have to be viewed in an international context. It is questionable whether spectrum efficiency will be improved optimally if other neighbouring states cannot move at the same reform pace. To allow trading across uses where others stick to rigid regulation of spectrum management may simply mean that national spectrum policy is determined externally. As an example, while it might be attractive to allow that spectrum is traded to mobile use, if all other countries require that cellular mobile be undertaken only in core bands, then the technology will only be made for those frequencies. Flexibility may well be lost.

2.6 Vodafone is strongly of the opinion that fundamental spectrum reform is needed. However, it is also of the view that this has to be undertaken at an international (at least pan-EU) level if a cogent trading system is to be created. To foster reform, it must be a priority of the Radio Spectrum Policy Group to commission consultants to examine the extent to which interference issues will act against a wholly free spectrum market. This will inform policy makers on the extent of trading and also help define future allocation policy (and the degree to which it will still be required). There remains also an action on Governments to consider the cross-border legal issues that might arise around the enforcement of rights of spectrum use.

2.7 Finally, until such time that public policy obligations acting on spectrum specifically – primarily roll-out obligations – have been met, it is difficult to see how the Government could move to trading across uses for those frequencies.

- **Transition**

2.8 Domestic spectrum reform can be pursued, albeit in a limited form. There appear to be no undue interference concerns that would occur as a consequence of trading spectrum to the same use. (As Aegis/Indepen advice: "Under these circumstances [trading where there is no change of use] there is little or no change to the interference environment and technical issues do not arise"<sup>2</sup>).

2.9 Vodafone supports mode 2: change of ownership and reconfiguration as a prelude to international agreement to mode 3 trading.

2.10 Spectrum markets need trading now to allow correction within uses. It is logically perverse to restrict trading simply to a change of ownership. This already occurs when one user acquires another, or a new user enters the market through company acquisition. The new user will always require equipment to put the spectrum into use, so is likely to want to buy the assets of the user selling the spectrum. There would be minimal efficiency gains from mode 1 spectrum trading.

2.11 Disaggregation of spectrum will also allow an ordered consolidation in the industry, acting against an unnecessary firesale of assets and allowing the industry to redistribute the spectrum resource efficiently.

2.12 Vodafone is not convinced of the case for overlay licences (mode 6) Our views are set out in detail in our comments on "Section 18: Start of Trading".

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<sup>2</sup> Page 68, Aegis/Indepen report

## VARIANTS OF TRADING: DURATION AND EXTENT

### Question 2:

**How should interference disputes be resolved ? How far should Ofcom become involved and what should its role be in relation to interference ?**

3.1 There appears to be two scenarios: one of interference caused where there has been a licence breach; and another of interference where no breach has occurred. Two similar but not identical dispute resolution procedures might be identified.

- **Interference where there has been a licence breach**

3.2 This presupposes that the cause of interference can be identified (hence the licence breach adduced). In the first instance, it would seem possible to allow the market to resolve the dispute. If a mutually beneficial arrangement can be reached, then the issue for the RA, as a licensing authority, is whether it can countenance the agreement. Where no other party is affected, it would be hoped that any licence change required would be made. So, in this case, a party A might accept a change in its licence to accommodate party B and receive a consideration for doing so. The RA would have to be notified of the change and could be able to veto it should it cause problems for other spectrum users.

3.3 Where no agreement can be reached, then the issue is one of licence enforcement and the RA should ensure that, in the above example, party B operates in accordance with its licence.

3.4 In any case of licence breach, the breach should be stopped immediately while negotiations continue as to a solution.

- **Interference where there has not been a licence breach**

3.5 Where there has been no licence breach or where a party denies any licence breach, it will be necessary to maintain an arbiter. Ofcom would seem a reasonable

body to play such a role given the expertise of the RA and also the possible need to amend licences. No consideration should be paid by the parties for changes in their licences where no breach had been found. However, where a licence was originally awarded through a competitive process, particularly an auction, it may be necessary for the regulator to pay compensation for any material change of licence required. If any licence breach is identified by the arbiter, then the process set out above should operate.

