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Response to Analysys' Response to Digital One's Comments on Band III Report Prepared for Digital One

NERA

Economic Consulting

FINAL REPORT

NON-CONFIDENTIAL VERSION

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1. Introduction

This report, which was commissioned by Digital One, has been written in response to a report by Analysys entitled “Response to Digital One Comment on Band III Report”¹ (hereafter referred to as “Analysys’ response”).

The main focus of this latest NERA report is Section 4 of Analysys’ response, which addressed comments made by NERA in an earlier paper entitled “Analysis of Ofcom’s Impact Assessment of the Allocation of Available Spectrum within VHF Band III and L-Band”.²

The earlier NERA report, issued in February 2005, analysed the economic impact assessment prepared by Ofcom as part of its consultation on the allocation of available spectrum within VHF Band III and L-Band.³ As part of this report, NERA also reviewed the results of a study carried out by Analysys, DotEcon and Mason (hereafter referred to as “ADM”)⁴ since many of Ofcom’s conclusions drew upon it.

¹ A report written for Ofcom, 2 June 2005

² Prepared for Digital One, 25 February 2005

³ “Radio- Preparing for the future: Phase 1 developing a new framework”, 15 December 2004. The impact assessment is contained within Annex E of the consultation document.

⁴ “Assessment of options for allocating available spectrum within VHF Band III and L-Band: Final Report”, December 2004 (available online: <http://www.dotecon.com/publications/>)

2. General Remarks

In its consultation document,⁵ Ofcom addresses a number of concerns raised by Digital One and NERA in the previous stage of the consultation process. [CONFIDENTIAL INFORMATION REMOVED]

Ofcom summarises the three main criticisms of ADM's report as being:⁶

1. The precision of quantifications of the benefits of allocating additional spectrum to PMR or T-DAB use.
2. The method of assessing the economic benefits of allocating spectrum to national multiplexes as against an allocation to local multiplexes
3. The method of quantifying the benefits of using national multiplex capacity for the provision T-DAB mobile and portable multimedia services.

With regards to the first criticism, Analysys argued that the relative values of these economic benefits were not material to the conclusions of the ADM study to allocate the spectrum to T-DAB use.

In response to the second criticism, Analysys and Ofcom explain that they did not use the calculations to support the proposals on local versus national allocation. Analysys argues that Ofcom's proposal to allocate three spectrum blocks to local in-fill is a public policy decision and not an economic one and therefore the accuracy of the estimates of the benefits is unimportant. NERA is unconvinced by this argument.

In relation to the final criticism, Analysys argues that the estimates were intended to be indicative and implies that the results were also not relied upon in Ofcom's conclusions. In its response, Analysys argues that, if a national block is used for multimedia services and not for a national broadcasting multiplex, then it will be because the economic benefit of the latter will be higher. As NERA argues in this report in Section 3, this argument that the lower bound of the economic value of the spectrum block is the economic value of a second national digital radio broadcasting multiplex is flawed (even if the value were correctly calculated).

In its response, Analysys incorrectly states that NERA was confused over the objective of the analysis. NERA understands that ADM's calculations of the benefits of a second national multiplex and of alternative uses were intended to estimate the economic benefit of leaving the allocation of the spectrum to the market. NERA's main criticism of the economic impact assessment was that it did not go far enough to identify different policy options. When looking at the allocation options for the fifth block of spectrum, neither ADM nor Ofcom have identified policy options alternative to leaving it to the market. By not fully considering

⁵ "Radio – Licensing Policy for VHF Band III, Sub-band 3", Consultation Document published by Ofcom, 19 October 2005

⁶ Paragraphs 5.42-5.45 of "Radio – Licensing Policy for VHF Band III, Sub-band 3", Consultation Document published by Ofcom, 19 October 2005

the implications of leaving the allocation of spectrum to the market, ADM have potentially overestimated the benefits and have failed to identify potential problems with this policy option. This means that other policy options have not been given due consideration.

