



Comments to CMS Select Committee

4G Spectrum Auction

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1.0 Summary

Considered Approach

A detailed review of the *“Consultation on assessment of future mobile competition and proposals for the award of 800 MHz and 2.6 GHz spectrum and related issues”* and its associated annexes shows that the auction of the spectrum has been highly and fully considered. Most key decisions detailed in the consultation report can be supported. However, there are some areas where a specific consideration of the delivery of services to rural areas, and the ongoing management of this delivery can provide additional clarity and depth to the proposed approach.

Rural Focus

The proposed response is focused around the issues of competition and coverage, and how they apply in the rural context. This is considered to be the most appropriate contribution for NNPA to make regarding this issue.

Retail and Wholesale Competition

The consultation document focuses strongly on the need for competition at wholesale level as a means of encouraging competition at retail level. It goes on to detail the need for four competing national wholesale providers. However, for rural areas the proposals will lead to only one wholesale provider. It appears there is no proposed provision to encourage retail level competition beyond the presence of wholesale competition – so none in rural areas.

Geographic Coverage

The auction is for 800 MHz and 2.6 GHz frequencies. The 800 MHz spectrum is significantly more relevant to rural areas. It is proposed that one of four licences in the 800 MHz spectrum will have an obligation to provide coverage to 95% of the UK population at a speed of 2 Mbps or faster. Other responses (for example MP, Rory Stewart) have suggested this figure should be higher. A review of the full consultation document suggests that the 95% figure is well considered, and significant increases above this will be both expensive and difficult to value. It is proposed that the 95% level should be supported, but details regarding how it can be managed may be developed further.

Enforcement

If rules are imposed to ensure fair provision of services to consumers and citizens, it is important that they can be enforced effectively. The proposals are also judged on how effectively they can be implemented and enforced.

2.0 Background

2.1 Existing competition

Currently there are four major mobile operators in the UK (Everything Everywhere, O2, Vodafone, H3G). There are a range of retail providers who use these network providers to deliver services to their customers. This leads to a 'value chain' of service provision in the mobile market – where service providers at different levels of the value chain are able to make a profit from their activities. The balance of this value chain currently strongly favours the main network operators.

Retained value shares in the mobile value chain for 2005-2007

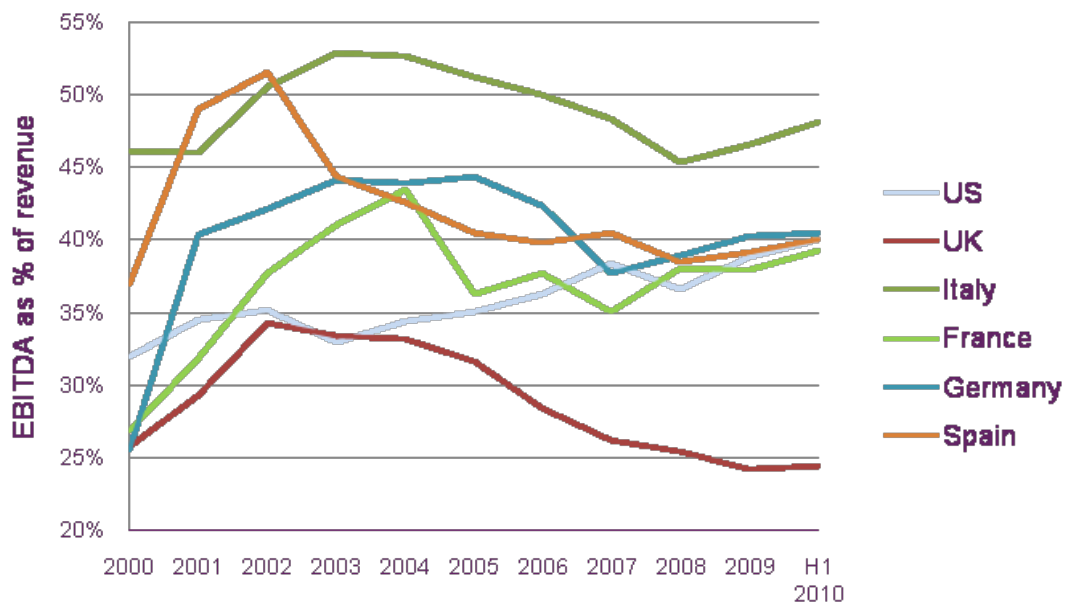
Value chain element	Description	% retained value
Network equipment vendors	This comprises the providers of network systems and sub-systems including radio and core access networks and IT platforms.	7.6%
Tower/transmission/backhaul	This comprises those organisations providing tower, transmission and backhaul services to network operators, including cell site providers (e.g. Arqiva) and telecoms service providers (e.g. BT)	2.5%
Network operator function	This comprises the holders of spectrum licences and operators of mobile networks, including the main national wholesalers and also smaller operators (such as UK Broadband)	42%
Service provision function	This is the retail function involving contracting with end users for the provision of mobile services, and includes service provision by both the MVNOs and national wholesalers	17.5%
Device vendors	This comprises the manufacturers of mobile handsets and other wireless devices (e.g. Nokia and Apple)	14.6%
Content providers	This includes content owners and content aggregators	1.2%
Distributors	This comprises the customer-facing distribution function and includes direct and online sales channels of the national wholesalers, MVNOs and independent retailers	13.5%