**Question 3:**

**It is proposed to give scope for trades with as wide as possible a variety of time periods and opportunities for reversion. Which combinations do you think will deliver greatest benefits ?**

3.6 This is a difficult question to answer quantitatively. The proposal to allow as wide a variety of combinations of trading over time should, theoretically, reflect a typical market model and thereby realise economic efficiencies through optimal liquidity.

3.7 Vodafone believes that only trading should be permitted. The maximum duration of any agreement should be determined by the termination date of the licence under which the spectrum was initially assigned.

3.8 Leasing should only be permitted to the extent that the licensee meets all obligations under his licence. (See answer to next question). Both lessor and lessee might be considered jointly and severally liable for meeting, for example, roll-out obligations.

**Question 4:**

**It is proposed to give scope for trades where the extent of transfer of rights and obligations is complete or concurrent. What is your view on this proposal ?**

3.9 Business cases have been determined on the basis of, inter alia, the licence conditions attached to spectrum. These conditions are usually restricted to interference controls that reflect the specifics of the underlying technology to be used by the licensee.

Other conditions may apply, however, that are more overtly public policy related. Such conditions include roll-out obligations.

3.10 There is a separate discussion to be had about the value or otherwise of roll-out obligations. For the moment they exist and any trading regime must reflect that fact. Roll-out obligations do distort capital expenditure efficiency and asymmetric application of such obligations may in turn distort competitive relationships within an industry, like mobile.

3.11 Vodafone believes that all obligations that act on spectrum should pass forward to the acquirer of the spectrum. In the case of 3G spectrum, as an example, were an incumbent to acquire additional frequencies from another operator, the obligation to roll-out a network across an area in which 80% of the population lives by 2008 would remain by virtue of the buyer's original spectrum licence. Where spectrum was acquired by a new entrant, the roll-out obligation attached to the spectrum should transfer to the the new entrant. This means that all players in the industry face the same spectrum regulatory environment. To determine differently would simply invite regulatory gaming and lead to inefficient outcomes. Where disaggregation of spectrum arises, the vendor and purchaser would be jointly and severally liable for the achievement of the roll-out obligation acting on the frequencies.

3.12 In time, this issue of obligations will become more problematic as trading across uses is allowed. Future assignment processes should consider very carefully the rationale for obligations on spectrum. The industry has consistently argued that roll-out obligations distort optimal capital allocation. Continued application of such obligations may also impair liquidity in the spectrum market.

## **SECTORS FOR PHASED IMPLEMENTATION OF SPECTRUM TRADING**

### **Question 5:**

**Licence classes from the following sectors are proposed for a first wave of the introduction of spectrum trading: public wireless network; broadband fixed wireless access, private business systems and terrestrial fixed links. Additionally for the first wave the simplest mode of trading (change of ownership only) is proposed for all other licence sectors and licence classes (with a few exceptions). a) What is your view of these proposals ? b) What is your view on the appropriate timing of the introduction of trading for particular licence classes within sectors, and in particular for Third Generation Mobile (3G) licences ?**

4.1 Vodafone has already indicated that it believes that mode 2 trading (change of ownership and reconfiguration) is appropriate from introduction of trading.

4.2 It is not clear why spectrum trading cannot be introduced for all classes of spectrum at the same time. This should be explained. The regulator should not mystify certain tranches of spectrum. If spectrum is an asset it should be treated in the same manner, irrespective of current service category allocation. Vodafone would welcome a response from the Government on this point.

4.3 Vodafone does welcome the fact that spectrum for public wireless networks will be included in the first wave of trading regulations – even if there is no justification for waves. This will allow the mobile market to rebalance available spectrum to meet market need and, if necessary, allow market correction and consolidation.

4.4 Vodafone cannot understand the rationale for delaying 3G spectrum trading and does not accept it. The objective of economic efficiency will be lost if trading cannot act on spectrum. Vodafone does not believe any regulatory uncertainty will result from trading and that, if anything, trading is a means for the market to manage commercial uncertainty.