3. Response to Analysys' Review of NERA's Comments

In this section we respond to Analysys' comments on the NERA report that are contained in Section 4 of "Response to Digital One Comments on Band III Report"⁷. The numbers in square brackets refer to the comment numbers used in the Analysys report.

[4.1 and 4.2] NERA's argument was that, in order to be able to make an informed decision about the best policy option, the economic impact assessment should address a wide range of allocation options. While leaving the allocation of the fifth spectrum block to the market is one policy option another policy option would be to introduce some sort of regulation for the allocation of the fifth spectrum block in the short to medium term. ADM did not analyse this policy option.

[4.3] Analysys argues that the ADM study did not seek to examine in detail the impact of individual options on individual stakeholders. However, given that Digital One is currently the sole national broadcasting multiplex licence holder, it is a fundamental part of the market and therefore due consideration should have been given to the effect of the policy options on it. The impact of a regulatory change on the existing market should underlie any conclusions about the best policy option. Had, for example, ADM found that the introduction of a second national multiplex would put the first one out of business many of the benefits modelled (which were based on the assumption that there would be at least two national multiplexes since entry to the market would increase the number of multiplexes in the long term) would fail to materialise.

[4.4] Analysys' response does not address NERA's concern over ADM's assumption that allocating more spectrum blocks to T-DAB will necessarily result in a commensurate increase in multiplex capacity and use. Although Analysys accepts and agrees with NERA that this assumption may not be valid, it does not seem to accept that using this assumption will lead to an overstatement of the benefits. Instead, Analysys seems to imply that, although the use of spectrum may take longer than expected, it will eventually be used in the most economically beneficial way.

However, if it does take longer for more radio stations to enter the market, the associated benefits will be delayed and therefore the net present value of any benefits will be lower.

[4.5] Analysys argues that, since the choice of usage of multiplex capacity is left to the market, it does not matter whether or not it has taken into consideration how much of the spectrum block for national coverage would be used for broadcasting and how much would be used for other purposes. It argues that, if capacity is used for the provision of multimedia services, "it is likely to be because the benefits for such services exceed the value of use of the same capacity for broadcasting. There may therefore be additional benefits to allocating spectrum to T-DAB".

The way in which firms decide to use spectrum is likely to depend only on the value to firms of each of the chosen uses. However, the value to firms, which is measured by producer surplus, only represents part of the economic benefit from using spectrum. The other part,

⁷ Report prepared for Ofcom, 2 June 2005

which is likely to be the dominant element, is consumer surplus. This depends on consumers' willingness to pay which in turn is determined by how much they value the service relative to the price. Since a firm does not consider net consumer benefits as part of its business decisions, it does not necessarily follow that the market will always choose to allocate resources the way that maximises total economic welfare. Another way of saying the same thing is that a ranking of spectrum allocation decisions based on producer surplus cannot necessarily be assumed to be the same as a ranking based on total economic welfare.

[4.6] While Analysys may hold the opinion that Ofcom's decision to allocate spectrum blocks to local coverage in-fill would not be swayed by a lower estimated economic benefit, the purpose of an economic impact assessment is still to inform policy decisions. Therefore, the benefits should be estimated in the most accurate way possible.

Moreover, the earlier proposal to allow the remaining two or three blocks to be used nationally appears to have been an economic one based, at least in part, on ADM's calculations.⁸ If these calculations were inaccurate, Ofcom's conclusions may be less robust. ADM calculated the overall benefits of this policy option using the economic benefits of allocating spectrum blocks to local coverage in-fill. These calculations were based on the assumption that the national spectrum blocks would be used for national digital radio multiplexes without considering how realistic this would be under different licensing options. If licences permitted a more market based approach to allocation it is not clear what the actual outcome and associated benefits would be.

[4.7] NERA does not feel that Analysys has sufficiently addressed the two issues that were raised in this section.

The first issue that NERA raised was that ADM did not extend its analysis to estimating the effect of a new national digital multiplex on existing local, regional and national multiplexes. If the analysis did extend this far, it was not made clear in the reports. This lack of transparency – which Analysys has not clarified in their response – makes it difficult to determine the validity of ADM's arguments.

