Summary of Report for the ACCC

Review of the mobile terminating access service cost model submitted by Vodafone

23 November 2005

Our ref: 250-484

Analysys Consulting Limited
St Giles Court, 24 Castle Street
Cambridge, CB3 0AJ, UK
Tel: +44 (0)1223 460600
Fax: +44 (0)1223 460866
consulting@analysys.com
www.analysys.com

Review of the mobile terminating access service cost model submitted by Vodafone

Summary of Report for the ACCC

Contents

Analysys

Public summary of report

On 30 June 2004, the Australian Competition and Consumer Commission (ACCC) declared the Mobile Terminating Access Service (MTAS) under Section 152AL of Australia's *Trade Practices Act 1974* (the Act). At the same time, the ACCC also made a pricing determination setting out pricing principles for the MTAS. Following this determination, the ACCC received notification of an ordinary access undertaking in relation to the MTAS from Vodafone Australia. This undertaking specifies the terms and conditions under which Vodafone would be willing to supply the MTAS – along with a higher charge than the one determined for MTAS by the ACCC. In support of the access undertaking, Vodafone has provided a detailed model associated with the estimation of the cost of providing the MTAS on its network. In this regard, Vodafone engaged PricewaterhouseCoopers (PwC) to develop the model. The ACCC released a discussion paper on the undertaking, and received third-party comments that covered both qualitative and quantitative aspects of pricing and costing for the MTAS.

On 7 September 2005, Analysys was commissioned by the ACCC to examine the supporting cost model[1] and related third-party submissions, and to produce a final report providing advice and specifications on various aspects of the model. Our specific remit covered the following areas of examination:

- magnitude of network costs and assets related to the provision of the MTAS
- methodology and magnitude of identifying network and non-network common costs
- service routeing factors
- current cost adjustments
- identification of costs associated with SMS and GPRS
- attribution of licence fees to the MTAS
- appropriate level of the weighted average cost of capital (WACC)
- concerns raised by third parties on costing methodology or calculations.

[1] We have reviewed the model denoted as the financial year end 2003 model. We are aware that on 31 October 2005 Vodafone submitted to the ACCC an updated model for financial year end 2004. We have not reviewed this updated model.

With regard to our examination of the methodology for recovering network and non-network common costs, the scope of our remit specifically excluded advice on Ramsey pricing and the allowance of a network externality surcharge. We have commented on the mark-up mechanism applied only in terms of the implications for the cost model's results compared to the equi-proportionate mark-up (EPMU) of the total-service, long-run incremental cost plus mark-up (TSLRIC+) standard outlined in the ACCC's June 2004 report.[2]

A set of clarification questions were sent to Vodafone on 3 October 2005, and a response received on 17 October 2005.

This public summary of our report provides the major conclusions of our investigation of the Vodafone cost model. For brevity, minor conclusions and uncertainties that are considered to be marginal are not listed in this public summary. A commercial-in-confidence report has been provided to the ACCC, Vodafone and third parties involved in a review of the undertaking.

The remainder of this summary is structured as follows:

- model results for unit costs of the MTAS and other services
- conceptual aspects of the proposed model
- quantitative (calculation and input) aspects of the model that are questionable
- conclusion on the magnitude of unit cost.

1 Model results for unit costs of the MTAS and other services

Vodafone has developed a fully-allocated 2002/03 unit cost for each of the following services included in the model:

- minutes to other local operators (OLOs)
- on-net minutes
- incoming minutes from OLOs
- SMS messages (converted into a minute equivalent volume)
- GPRS Mbytes (converted into a minute equivalent volume).

[2] The ACCC's *Mobile Terminating Access Service* Report, 30 June 2004, pages 202–210.

The fully-allocated unit cost is built up from direct cost allocations, and indirect cost mark-ups. The structure of direct and indirect costs determined by the model is shown in Exhibit 1 below. In this exhibit, indirect costs are marked-up onto those cost elements supported by the indirect cost. The size of each box is illustrative of its overall magnitude in annualised cost terms.