4.5 This is an important issue for Vodafone. Other regulators across Europe are looking at the RA consultation. It would be disheartening indeed if the RA now acted against its own logic and constrained trading on one specific service.

4.6 An argument has been made that it would not be helpful for the industry if trading revealed a lower price for spectrum than that paid at auction. However, it is not explained why this should be a consideration for spectrum policy and the argument, in any case, does not bear scrutiny from a commercial perspective.

4.7 Companies are required to consider impairment of their assets when completing their annual report and accounts. Vodafone takes the book value of the assets ascribed to each of its businesses (of which the spectrum licence is but a part) and sets that valuation against the discounted cash flow forecast of its future business. If the DCF analysis is lower than the book value of the company, then an impairment provision must be taken. The licence itself is simply written down in accordance with amortisation policies. A trade, of itself, is simply a reflection of a value placed on a piece of spectrum by the buyer and seller of that spectrum. It should not be used to determine the value of another party's business. The share price of an operator also reflects expected asset values and future revenue flows anyway.

4.8 To continue the financial treatment of trading – which is not commented upon in the consultation paper – Vodafone would expect any profits from trading to be treated as income. The profit would be the difference between the amount received for the spectrum and the amortised value of that spectrum on the balance sheet. Where no licence fee was paid, any revenue would be pure profit. (There is an argument that trading should be treated as a change in capital and subject then to capital gains tax. However, our external accounting advice suggests that new rules on the treatment of IPRs means that profits should, properly, be treated as income).

4.9 If all spectrum is not included in the first wave, then to introduce at least mode 1 trading to spectrum outside the first wave seems logical. This already happens as part of M&A activity and the proposal would simply be de-linking spectrum from the other individual assets of a company.

**Question 6:**

**Licence classes from the following sectors are proposed for a second wave of spectrum trading: sound broadcasting (analogue and digital), television broadcasting (analogue and digital), programme making and special events, and aeronautical and maritime. What is your view of these proposals ?**

4.10 Subject to the comment above that trading should act on all spectrum in the first wave, if the RA thinks this is not possible, then this suggestion is acceptable to Vodafone. Until such time, we would expect spectrum pricing to act on this spectrum to create an administrative means to incentivise spectrum efficiency. This comment is applicable also to non-tradable spectrum generally, such as that held by the public sector.

**Question 7:**

**In your view, what is the best approach for introducing the more complex forms of trading ?**

**Question 8:**

**What is your view on the overall timing of the introduction of spectrum trading ?**

**(Both questions taken together)**

4.11 Vodafone would expect that mode 2 trading be introduced as soon as is practicable. The consultation document indicates certain steps that must be taken. Vodafone would hope that these could be done in parallel, wherever possible. With reference to the timetable illustrated in paragraph 4.1, Vodafone expects that consultation with industry and others on trading for selected individual licences and licence classes and on the draft Trading Regulations would be done while legislation is progressing in the House. Following this sort of timetable, it is not clear why the RA consultation suggests spectrum trading will only be implemented towards the end of 2004.

4.12 The long term goal should be trading across uses to the widest extent possible. It would be helpful if the RA could pursue technical and legal studies to determine the natural extent of trading across uses. Are there, for example, technical issues of interference that always mean that some form of service categorisation is required? How would cross-border interference disputes be rectified? Vodafone has suggested to the European Commission that consultation work under the auspices of the Radio Spectrum Policy Group should look into these issues in detail. Such work should commence as soon as possible because developing any subsequent policy response will inevitably take significant time.

**Question 9:**

**In planning for the introduction of spectrum trading, it would be helpful to have an estimate of the likely volume of trading. For each licence sector and licence class on which you can express a view, what volume of trades would you expect? Would you expect a different volume depending on the available modes of trade?**

4.13 It is not possible to answer this question quantitatively.

4.14 Any moves that result in market forces acting increasingly on the allocation of spectrum are likely to see increased trading volumes. That is because the market provides incentives for dynamic management of the resource. Within the 2G and 3G markets, in which Vodafone primarily participates, trading may not be common. 2G operators face only limited barriers to expansion. Within 3G, one might see a rebalancing of spectrum holdings across the operators depending on their developing service visions. One might also see consolidation.