The second issue that NERA raised was that, if increasing digital multiplex capacity resulted in lower carriage charges, this would reduce the revenue of existing digital multiplexes. If the allocation were left to the market it is not clear that the benefits calculated by ADM would actually materialise. By failing to take into account whether entry into the market would be profitable – in other words, whether firms would enter the market and whether there would be new radio stations – ADM has potentially overestimated the potential benefits.

[4.8] NERA recognises that it may have been beyond ADM's remit to consider regulation of digital radio broadcasting to safeguard the market. However, NERA's analysis was based not just on ADM's report but also on the consultation documents and their annexes prepared by Ofcom. NERA notes that Ofcom did not consider these regulatory issues either.

⁸ See Section E1 of "Appendix E: Regulatory impact assessments", "Radio – Preparing for the future; Phase 1: Developing a New Framework", published 15 December 2004

NERA also argued that increasing the capacity of commercial radio may not necessarily increase product differentiation. While accepting this possibility, Analysys argued that the scope for product differentiation would be increased. NERA accepts that increasing capacity increases the scope for differentiation. However, NERA would like to reiterate its point that this increased scope will not necessarily be exploited.

Therefore it cannot necessarily be assumed that ADM's estimate of the increase in value of 40% is conservative. If increased product differentiation does not materialise, 40% may not be conservative enough.

Analysys has misinterpreted NERA's comments about regulation. NERA did not suggest that restricting entry would promote increased quality but we do suggest that quality gains could be promoted with other forms of regulation.

[4.9] NERA accepts Analysys' explanation that ADM did assume that the incremental benefits of new multiplexes are decreasing.⁹ However, it was not clear from the original report *why* ADM believed that they were decreasing. NERA wished to highlight that there may be additional factors, not discussed by ADM in their reports and possibly not considered, that should be evaluated and, if necessary, estimates of values should be revised downwards. Although Analysys believes that its assumptions already take account of the issues raised by NERA, it was not clear from the original report that this was the case.

[4.10] The point that NERA was seeking to make was that ADM has not considered whether digital radio stations will actually use the extra multiplex capacity if it becomes available. Therefore, while there may be winners and losers, what is important is the net effect on the number of radio stations. By not examining the profitability of the digital radio market, ADM has not determined whether its forecasts of the number of digital radio stations are realistic.

While potential bidders for spectrum for digital multiplexes will take into account competition in the downstream market (i.e. in the digital radio station market), the evidence for excess demand in the national multiplex market is limited. Although various companies have expressed an interest in bidding for the capacity there is no guarantee that they will actually bid. Furthermore, not all parties responding to the consultation process believed that there was excess capacity.¹⁰

There is still insufficient evidence to suggest that the listener base will actually increase sufficiently to allow all the multiplex operators to remain in the market. As discussed previously, ADM's estimates of the increase in value of digital radio may be overstated. This could in turn lead to overestimation of the increase in DAB listeners arising from the deployment of new digital multiplexes.

[4.11] NERA recognises that there is a pattern of diminishing value of extra radio stations. However, ADM does not provide any evidence of how this pattern is calculated. The source of Exhibit 4.1 is Analysys and it is still not clear how it arrived at these figures.

⁹ Analysys refers the reader to Exhibit C.22 of its report but it looks like this could be a typing error. It is difficult to determine to which Exhibit Analysys is referring.

¹⁰ See paragraphs 6.41- 6.54 of "Radio – Licensing Policy for VHF Band III, Sub-band 3", Consultation document published 19 October 2005

NERA discusses the implications of incorrectly calculating the increase in consumer value as part of issue 4.8 above. These problems are significant because the sensitivity analysis shows that consumer surplus varies greatly according to the marginal value of each additional radio station.

[4.12] The issues surrounding the robustness of the methodologies that ADM has used to assess the impact on listeners are discussed as part of sections 4.18 onwards.