From *"Consultation on assessment of future mobile competition and proposals for the award of 800MHz and 2.6GHz spectrum and related issues, Annex 6: Competition Assessment"*

Source: Analysys Mason

However, although the retained value appears to favour the network operators, there is no evidence of excessive profits in the UK mobile market. The high retained value appears to reflect the high costs of providing and operating a mobile network. Other parts of the value chain are significantly simpler, and have significantly lower financial barriers to entry.

EBITDA margins in selected European countries and the USA



From *“Consultation on assessment of future mobile competition and proposals for the award of 800MHz and 2.6GHz spectrum and related issues, Annex 6: Competition Assessment”*
 Source: Ofcom

It appears that the competition between the four major providers in the UK ensures competition at the retail level – ensuring innovation in service provision and competitive pricing to end users.

In countries where there are fewer than four major national operators, it appears there is significant anti-competitive behaviour, including refusal to supply service to retail level competition. It is unclear how the direct cause and effect route operates – does a competitive environment lead to 4 or more major players, or does the presence of 4 or more players ensure a competitive environment? Ofcom appear to have assumed the latter. They propose to ensure competition at wholesale level of 4 or more players through the structure of the auction, and expect this to drive competition at retail level.

2.2 Existing mobile coverage

Existing 2G mobile services cover approx 97% of the UK population. 3G services are less well developed, though there is a new obligation to provide at least 90% of the UK population by mid 2013.

There is, of course significant variation of this coverage throughout the UK. It is clear that rural areas are less well served than urban areas, and that population density is the critical factor in determining service availability.

There is the potential to use the current auction to address not-spots in the existing services, but it is proposed that this option will not be taken.

Factors affecting coverage

The geographic coverage of services is determined by the technical constraints of the spectrum in terms of possible transmission distance, and by the location of transmission sites. The existing mobile infrastructure represents a significant investment. Although the transmission equipment is not relevant to the new LTE spectrums, other aspects are – particularly access to sites and backhaul networks from those sites.

Of the new spectrums, the 800 MHz has the greatest transmission distance capability. Matching the transmission capabilities of the 800 MHz spectrum with the existing transmission sites results in 95% coverage of the UK population.

Micro / Pico / Femto – Cells

The use of small mobile cellular base stations for home, office or localised use is only really emerging, but can be expected to play an important part in the future of mobile communications in rural areas. Micro-cells have a range less than 2 Km; pico-cells less than 200 m; femto-cells less than 10 m.

In deep rural areas, the main mobile networks are constrained by lack of access to high capacity backhaul bandwidth, and low capacity of use – making conventional infrastructure implementations impractical. The use of micro-cells (here used as the generic for all three types) is a practical solution – allowing conventional broadband services to provide backhaul for low capacity services at specific locations (often inside buildings).

3.0 Competition

Ofcom's principal duties are:

- to further the interests of citizens in relation to communications matters, and
- to further the interests of consumers in relevant markets, where appropriate by promoting competition.