**Additional comments on section**

4.15 It is suggested at para 8.12 that Ofcom should be able to issue licences for a particular sector or class even when they are already available through trading. Vodafone accepts this point on two conditions.

4.16 First, any assignment by Ofcom must be market-based. Ofcom does not have the economic incentive of a spectrum user when selling spectrum. The spectrum user will consider the marginal value of spectrum to himself and then seek a price above that. Ofcom will not operate under the same conditions. It must find a proxy – an auction – to achieve the same market dynamic, otherwise assignments by Ofcom will distort the market.

4.17 Second, once Oftel has identified that there is spectrum available for a given sector or licence class, it must ensure that the market is notified of this immediately. Failure to do so would create uncertainty in the market.

## **MODES APPLICABLE TO SECTORS FOR FIRST IMPLEMENTATION OF SPECTRUM TRADING**

### **Question 10:**

**For the proposed licence sectors from which licence classes will be selected for the first wave of the introduction of spectrum trading with more complex trading modes (ie for the sectors: public wireless networks, broadband fixed wireless access, private business systems and terrestrial fixed links) do you have any views on how extensively change of use or reconfiguration should be permitted ?**

5.1 Vodafone does not believe change of use should be permitted until such time that all technical and legal issues have been adequately resolved. This will require international agreement at least at pan-EU level.

5.2 The operational concern for Vodafone is that without relevant technical studies, the RA risks throwing the market into confusion. Similarly, market players need to understand the extent of their legal rights. In an international arena like spectrum where interference can easily occur across international boundaries, EU discussion is required before a managed move to trading across uses.

5.3 As noted already, Vodafone supports mode 2 trading and believes reconfiguration should pose no issues for orderly spectrum management by the market.

### **Question 11:**

**For the proposed licence sectors from which licence classes will be selected for the second wave of spectrum trading, do you have any views on how extensively change of use or reconfiguration should be permitted ?**

5.4 No change of use should be permitted until technical and legal studies have been done on the viable extent of trading across uses. As a point of principle, reconfiguration should be permitted. Vodafone will await further consultations on the specific services before committing itself to a final position, however.

**Question 12:**

**Would having different trading rules for different licence sectors and licence classes have any undesirable impact ?**

5.5 Potentially, yes. Ofcom will need to consider very carefully whether the introduction of trading where change of use is permitted could be undertaken in waves without causing imperfections in the spectrum market. This is particularly the case where one market player may have sufficient spectrum to offer services across a portfolio of technologies, whereas another player in ostensibly the same market is constrained by regulation in the use to which they can put their spectrum.

**Question 13:**

**In what circumstances do you consider it would be appropriate for Ofcom to (a) require prior clearance or consent (ex ante) for competition purposes for a proposed trade and (b) withhold consent for a trade on competition grounds ?**

5.6 There is a danger that spectrum trading might create or strengthen a dominant position. This might occur where spectrum holdings of players in the same market are markedly asymmetric. Such asymmetry may allow one player to accrue economy gains sufficient to "tip" the market.

5.7 Vodafone favours *ex ante* regulation of spectrum simply because it will allow for more regulatory certainty in the market. Liquidity will be enhanced by good, transparent guidance from Ofcom that indicates conditions where no notification might be required, such as very localised sales in national markets, or where the buyer will still have no more than 25% of spectrum assigned to any service.

5.8 Consideration should be given also to article 9 of the Framework Directive that requires licence holders to notify their intention to transfer spectrum, which suggests that *ex ante* may be the legally proper route forward.