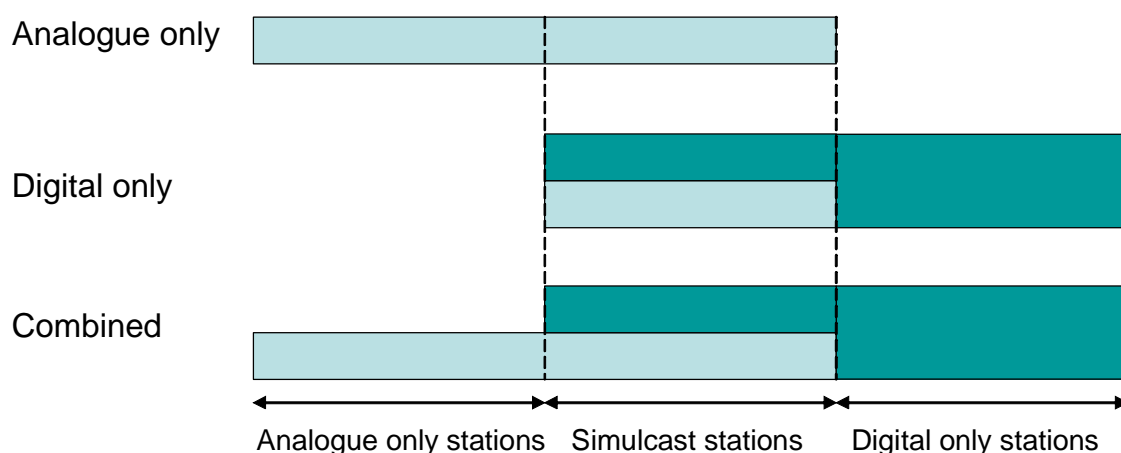
[4.13] NERA maintains its argument that looking at the difference between the price of a digital-only radio set and an analogue-only radio set does not give you an indication of how much the consumers value the digital radio service.

When consumers buy radio sets they are faced with the choice between three main types of radio

1. an analogue-only radio set;
2. a digital-only radio set; or
3. a combined analogue and digital radio set.

Each type of radio set offers the consumer a different combination of services. The benefits of each radio set are illustrated in Figure 3.1 below. On an analogue-only radio set the listener is able to access a given number of analogue channels at a given quality. Buying a digital-only radio set allows the listener to access some but not all of the channels that are available on the analogue network but at a higher quality (the listener can access channels that are simulcast over digital multiplexes) and also some additional digital-only radio stations. Buying a combined set allows the listener to access all of the above. The darker shaded areas in the figure below indicate the value to the consumer of having a digital radio (both in terms of higher quality of simulcast channels or in terms of being able to access digital only channels).

Figure 3.1
Composition of Value of Different Types of Digital Radio Sets



It can be seen that by calculating the difference in price between a digital only-radio set and an analogue-only radio set, ADM would underestimate the value of digital radio. This is because there are a number of analogue channels that are not available on a digital only radio set. Therefore, the correct differential would be between the price of a combined radio set and that of an analogue only set.¹¹

[4.14] The issues surrounding the robustness of the methodologies that ADM has used to forecast demand are discussed as part of the sections 4.18 onwards.

[4.15] Exhibit C.4 shows how ADM expect the price premium of DAB sets to fall over time in response to increased take up. However, the take-up in this graph – and presumably the figures underlying the study – depends only on time and not on other factors such as an increased number of radio stations in the UK.

Analysys notes that “the pricing of receivers will depend on the take-up of DAB across the world – not just take-up in the UK”. However, this was not clear from its initial report.

[4.16] Liberalising the use of spectrum and promoting technology and service neutrality are both elements of promoting competition. While Ofcom does have a mandate to promote competition, this is not its only goal.¹² Moreover, sometimes it may be inappropriate to promote competition in the short term because of market failure.

[CONFIDENTIAL INFORMATION REMOVED]¹³

In summary, NERA maintains its view that allowing blocks to be allocated to national commercial digital radio will create a perception of increased regulatory risk and there is insufficient economic evidence to conclude that this would be the best policy option.

[4.17] The additional information in this paper does provide some clarification of some of the issues that were not clear in ADM's original report and annexes. NERA believes that leaving key decisions to the market where *optimal* would be the most efficient policy option. However, as argued above, leaving decisions to the market may not always result in total economic welfare being maximised.