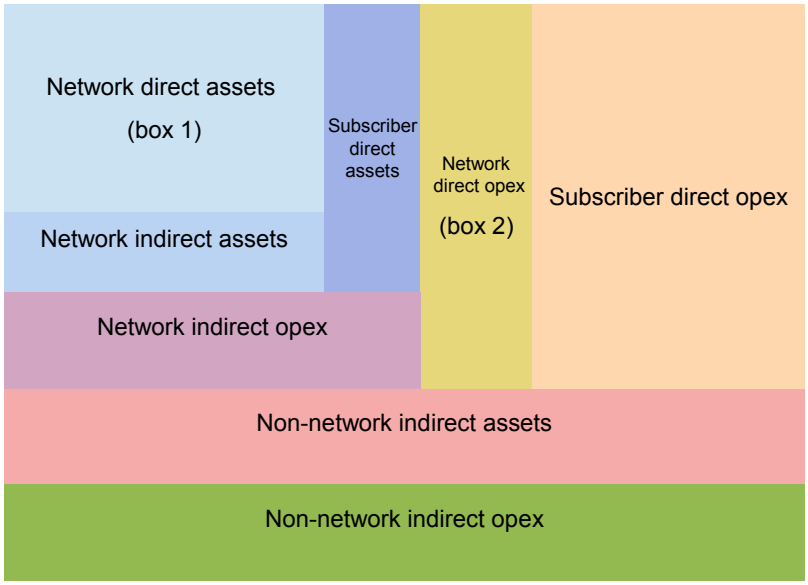

Exhibit 1:
Direct and indirect cost schematic of the Vodafone model [Source: Analysys]

The four indirect cost components correspond to a cost-based mark-up of relevant costs. These EPMU percentages are as follows:

- network indirect assets: [✂][3]
- network indirect opex: [✂]
- non-network indirect assets: [✂]
- non-network indirect opex: [✂].

Direct unit costs for each service are derived from the four direct cost components, routeing factors, and 2002/03 service volumes. The relevant results for MTAS minutes are:

- network direct assets – allocated direct cost per incoming minute = [✂]
- network direct opex – allocated direct cost per incoming minute = [✂]

3 Commercial-in-confidence information in this summary has been removed and replaced by [✂]

The model calculates a marked-up cost of termination by sequential application of the four indirect mark-ups. By this sequence, it arrives at a fully-allocated cost (FAC) per minute for the MTAS of AUD0.1615. Since the model is a fully-allocated cost model, it ensures full and exact cost recovery of all annualised capital and operating expenditures that are modelled for 2002/03, including an allowance for return on capital (specified by the WACC). The fully-allocated approach also distributes [✂] of total annualised costs to SMS plus GPRS volumes.

2 Conceptual aspects of the proposed model

PwC has built a top-down model for Vodafone that estimates fully allocated costs for six services, including mobile termination. Vodafone has not calculated costs according to total service long run incremental cost (TSLRIC) principles for MTAS, claiming that it had insufficient time and resources for such an exercise. This limits the usefulness of attempting to compare the model with the approach that should be taken to generate TSLRIC-based estimates; no claims are made that the model makes such calculations. The most important difference between Vodafone's FAC approach and a LRIC method is in the identification of common and total-service incremental costs. The Vodafone model identifies a range of indirect cost components which may or may not be (fully or partially) common costs; it also groups together direct network costs which may be partially common costs.[4]

The model has converted historic costs into current costs for the network assets. It estimates the gross replacement costs (GRC) of these assets by multiplying the quantities of these assets by the current cost. No adjustments are made to the costs of non-network capital expenditure (capex) or network operating expenditure (opex).

Apart from the historic-to-current-cost adjustment, the model is based on Vodafone's actual costs rather than the costs of a hypothetical efficient operator. Vodafone argues that it is efficient in the costs it incurs and there is no need to make further adjustments to the costs in the model. For costing purposes, PwC has utilised 2G costs, 2G demand and assumed traffic levels that are constant (at 2002/03 levels) without any future migration to 3G services. The model does not have the functionality to consider how costs might vary if

[4] For example, non-traffic-driven rural radio sites and equipment.

Vodafone carried a different traffic load or offered coverage over a different area. For the purposes of producing top-down FAC results these modelling decisions are reasonable. However, this means that the model cannot indicate the implications should the ACCC decide that the undertaking should be based on the costs of a hypothetical operator, e.g. one with 25% market share carrying a proportion of its traffic using 3G technologies.