## **FEATURES OF LICENSING AND THE TRADING ENVIRONMENT**

6.1 No question is asked in this section. Vodafone would, however, like to make a number of comments.

6.2 First, at a political level, there must be an acceptance that spectrum is an economic asset. From this starting point, real policy can be devised. Vodafone would value any public statement by the Government that clearly expressed this view. It would help substantially in discussions in other countries because the UK is seen as being in the vanguard of European countries on spectrum matters. A failure to get this basic premise accepted elsewhere in the EU may have significant, adverse effects for the later development of trading across uses.

6.3 Second, paragraph 11.2 captures aspects of a successful market. What is not brought out is in which order things have to happen to ensure success and who is responsible for ensuring what. To explain, the regulator should not presume that there will or will not be a sufficient number of buyers and sellers. Nor should it seek to ensure full transparency of information on prices and products. These are outcomes of other actions and should be left to the market to provide.

6.4 Government action should, instead, concentrate on the definition of necessary property rights, the removal of barriers to trading and the enforcement, where necessary, of competition law (sectoral or general). Whether and how the market subsequently develops is a function of enterprise.

6.5 Vodafone assumes that the definition of property rights will be caught in the later consultation on licences prior to the introduction of trading.

## **PACKAGING SPECTRUM**

### **Question 14:**

**How should tradable licences be structured? Views on all aspects of structuring the licences would be appreciated including on the technical construction of boundary conditions.**

6.6 If mode 2 spectrum trading is introduced, few changes to licences will be necessary. Vodafone has already argued that obligations should remain unchanged. The things that may change as a consequence of a trade are the name of the licence holder, the frequencies at issue and the geographic extent of the licence.

### **Question 15:**

**Are there licence classes, or licence sectors, for which division of spectrum into predefined frequency trading units with fixed boundary conditions would facilitate trading?**

6.7 Vodafone is not convinced that there is a need for ftus. Any commercial deal on assets is generally not governed by prescribed units. Commodity exchanges have arisen over time as a consequence of perceived need. Some contracts have failed, others have succeeded. The lesson is that the market will define ftus if they are required. It is not necessary for the regulator to do so and may, if mandated, act as a barrier to trading.

6.8 Definitions of fixed boundary conditions can be included in the original licence. Should a party wish to change the conditions, they could do so through commercial negotiation. Assuming a successful commercial negotiation and a result that would not impair the rights of any other spectrum user, the licensing authority might be expected to permit the licence change.

6.9 Vodafone operates in Australia where ftus are currently used. Our view is that they have done nothing material to improve the liquidity of the market and may have a

harmful effect if boundary conditions are not appropriate for the use to which the spectrum might be prospectively put. In short, spectrum may not be sufficiently similar to a commodity product for ftus to be viable across the broad range of frequencies. As change of use is permitted, so the applicability of ftus becomes even more marginal.

**Question 16:**

**Are there licence classes, or licence sectors, for which user-negotiable boundaries would facilitate trading ?**

6.10 Vodafone has national licences. It would be helpful in such instances to be able to buy disaggregated licences to increase capacity in hot spots or to allow the industry to manage consolidation.

**Question 17:**

**Are there licence classes or licence sectors, for which spectrum reconfiguration on demand would facilitate trading ?**

6.11 It is not clear from the consultation what is meant by "reconfiguration on demand". Vodafone does not believe that licence conditions should be changed except as they relate to interference limits as commercially renegotiated. While the aggregation of a licence may simplify matters for both regulator and user, it will also increase complexity if the regulator is asked to aggregate together licences with different non-interference related conditions, such as roll-out clauses. Vodafone believes that negotiation on demand (as we understand the term) will lead to regulatory gaming and should be avoided.

## LICENCE TERM AND SECURITY OF TENURE FOR TRADABLE LICENCES

### Question 18:

**What changes, if any, do you consider are needed to licence term and security of tenure to promote the successful introduction of spectrum trading ? Please be as specific as possible about the licence sector(s) and licence class(es) to which you are referring.**

7.1 Vodafone's comments are related to its 2G, 3G and paging licences. However, it does not readily see why the same regime on licence terms and duration should not extend across all forms of licence.