[4.18] Analysys' response here provides a clearer explanation of this issue that was not clear from the original report.

[4.19] NERA's main arguments here were that it is incorrect to argue, as ADM did, that “the surplus that is generated could either be in the form of consumer surplus (in that customers are charged the full value of the benefit) or producer surplus (savings for bus companies)”.¹⁴ This statement is incorrect for a number of reasons. Firstly, if customers were charged the full

¹¹ This is true if there are no synergies from the goods being bundled together. However, it is likely that there are synergies and therefore consumers are willing to pay a higher price for the bundle than they would if the services were supplied separately. Simply calculating the price differential, therefore, will tend to overstate the value of digital radio.

¹² Ofcom's statutory duties under the 2003 Communications Act include furthering “the interests of consumers in relevant markets, where appropriate by promoting competition” <http://www.ofcom.org.uk/about/sdrp/>

¹³ [CONFIDENTIAL INFORMATION REMOVED]

¹⁴ Page A-29 of the ADM report

value of the benefit, there would be no consumer surplus since the benefit would go to producers. Secondly, as Analysys recognises in its response (page 31) it is “nonsensical” to seek to charge each and every customer the full value of the benefit in a market where price discrimination is not possible. Thirdly, savings for bus companies do not always manifest themselves as producer surplus since savings do not always result in higher profits. Fourthly, it is not clear why real-time passenger information would result in cost savings for the transport companies.

The definition of consumer surplus provided by Analysys in its response is the one used by economists. However, it is still not clear that this is what ADM have actually calculated.

Analysys argues that it looked at the difference between what customers are willing to pay minus what they might actually be charged for the service. It is not possible to tell whether or not ADM have taken into account the effect this increase in price will have on the number of bus journeys per annum.

NERA was not suggesting ADM had assumed that transport companies would charge each and every consumer their willingness to pay. NERA was trying to highlight the lack of transparency in ADM's methodology and the lack of coherence in explaining it. This confusion still remains.

It seems that ADM has taken the number of bus journey per annum and multiplied it by the value of real time passenger information per journey (Exhibit A.26). This could only be correct if the value of real time passenger information per journey is for the *average* passenger. If this is what ADM have done, this would give the gross consumer benefit of real time passenger information. However, it is not clear that the value used was indeed for the average passenger.

These issues aside, assuming that the price increase is only sufficient to cover costs means that calculating the total cost (which is what ADM have done, see Exhibit A.26) and subtracting it from the gross consumer benefit of real time passenger information will result in the consumer surplus of real time passenger information.¹⁵

While it may be possible to increase ticket prices by more than the cost of the system this would result in a lower number of bus journeys per year. Increasing prices would reduce consumer surplus and increase producer surplus. The overall effect would be a reduction in total economic welfare (economic benefit in the terminology of Analysys). This is because there would be a deadweight loss associated with charging above marginal cost (inefficient under-consumption). Analysys acknowledge this in their response but it is still not clear whether Analysys has calculated the effects of this.

Importantly, as Analysys itself recognises “the assessment of benefits generated by the use of real-time passenger information systems is highly speculative”.¹⁶ Therefore, in NERA's

¹⁵ Nevertheless, such pricing is not consistent with profit maximisation where the firm sets quantity where marginal revenue is equal to marginal cost. Neither is it consistent with a firm operating in a perfectly competitive environment which would set price equal to marginal cost and this would also coincide with total social welfare maximisation.

¹⁶ See page 30 of the Analysys response

view, it is difficult to determine why Analysys is still able to conclude that “neither of these economic assessments directly affects [its] study recommendations.”¹⁷

[4.20] NERA accepts this explanation of a point that was unclear from the original study. However, there is some concern over why this explanation was not offered in the original report and whether it was actually considered in the modelling process.

[4.21] This issue is addressed under section 4.13

[4.22] It may be true that the primary determinants of the allocation decision between T-DAB and PMR were not the results of the economic impact assessment. However, the results of the economic impact assessment have been used to conclude that the best use is T-DAB blocks should be determined by the market.