The consultation document focuses strongly on their duty to promote competition. However, promoting competition at the national level does not necessarily serve the needs of rural environments that simply cannot sustain the same levels of competition.

Competition is essential to the provision of high quality, innovative and affordable products in the UK. Strong competition is central to the effective development of markets, and has been highly successful in the UK – including in the communications markets for fixed and mobile voice services and fixed broadband services. However, very different models of competition are in evidence for fixed and mobile services, and they have very different impacts in rural environments. Promoting the most appropriate competitive actions for the rural environments is critical.

3.1 Background Assumptions

The proposals detailed in the consultation document are based on background market analyses detailed in Annex 6. The analyses result in a number of conclusions identified in section 3 of Annex 6. Most, but not all of these appear valid and relevant.

We have concerns regarding the assumption of a single UK-wide market. This currently appears to be the case in the mobile market – operators have UK-wide pricing schemes. However, consumers in rural areas are restricted to a limited number of retail providers because of their limited access to services at a wholesale level. Similar restrictions in the fixed broadband market are resulting in increased retail prices (and reduced product options) at exchanges where BT is the only service provider.

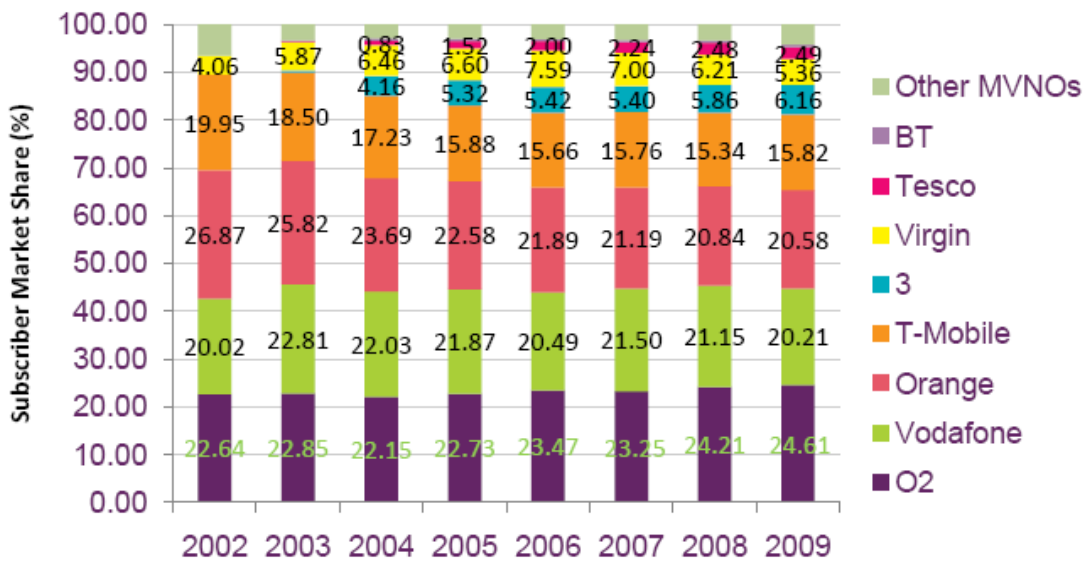
The assumption of a single UK-wide market appears fragile. It is also critical. The effectiveness of wholesale competition between 4 nationally credible providers appears to rely on a single UK-wide market being maintained.

Comments on market assumptions

Assumption	Comment
Mobile retail services are not competitively constrained by fixed services.	This is considered correct, and likely to remain the case, though not certain. There is thought to be some increasing overlap in terms of call volumes on fixed and mobile services, and the introduction of micro-cells for mobile will increase the inter-dependence of the two. However, we support the underlying assumption that they will be complementary rather than competitive.
There is a single mobile retail market for access, voice call origination and data.	This appears correct. Consumers buy a package of access, calls and text messages. There is market innovation around the pricing and balance of these features.
It is expected that data services will continue to grow in importance.	All current trends suggest that this will be true, and the availability of higher quality data transfer is considered likely to enhance the trend.
It is possible that separate markets may develop based on higher quality data services.	Since it is likely that data will grow in importance, if significant differences in wholesale quality emerge, then it is possible that new markets will be created.
There is a single UK – wide market.	Although currently the case for the mobile market, this may not be sustainable. Differences in retail pricing for fixed broadband services are emerging based on the levels of wholesale competition at individual exchanges. With the increasing importance of data in the mobile market, it seems likely that geographic variations in pricing may emerge.