7.2 Where no change of use is permitted, it is Vodafone's view that licences should be subject to a rolling licence period. 3G licences are for 20 years and this should be a benchmark base duration. The concept of a rolling licence does create issues for licence valuations. These issues might be managed through clear guidelines on when roll-over conditions would not be applied and when a licence would then be subject to a notice of revocation. Vodafone believes such guidelines should be drafted. Notice should only be given where a technical and market analysis illustrates that the capacity provided by the spectrum is not being, or is unlikely ever to be, required by the licensee.

7.3 In the long-term, when trading is permitted across uses, the need for a licence termination date becomes negligible. The market should be able to allocate spectrum dynamically so there would be no gain in taking spectrum back into Ofcom. Vodafone recognises that there will remain a need for "compulsory purchase" provisions to enable the Government to take back spectrum that it might need for its own purposes, eg national security. Of course, the strength of this argument rests on the extent to which it is technically feasible to construct a trading system where change of use is allowed in an extensive manner.

## **ANNUAL LICENCE FEES**

### **Question 19:**

#### **What are your views on continuation of annual licence fees for traded licences ?**

8.1 Vodafone has expressed its fundamental opposition to the application of administrative pricing to tradable spectrum in its response to the Independent Spectrum Management Review.

8.2 Spectrum trading should achieve optimal economic efficiency in the market. The idea that trading will not occur simply because the proceeds of a trade "might, in practice, not be perceived to be a real motivator by licensees" suggests that licensees do not act in a profit maximising manner, or conversely that the Government is better able to recognise the value to a business of a trade than the business is itself. Either is a difficult assertion to sustain.

8.3 The consultation also suggests that the administrative price might provide "information about price levels". This is bizarre. The administrative price is meant to reflect the marginal value of the spectrum to the user. But whether it does so is a matter of conjecture. Trading will actually value the spectrum at the marginal value of the optimal user of the spectrum. As spectrum pricing does not attempt to find that price, it is no guide to the real value of the spectrum. This holds true even where trading is to the same use because different users will face different capacity considerations and these considerations will change over time.

8.4 Annex A sets out a discussion of spectrum pricing on tradable spectrum. This is based on external economic advice sought by Vodafone and clearly illustrates that the application of pricing on tradable spectrum does not enhance efficiency – and might actually be harmful. Given this finding, it is strongly arguable that the application of administrative pricing to tradable spectrum is simply a revenue raising measure and as such illegal under Article 11 of the Licensing Directive.

## **INFORMATION REQUIREMENT FOR TRADING**

### **Question 20:**

**a) Ofcom could provide only a minimum level of information for spectrum trading (identification and some description of licensed spectrum, and ability to send a message to the licensee) and leave further information provision to the market, or Ofcom could provide higher levels of information. What is your view on the optimum level for spectrum trading of information by Ofcom ?**

**b) What type of information would assist or encourage you to trade ?**

**c) Should Ofcom have power to compel disclosure of market information ?**

9.1 Ofcom could play a helpful role in providing information to the market on ownership of the spectrum asset. In particular, it might help identify for any specific frequency:

- i. the name and address of the current licensed user;
- ii. the geographic extent of their licensed use;
- iii. the obligations that apply to the spectrum – eg interference conditions, roll-out obligations
- iv. the technology that may be deployed in the band (if restricted).

9.2 Where a trade is undertaken, there should be a mandatory requirement that the parties inform Ofcom and provide the details given above.

**Question 21:**

**Should Ofcom publish details of potential trades before they take place ?**

9.3 Where *ex ante* clearance need be given – as Vodafone believes should be the case – then Ofcom should be able to publish details of any proposed sale. Details published should be limited to those necessary to determine whether a given sale may raise competition concerns.

## CONSULTATION PRIOR TO TRADING

### Question 22:

**Are there topics other than those listed in Table two paragraph 17.1 that will need to be considered before Trading Regulations are finalised and trading is introduced for particular licence sectors and classes?**

10.1 The list presented is comprehensive. What is needed, first, however, is a clear statement from Government on the logic of its spectrum policy. In particular, is the introduction of spectrum trading now simply a transitional stage or the end state of trading policy? Vodafone has a clear view that trading, in the short-term, should be to the same use and, in the long term, subject to technical and legal studies, be across uses (or allow change of use as the consultation paper calls it). Is this vision shared by Government?