The potential economic value of spectrum derived from its use for national multiplexes, even if correctly estimated, cannot automatically be assumed to be an underestimate (lower bound) of the value of leaving the allocation to the market. (See also 4.17).

A firm will only use the nationally assigned T-DAB block to deploy a series of local multiplexes if it believes that this will be more profitable than using it for a national multiplex. The firm's decision to do this does not take into consideration the effect on consumer surplus. Therefore, the net effect on total economic welfare may be negative or positive. In other words, using the potential economic value of spectrum derived from its use for national multiplexes as a proxy for the economic value generated from leaving the allocation to the market may overstate the value. This means ADM's conclusion that leaving the allocation of national spectrum blocks not reserved for local services should be left to market forces alone¹⁸ could be incorrect.

[4.23] This issue is addressed in section 4.15

[4.24] There are several issues in this section.

Firstly, it was not clear from the original report what ADM was calculating as the economic benefit and whether this was consumer surplus or gross consumer benefit. In particular ADM used the terms “value to listeners” and “consumer surplus” interchangeably, when they are palpably not the same thing. Consumer surplus is equal to value to consumers less what they pay. Analysys does not directly address this point. It argues that it calculated consumer surplus but does not explain precisely how it did this. As a result, it is still not clear whether consumer surplus was in fact estimated correctly.

Secondly, Analysys argues that an additional multiplex will lead to an upward rather than the outward shift in the demand for DAB radio services to which NERA referred to its earlier report. NERA is unclear about the point that Analysys is trying to make about the demand curve shifting “upwards” rather than “outwards”. An increase in demand means that the

¹⁷ See page 31 of the Analysys response

¹⁸ See page 16 of the Analysys response

demand curve exhibits an outward shift relative to the origin, which is exactly what is shown in Analysys's Exhibit 4.2.

Thirdly, NERA raised concerns over whether ADM had taken into account the time necessary for the benefits of increased radio stations to manifest themselves. Analysys have responded by saying that their "analysis takes account of the time take for the deployment of a national multiplex." However, this still does not take into account the time necessary to attract radio stations and for listeners to discern the value.

[4.25] NERA recognises that the sensitivity analyses may go some way to capture the uncertainties that NERA highlighted. However, these were not discussed in the original report and therefore NERA remains unconvinced that the sensitivity analyses go far enough to capture these uncertainties.

[4.26] NERA does not feel that Analysys' response sufficiently addresses the concerns that NERA has raised in this section of their report.

A key point that NERA raises is that ADM has significantly underestimated the cost of operating a national multiplex. This will lead to a significant overstatement of the benefits of a national multiplex. In spite of its potential importance, Analysys has not addressed this point.

A second point is that ADM did not determine the consequences of having different types of licences (either a licence under the Broadcasting Act or under the Wireless Telegraphy Act). Again, Analysys does not address this point.

Analysys appears to argue that neither of these last two issues is important because there is so much uncertainty surrounding the estimates of the benefit of multimedia services over T-DAB. Instead, Analysys seems to arguing that, if the spectrum is used for multimedia services, it will be because the economic value of this is greater than for a national broadcasting multiplex. As discussed previously (see section 4.22 and 2.17), using the economic value of a national broadcasting multiplex is not necessarily a good proxy for the lower bound of the economic value of the spectrum block.

4. Summary and Conclusions

In summary, while Analysys' response does go some way to explain the uncertainties that NERA highlighted in its previous report, it fails to address a number of important points that were raised. In addition, some of Analysys' arguments are unconvincing.

NERA does not accept that Ofcom's and ADM's economic impact assessments have fully considered all the different policy options and their associated economic benefits. When looking at the options for spectrum blocks not reserved for local in-fill, neither ADM nor Ofcom have examined the impact of allocation options alternative to leaving it to the market. In particular, neither of them have looked at the likely economic impact of different licensing options. This means that other policy options have not been given due consideration and Ofcom's conclusions and recommendations may not be the best both from an economic view and a public policy perspective.

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