3.2 Retail Competition

There is significant competition at the retail level in the UK mobile market. There are a significant number of retail providers of service, and significant switching between them. Financial barriers to entry of the market are low.



From "Consultation on assessment of future mobile competition and proposals for the award of 800MHz and 2.6GHz spectrum and related issues, Annex 6: Competition Assessment"

Source: Ofcom

The mobile market is considered to have served consumers (with low prices) and citizens (with growing penetration) well. Competition is considered to be the strong driver behind the success of the market.

However, services have been relatively slow to reach rural areas. 2G services have delivered better coverage than 3G so far, and 3G coverage is expected to remain limited in deep rural areas. The 2G markets demonstrate the impact of multiple wholesale operators competing to provide service through a larger number of retail providers. Competition at all levels works efficiently in densely populated areas to ensure low costs and innovative product design, but leads to confusion in rural areas – where retail choice is restricted by limited wholesale coverage.

The current 2G approach is highly inefficient in deep rural areas – where different areas may only be able to access services from different wholesale providers. Users are limited to patchy access, and possible requirements for multiple services for the different areas they need to operate in.

3.3 Wholesale Competition

The consultation document focuses on the need for four competing national wholesale providers, and on the critical strategic importance of the 800 MHz spectrum in the wholesale market.

The sub 1 GHz spectrum (the new 800 MHz spectrum, and existing 900 MHz spectrum) have superior performance in terms of transmission range and signal quality than higher frequency services. These characteristics make it much better for building a high quality national service, since it is far cheaper to achieve good coverage than with higher frequency services. For this reason, to be a credible national level wholesaler requires the service provider to hold significant spectrum at sub 1 GHz frequency.

Currently only two providers (Vodafone and O2) hold sub 1 GHz spectrum.

The consultation document details significant concerns regarding fewer than four wholesale providers holding sub 1 GHz spectrum. It is considered that this will result in significantly lower competitive intensity, and be damaging to the development of the market.

The 800MHz band has 2 x 30 MHz of spectrum available, and it is proposed that the auction will be in 2 x 5 MHz blocks. This allows up to 6 spectrum holders, with an expectation of at least 4 holders. One holder will be required to also maintain a geographic coverage requirement – but only one.

There is a belief under-pinning the approach that weak competition at the wholesale market leads to weak competition in the retail market. Weak competition in the wholesale market leads directly to poor service and high costs to consumers.

The belief that weak wholesale competition leads directly to weak retail competition appears at odds with the requirement that only one spectrum holder has a geographic coverage obligation. However, this direct link need not necessarily be true. There is relatively weak competition in the UK wholesale market for fixed broadband services – BT wholesale is the dominant provider, and the only available wholesale provider in many rural areas, yet strong retail competition persists, leading to competitive services and prices.

The requirement to have four national service providers under-pins all of the wholesale competition proposals. It is proposed that no additional measures are imposed to ensure access to services, and hence effective retail competition in rural areas.

3.4 Summary of Views on Competition

Strong competition at retail level is essential to maintaining affordable and innovative products for consumers. However, in the mobile market, only 17.5% of retained value is held at retail level; 42% is held at wholesale level. Without competition at wholesale level, there is limited scope for effective competition at retail level.

It is proposed that by maintaining a minimum of 4 credible national service providers, competition will be maintained at wholesale level. Further it is proposed that no further action is required to promote competition at wholesale or retail level. This appears credible, but only where all or the majority of the 4 national providers are active.

It is proposed that one frequency block in the 800 MHz spectrum (of a total of 6) will have a geographic coverage obligation (to cover 95% of the UK population). If this is to be effective in maintaining competition, then the assumption of a single UK-wide market is required to be correct. We have significant concerns that this approach will impose direct pressure on the sustainability of a UK-wide market and that the assumption will break down under these conditions – as is already happening in the fixed broadband market.