10.2 The vision might be expected to raise further issues to be covered in the development of the Trading Regulations. For example:

- when will the second wave of spectrum licensing be undertaken?
- when might change of use be permitted?
- when might Ofcom make available further spectrum for the same use (eg the 3G extension band)?

10.3 In a converging telecoms environment, it is not simply the regulations that act on a user's technology that are of interest, but also the regulations that act on a competitor using a different technology. A view of the whole game plan is needed.

## **START OF TRADING**

### **Question 23:**

**For licence sectors and licence classes in which you have an interest how would you like to see trading start ?**

11.1 The aim of spectrum trading is economic efficiency. To that end, simple introduction as set out in the consultation paper is Vodafone's strongly preferred option. In line with previous comments, Vodafone believes that introduction should be preceded by the introduction of a rolling period of notice.

11.2 Vodafone strongly objects to the suggestion that licences, such as those of public wireless networks, should be auctioned first. It is quite apparent that spectrum trading can act on 2G frequencies, for example, without the need for an auction. Consequently, any auction would simply be a means for Government to extract revenue without any improvement in spectrum efficiency.

11.3 It follows that Vodafone does not believe that overlay licences are required. Any consideration of them is, at least, premature and possibly redundant. Overlay licences illustrate a very static notion of trading going forward. If, as Vodafone believes, trading across uses should be possible in the long term, the Government would be far better off pursuing that goal than endeavouring to maintain the flawed system of administrative spectrum allocation which trading helps to resolve.

11.4 Take as an example a paging operation. Pagers only work on the channel for which they were made. Pagers, unlike a mobile phone, do not search for alternative channels. In that sense, they are a simple radio device. If an overlay licence was offered for spectrum operated by a paging company, that company would face the closure of its business as terminal replacement would likely be commercially unviable. In a sense then, the operator must bid on the basis of the full value of their business. In some ways this is the price to be paid for spectrum efficiency, but retention of funds by the Government creates inefficiencies. Ordinarily, if the asset was "owned" by the user, they would seek a price that compensated them for having either to (i) close down their

business; or (ii) retune pagers. The auction of overlay licences removes this ability of the pager to stay in the market if the spectrum currently allocated to them is acquired by someone else for a different purpose.

11.5 It may be that overlay licences will have a role, albeit limited, if, even after the most extensive form practicable of spectrum trading is introduced, it is necessary to retain service categories. Then an overlay licence may facilitate the move of frequencies from one service category to another. However, no adequate technical and legal research has been undertaken to show the logical extent of trading and a justification for overlay licences.

**Question 24:**

**What steps, if any, should the Government take to recoup capital gains realised as a consequence of the introduction of spectrum trading ?**

11.6 None.

11.7 Profits on trades will be subject to tax so the Treasury will not go unrewarded. As Vodafone noted in its response to the report of the Independent Spectrum Management Review, action to recoup capital gains would be distortive and unfair. To quote from our response:

"Professor Cave suggests that, if windfall gains are perceived to be an issue, spectrum pricing might be levied on tradable spectrum, presumably until such time that it was traded. Vodafone notes that this would not enhance spectrum efficiency and would distort the market<sup>3</sup>.

Applying a tax to the return on the trade is also likely to act against efficiency. Any tax will create a disincentive to trade at the margin. While a trade might be profitable in the absence of a tax, this need not be the case where a tax is present because of the effect of transaction costs.

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<sup>3</sup> See Annex 1 for a fuller analysis

Finally, valuing the profit is difficult. A beauty parade is simply a one-round auction of a rather opaque kind. Prospective tenders give up some value in a bid to obtain the spectrum. There are costs involved in just the same way as an auction. To distinguish between auctions and beauty parades therefore is not helpful.