We have concerns about how Vodafone has arrived at a proposed cost-based price for 2007/08. The model uses 2002/03 data to estimate costs in that year. Annualised capital costs are estimated using a tilted annuity, which in most cases results in the capital costs being brought forward (because of assumed negative price trends). This is reasonable, but the same principles should apply when thinking about what costs might be in 2007/08. Instead, Vodafone argues that there is no basis to assume that forward-looking efficiency gains are likely to exceed – or even match – inflation forecasts. It concludes, therefore, that the 2002/03 estimates should be used when setting cost-based prices in 2007/08. This statement would seem to imply that the price trends PwC has used should all have been 0% (i.e. no tilt), which would result in a lower FAC estimate for 2002/03. Rather than assuming constant asset prices, we suggest that tilted annuity calculations should be adapted so that they can estimate annuity charges for later years. These estimates could be combined with opex and non-network capex levels that, as a first approximation, are the same as in 2002/03 to generate FAC estimates for later years.

Vodafone has adopted a reasonable approach to determining a cost of capital. The fact that its estimated cost of capital is slightly higher than used for fixed services is not of particular concern, and is in line with the different fixed and mobile costs of capital applied by numerous other telecoms regulators. The lack of data to determine an asset beta for a MTAS-only operator means that it is reasonable that Vodafone has not attempted to estimate a more-disaggregated cost of capital.

3 Quantitative aspects of the model that are questionable

We list below the main quantitative points we believe represent concerns with the model.

- Numbers of units and unit prices are not supported in terms of their relationship to historic gross book value (GBV).

- The asset lifetime for site acquisition ([✂]years) is short.

- The tilted annuity formula applied in the model is incorrectly coded.

- A number of network asset types have been allocated to *Network Indirect* costs, which we believe can be better allocated. These are: VMS system, repeaters, SMSC, STP, IN, secondary GSM licence fees.

- The conversion of SMS and GPRS traffic to voice equivalent minutes is consistent with the approach originally developed by Analysys. We would suggest, however, that the non-voice loading for some network assets (e.g. MSC, HLR) should be expressed on an event basis.

- The radio routeing factors used do not take into account the proportion of incoming calls which are diverted to voicemail systems, and which therefore do not use significant radio layer resources. However, reducing the incoming call radio routeing factor to account for this effect amounts to a specific exclusion of the recovery of voicemail deposit and retrieval costs from incoming callers.

- Network operating expenditure categories of Processing Platforms, Applications Support, Solutions and Partner Services could have a more accurate allocation than simply to *Network Indirect* costs.

- A historic accounting depreciation approach has been taken for non-network assets. This is inconsistent with the current costing approach proposed, although we would expect a limited impact on overall results from this choice.

- The allocation of non-network Computers and F&F assets does not appear to relate to a headcount breakdown of Vodafone's non-network staff. We suggest a material allocation of these assets should be made to Retail services. The same criticism applies to the allocation of certain significant non-network operating expenditures.

- The marking-up of *subscriber direct assets* (retail billing system) costs by *network indirect opex* does not appear consistent with the cost categorisations developed by Vodafone.

- The final results for the year 2002/03 (average date effectively 30 September 2002) are significantly out of date, and further applied directly as the nominal target charge in 2007/08. The tilted annuity formula has not been used to extract the cost in future years.

4 Conclusion on the magnitude of unit cost

A summary of our views on the magnitude of unit cost is given in the table below. It should be noted that we have not adjusted the model calculations to implement all our suggested improvements in combination. All but two of these adjustments reduce the cost of the MTAS, and all are material in nature (i.e. greater than 1%). Therefore we expect that Vodafone's proposed model result materially overstates the result that would be achieved by adopting all or most of our suggested revisions.

Issue	*Commentary on issue*	*Potential impact*
Revision of asset lifetimes	Sites increased to 15 years	-4% reduction in unit cost of termination
Correction of the tilted annuity formula		-6% reduction in unit cost of termination
Reduction of radio routeing factors to reflect calls diverted to voicemail	Estimated at 15% of incoming and on-net calls	-5% reduction in unit cost of termination
Revision of non-network asset and opex allocations	Effect depends on proportions allocated to retail activities	Could be up to -15% reduction in unit cost of termination if significant costs are allocated to retail activities
Removing subscriber direct assets from network opex mark-up		Increases unit cost of termination by around 1%
Extraction of cost from later year of tilted annuity calculation	Overall price trend is, as modelled, a slight reduction	Price extracted from later year of tilted annuity would therefore be lower, though cumulative inflation would also need to be applied to develop a nominal target charge

Exhibit 2: *Summary of conclusions regarding the model and associated impacts [Source: Analysys]*