It appears that the proposals are sufficient and proportionate to ensure effective competition at wholesale and retail levels in urban areas. However, they do not appear sufficient to ensure any competition at wholesale level in rural areas, and in the absence of wholesale competition, there appears little expectation of effective retail competition without additional measures. We believe that additional measures are required to ensure widespread retail access and wholesale price control for services provided through the A3 block in the 800 MHz spectrum.

4.0 Geographic Coverage

4G mobile services are expected to be another important factor in economic development, and there is a concern that the benefit of these services should reach as much of the UK as possible. However, it is clear that normal commercial rollout will focus on more densely populated urban areas. Rollout to rural areas will be slower and less complete.

Ofcom's aim is to use the spectrum auction as a means of encouraging the maximum geographic reach of 4G services as quickly as possible.

4.1 Obligation or Funding?

Achieving widespread geographical coverage can be undertaken through imposing an obligation, or through direct funding to reach areas that would not be otherwise commercially viable. However, before the award of the spectrum, it is not clear what areas will be commercially viable.

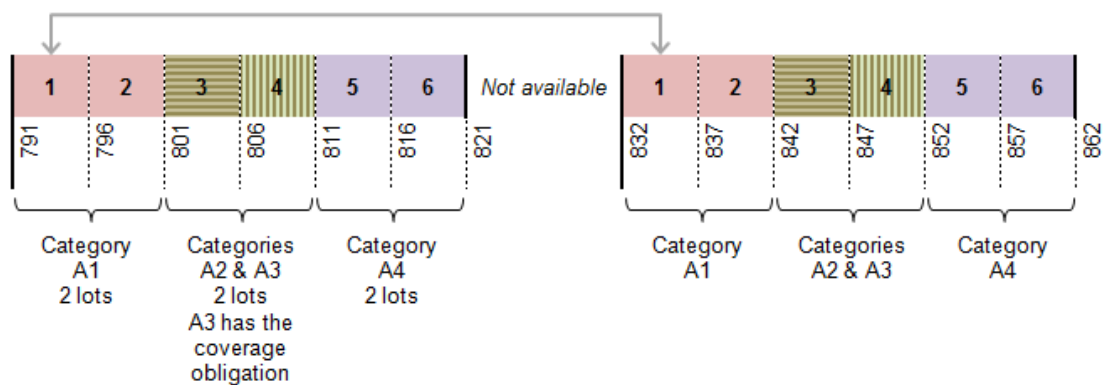
Achieving wide geographic coverage requires investment in transmission infrastructure, and availability of sites from which to operate the equipment. Ofcom's analysis judges that 95% coverage can be achieved using existing 2G and 3G sites. It is not clear whether this is O2 and Vodafone sites or Everything Everywhere sites – this is an important distinction. O2 and Vodafone already use sub 1 GHz spectrum, but Everything Everywhere do not. Everything Everywhere have more sites, but with different equipment. Clearly, different operators will have different views regarding what areas will be commercially viable based on their existing infrastructure investments.

Additionally it must be noted that 42% of the retained value in the mobile services value chain is held by the service operators. This is a significant value, and gives scope to impose an obligation, if this can be clearly evaluated by the operators and factored into their valuation of the spectrum for their participation in the auction.

Finally, it should be accepted that the conditions imposed by the spectrum licensing do not preclude further intervention to meet specific targets. For example, local gap-funding to increase coverage in specific geographic locations, or local micro-cells to boost service availability.

4.2 Coverage Obligation

The 800 MHz spectrum is the most important in terms of geographic coverage. The spectrum is divided into two large blocks of 30 MHz – one for ‘up-link’ from handset to base station and one for ‘down-link’ from base station to handset. Each of these 30 MHz blocks is divided into six blocks of 5 MHz each. The 5 MHz blocks will be sold in matched pairs – each pair including spectrum for up-link and down-link.



From *“Consultation on assessment of future mobile competition and proposals for the award of 800MHz and 2.6GHz spectrum and related issues”*

One block includes a geographic coverage obligation. The user of the A3 spectrum block will be required to meet a minimum geographic coverage requirement as a condition of using this part of the spectrum.