Turning to the principle of a windfall tax, such taxes have been imposed where regulatory error has resulted in specific sectors making substantial excess returns. Mobile is a competitive industry evidenced by the fact that the sector as a whole does not make its required rate of return. Vodafone can see no reason therefore to suggest that there is any monopoly rent being earned that is due to regulatory error. There are no windfall profits<sup>4</sup>."

**Question 25:**

**a) What steps, if any, should Ofcom take to facilitate the start of spectrum trading markets?**

11.8 Ofcom should publish details of current licence holders, including their current address and, if practicable or does not breach a trust, a contact point.

**b) How can Ofcom assist the development of successful spectrum trading markets?**

11.9 Vodafone believes that the information listed in answer to question 20 should be publicly available. No other action by Ofcom is required.

**c) Do you consider that intermediaries are likely to emerge through the market if there is demand, or will Ofcom need to assist, and if so how?**

11.10 As in many other markets, intermediaries will emerge if there is a market opportunity for them and no regulatory restrictions on their existence. No action is required by Ofcom.

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<sup>4</sup> Vodafone recognises that asymmetric assignment models acting on the different industry players could create conditions where windfall taxes might be justified. However, this is not the case in cellular mobile.

## **INTRODUCTION TO DRAFT REGULATORY IMPACT ASSESSMENT**

### **Question 26:**

**Do you agree with the analysis in the draft Regulatory Impact Assessment ?**

**Is there additional information or data you can provide to help assess either costs or benefits ?**

12.1 Vodafone has not attempted to quantify the benefits of spectrum trading but concurs with the RIA that trading will be significantly beneficial for the UK economy. The extent to which this is so will depend on the speed of introduction, the breadth of trading permitted and the steps taken subsequently to extend trading to permit change of use.

**SPECTRUM PRICING**

- **Spectrum pricing and trading**

Table 1 considers whether spectrum pricing applied to tradable spectrum will increase spectrum efficiency.

<b>Table 1 – User net valuations</b>		
<b>User</b>	<b>No administrative charge</b>	<b>Administrative charge of 1</b>
A	1	0
B	3	2

Suppose that user A currently has an assignment of spectrum and that he has a valuation of 1 for this. User B currently has no spectrum and has a valuation of 3 (see second column). The difference in the users' valuations could arise for several reasons. For example, B may be more efficient than A, or may wish to use the spectrum to provide a more valuable service than that provided by A.

In this case, allowing trading would result in B buying spectrum from A at a price between 1 and 3. This increases economic efficiency since spectrum is moved from a low-value to a high-value use. The magnitude of the efficiency gain from trade is given by the difference in the users' valuations, and is equal to 2 in this example (ignoring any transactions costs).

Now suppose that spectrum users are charged an administrative price of 1. This reduces the (net) value of spectrum for both A and B by 1. In other words, with an administrative charge of 1, A's net value is 0 and B's is 2 (see third column in Table 1). Trading would now result in B buying spectrum from A at a price between 0 and 2. As

before, this is efficient since spectrum is moved from a low value user to a high value user, and the increase in efficiency is again equal to 2.

There is, therefore, no increased efficiency as a result of applying spectrum pricing to tradable spectrum.

- **Spectrum pricing and windfall gains**

Table 2 considers the effect of applying spectrum pricing to tradable spectrum as a means to claw back perceived windfall gains.

<b>Table 2 – User net valuations</b>		
<b>User</b>	<b>No administrative charge</b>	<b>Administrative charge of 1 on initial assignment; 0 if traded</b>
A	1	0
B	0.5	0.5

In the example, an administrative charge is applied to spectrum until such time that it is traded. In the absence of the charge, user A (the current spectrum user) has a net valuation of 1, and user B of 0.5. However, if an administrative charge is applied, User A is incentivised to sell spectrum to User B, notwithstanding the fact that the optimal user of the spectrum is User A. Of course, the market would, in time, unwind this perverse outcome but transaction costs will have been introduced into the process.