There is a critical question regarding whether restricting this obligation to only one operator and one part of the spectrum will be sufficient to ensure effective retail competition in rural areas. We believe the current proposed controls are not sufficient. This is discussed in Section 3 on competition.

4.3 95% Coverage of UK Population

The proposal is to require the successful bidder for spectrum block A3 to achieve 95% coverage of the UK population. There have already been calls to increase this level to 98%. Clearly, there is a concern at the 95% level – this is too low to ensure good coverage in deeply rural areas. 2G mobile voice services have reached approximately 97% coverage and much of the Northumberland Uplands area is still poorly served. 95% is not sufficient – but is the spectrum auction the most appropriate means to address this issue?

Clearly the spectrum auction is a critical point to impose appropriate behaviours on the spectrum holders. The behaviour of the A3 block holder will be critical to the quality of services in the rural areas. It is important that they are encouraged to invest rapidly to achieve maximum geographic coverage as quickly as possible. Clear and achievable coverage criteria are important factors in ensuring this investment.

Because of the geographic coverage obligation, the commercial value of the A3 block is quite different from the other blocks. The block requires the operator to operate in commercially unattractive areas. The costs of this requirement must be factored into their evaluation of the value of the spectrum block. The requirement to achieve 95% coverage using their existing sites will allow them to assess the commercial value of the block relatively accurately. Any requirement to go beyond this point will impose significantly greater uncertainty in the commercial valuation – making the auction far less reliable. There would then be a far greater risk of default on the geographic coverage obligation following the spectrum award.

We support Ofcom's analysis that 95% coverage represents an appropriate level for the obligation condition.

We believe there will be local requirements in rural areas to encourage service providers to go beyond the 95% coverage level. This will require a detailed understanding of how the 95% obligation will be achieved, and what areas will be included. For this reason we believe it will be beneficial to require operators bidding for spectrum block A3 to include details of where they will deliver coverage as a part of their bid. This will allow Ofcom to verify that their delivery plans will meet the obligation, and allow local authorities and stakeholders to identify any specific requirements for local intervention in their areas.

4.4 Definition of Obligation

The proposed definition of the geographic coverage obligation is as follows:

“An obligation to serve by the end of 2017 an area in which 95% of the UK population lives, while providing a sustained downlink speed of 2Mbps with a 90% probability of indoor reception.”

It is important that this obligation is specific, verifiable and enforceable. The proposed definition is very clear and widely understandable. We support the majority of the definition. However, the requirement for *“90% probability of indoor reception”* is considered problematic. Verification of this condition will require extensive testing. We suggest that it would be preferable to relate this condition as a required signal strength. Because the condition applies to a specific frequency spectrum, it will be possible to determine a specific signal strength that would be expected to result in a 90% probability of indoor reception for conventional devices. We suggest that this will result in a more specific condition that is simpler to verify and enforce.

It is also important that the 95% coverage is verifiable on a local basis. We propose that bidders for the A3 spectrum block should be required to submit plans to achieve 95% coverage, showing what areas they will serve. Following the award of the spectrum block, the plans for the winning bidder should be available for local verification of the areas to be served. We suggest that these plans should be at county level, and show areas and percentage of population that will be served in each county. The obligation would then be required to be met at local and national levels.

We would suggest that the plans would be subject to change control at national level, managed by Ofcom.

It will be important to differentiate between coverage that is achieved as part of the obligation, and additional coverage that may be achieved through subsequent gap-funding at local or national levels.

4.5 Investment not Competition

In Section 3 on competition, we detailed concerns regarding the focus on a single operator holding the geographic coverage obligation, and what this meant for competition. However, in terms of meeting the needs of rural areas, the most important factor is the overall efficiency of investment in infrastructure, and access to that infrastructure.

2G mobile services demonstrate a highly inefficient investment model. Different operators maintain separate infrastructures, with little effective access between them. Consequently, consumers in rural areas are limited in choice to services provided by the operator with the best coverage in the areas they want to use service in. Clearly, investment in 2G infrastructure into rural areas is highly inefficient.

Focusing the geographic coverage obligation onto one spectrum block, to be held by one operator can potentially lead to far more efficient investment in rural areas. Bidders for the A3 block will be required to factor in the requirements to operate in less commercially attractive areas, and bidders for other blocks will not. At face value this appears efficient. However, if wholesale access to the services provided through the A3 block is restricted and not available to all retail providers, then other providers will need to consider extending their geographic coverage based on geographic availability of service provision, rather than the basic commercial viability of service provision at each location – the inefficient investment model of the 2G services will be replicated.

The most desirable result for rural areas is to encourage widespread availability of services with minimum overlap in areas that are commercially unattractive, and with shared access to services in remote rural locations at retail level. Essentially this is a collaborative model in terms of infrastructure investment, with competition at retail level to ensure affordability and innovation of services to consumers.

If efficient investment in infrastructure in remote areas is to be maintained, there must be ready access to the services over this infrastructure at retail level. As a starting point, the holder of the A3 spectrum block must be required to allow all other service providers to use these services for their customers. Service providers using the other spectrum blocks will then determine whether they require infrastructure at specific locations based on the commercial returns at those locations, rather than the geographic reach of services they want to offer to their customers.

Access to services provided through the A3 spectrum block will mean that all services providers can offer their customers service across 95% of the UK population – not just the holder of the A3 block who are effectively subsidised to do this.

The wholesale price for services in the A3 block are then potentially sensitive. It is likely that some regulation will be required to ensure the affordability of these services. However, it should also be possible for other operators to offer their services into this wholesale market for remote rural services. This may apply to national operators who identify specific areas of commercial opportunity to compete with the A3 block holder in specific locations, and also to smaller operators of micro-cells, etc who can provide highly geographically focused services – for example at remote tourist locations.

4.6 Summary of Views on Geographic Coverage

With 42% of retained value in the mobile market held at wholesale service provider level, it is considered appropriate to leverage this value to impose an obligation to deliver a base level of geographic coverage. It is important that this is set at a level that its commercial costs and value can be readily determined by service providers in advance of the bidding process.

We support Ofcom's analysis that 95% is an appropriate level for the geographic coverage obligation. We suggest that bidders are required to submit plans as to how they will deliver this coverage as a part of the bidding process.

It is important that the geographic coverage achieved is verifiable. To support this we suggest that the specification of the obligation is changed slightly to include a minimum signal strength, rather than the 90% probability of indoor reception. Equally we suggest that the 95% national coverage is broken down (in the service provider's own plans) to plans at local (county) levels which will then form a part of their service delivery obligation.

The critical factor for rural areas is the depth of coverage, and the widespread availability of these services. Imposing a geographic coverage obligation on only one spectrum block enables the efficient investment in infrastructure required to achieve maximum coverage. Further measures will be required to ensure ready access to the services provided through this spectrum block to all retail providers.

Ensuring effective pricing for wholesale service in rural areas is critical. We believe this will require a mix of direct regulation and support for competition in this element of the market. Allowing other service providers to supply into the rural wholesale market will help to support collaboration and competition in the market.

5.0 Questions

The consultation raises a number of direct questions. Not all of these are relevant directly to the provision of services in rural areas. We propose to answer only those questions where a specific rural perspective is relevant. These questions are highlighted.

5.1 Mobile spectrum bands

Question 4.1: What use, if any, would you make of the top 2x10 MHz of the 800 MHz band in the second half of 2012 if it were available for use? What would be the benefits for citizen and consumers of such availability?

Question 4.2: If we were to offer shared access low-power licences in some way, do you have any comments on the appropriate technical licence conditions which would apply for the different options?

5.2 Competition assessment and future mobile markets

Question 5.1: Do you agree that national wholesalers need a reasonable overall portfolio of spectrum to be credible providers of higher quality data services? In particular, do you agree that national wholesalers need some sub-1 GHz in order credibly to be able to offer higher quality data services? Please state the reasons for your views.

Question 5.2: Do you agree there is a material risk of a significant reduction in the competitive pressures, at least to provide higher quality data services, in retail and wholesale markets without measures in the auction to promote competition? Please state the reasons for your views.

Question 5.3: Do you agree there is a risk of potentially beneficial sub-national RAN uses not developing without measures to promote competition? Please state the reasons for your views.

Question 5.4: Do you agree with the analysis that at least four competitors are necessary to promote competition?

Question 5.5: Do you agree that the specific measures we propose to take to ensure there are at least four holders of such spectrum portfolios are appropriate and proportionate?

Question 5.6: Given the measures we propose to take to ensure four holders of spectrum portfolios sufficient credibly to provide higher speed data services, do you agree that it would not be appropriate or proportionate to introduce a regulated access condition into the mobile spectrum licences to be awarded in the combined award?

Question 5.7: Do you consider that we should take measures to design the auction to assist low-power shared use of 2.6 GHz? If so, what specific measures do you consider we should take? Annexes 1-5 8

5.3 Mobile coverage and related issues

Question 6.1: Do you have any comments on the proposal to include in one of the 800 MHz licences an obligation to serve by the end of 2017 an area in which 95% of the UK population lives, while providing a sustained downlink speed of 2Mbps with a 90% probability of indoor reception? Do you think there is another way of specifying a coverage obligation that would be preferable?

Question 6.2: We would welcome views and evidence on the costs and benefits of imposing an additional coverage obligation focussed on particular geographical areas, and if such an obligation were to be imposed what might be the appropriate specification of geographic areas?

Question 6.3: Do you have any comments or evidence on whether an additional obligation should be imposed to require coverage on specific roads?

Question 6.4: Do you have any comments on our proposal not to use the combined award to address existing not-spots?

Question 6.5: Do you have any comments on our proposal not to impose 'use it or sell it' obligations but to consider including an additional power to revoke during the initial term of the licences?

5.4 Non-technical licence conditions for 800 MHz and 2.6 GHz

Question 7.1: Do you have any comments on the proposals relating to the duration of the initial licence period, our rights to revoke the licence during this period, the charging of licence fees after the end of the initial period and our additional revocation powers following the initial period?

Question 7.2: Do you have any comments on the proposal to amend the spectrum Trading Regulations to apply to the auctioned licences in the 800 MHz and 2.6 GHz bands, to include a competition check before we consent to a spectrum trade of mobile spectrum and not to allow transfers that would increase the number of 2.6 GHz low-power licensees?

Question 7.3: We welcome views on the merits of the proposed approach to information provision; in particular concerning the type of information that may be helpful and any impacts that publication of information might have both on licence holders and the wider spectrum market.

5.5 Spectrum packaging proposals for the 800 MHz and 2.6 GHz award

Question 8.1: Do you agree with the way in which we are taking account of the main factors relevant to spectrum packaging and why?

Question 8.2: Are there other factors that we should consider to develop our approach to packaging? If so which ones and why?

Question 8.3: Do you agree with our packaging proposals for the 800 MHz band? Please give reasons for your answer.

Question 8.4: Do you agree with our proposal not to allow relinquishment of 900 MHz spectrum and why? Do you have any other comments regarding our packaging proposals for the 900 MHz band?

Question 8.5: Do you agree with our proposal not to allow relinquishment of 1800 MHz spectrum and why? Do you have any other comments regarding our packaging proposals for the 1800 MHz band?

Question 8.6: Do you agree with our proposal not to make provisions to include 2.1 GHz spectrum in this auction and why?

Question 8.7: Which aspects of our packaging proposals for the 2.6 GHz band do you agree with and why?

Question 8.8: Do you agree with our proposed approach for eligibility points and why?

Question 8.9: Which approach to reserve prices do you think would be most appropriate to secure optimal spectrum use in the interests of citizens and consumers, and why?

5.6 Auction design and rules proposals for the combined award

Question 9.1: Do you agree with our proposals for the auction design and why?

Question 9.2: Do you have any comments on the proposed auction rules as explained in section 9, Annex 9 and Annex 10?

Question 9.3: Do you have any comments on how we should approach the payment of deposits and licence fees?

5.7 Revising annual licence fees for 900 MHz and 1800 MHz

Question 10.1: Do you have any comments on our proposal to use 800 MHz price information as derived from the auction to estimate the full market value of 900 MHz spectrum? Question

10.2: Do you have any comments on our proposal to use an average of 800 MHz and 2.6 GHz price information as derived from the auction to estimate the full market value of 1800 MHz spectrum?

Question 10.3: Do you have any comments on the proposed approach to convert lump sum amounts into annual payment?

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