

AUSTRALIAN COMPETITION TRIBUNAL

Application by Vodafone Network Pty Ltd & Vodafone Australia Limited [2007] ACompT 1

TRADE PRACTICES – application pursuant to s 152CE(1) of the *Trade Practices Act* 1974 (Cth) – application for review of decision of Australian Competition and Consumer Commission to reject access undertaking – mobile terminating access service – whether terms of the undertaking are reasonable – efficiency of costs – benchmark efficient operator – fully allocated cost model – pass through safeguard

Trade Practices Act 1974 (Cth): ss 103(1)(c), 152AA, 152AB(1), 152AH, 152AL, 152AQA, 152AR, 152BS, 152BV(2) 152BU(2), 152CE(1), 152CF, Pt XIC

Telecommunications (Consumer Protection and Service Standards) Act 1999 (Cth): ss 154, 155

Telstra Corporation Limited [2006] ACompT 4, applied

Application by Optus Mobile Pty Limited & Optus Networks Pty Limited [2006] ACompT 8, applied

Re Seven Network (No 4) (2004) 187 FLR 373, approved

Re Michael; Ex parte Epic Energy (WA) Nominees Pty Ltd (2002) 25 WAR 511, cited

Application by East Australian Pipeline Limited [2004] ACompT 8; [2005] ACompT 3, cited

File No 4 of 2006

RE: APPLICATION FOR REVIEW OF THE FINAL DECISION OF THE AUSTRALIAN COMPETITION AND CONSUMER COMMISSION DATED 31 MARCH 2006 IN RELATION TO THE ORDINARY ACCESS UNDERTAKING LODGED BY VODAFONE NETWORK PTY LTD AND VODAFONE AUSTRALIA LIMITED FOR THE GSM TERMINATING ACCESS SERVICE

BY: VODAFONE NETWORK PTY LTD and VODAFONE AUSTRALIA LIMITED
Applicants

JUSTICE GOLDBERG (PRESIDENT), MR R DAVEY and MR R SHOGREN
11 JANUARY 2007
MELBOURNE

IN THE AUSTRALIAN COMPETITION TRIBUNAL

File No 4 of 2006

RE: APPLICATION FOR REVIEW OF THE FINAL DECISION OF THE AUSTRALIAN COMPETITION AND CONSUMER COMMISSION DATED 31 MARCH 2006 IN RELATION TO THE ORDINARY ACCESS UNDERTAKING LODGED BY VODAFONE NETWORK PTY LTD AND VODAFONE AUSTRALIA LIMITED FOR THE GSM TERMINATING ACCESS SERVICE

BY: VODAFONE NETWORK PTY LTD and VODAFONE AUSTRALIA LIMITED
Applicants

THE TRIBUNAL: JUSTICE GOLDBERG (PRESIDENT), MR R DAVEY and MR R SHOGREN

DATE OF DECISION: 11 JANUARY 2007

WHERE MADE: MELBOURNE

THE TRIBUNAL DECIDES THAT:

1. The decision of the Australian Competition and Consumer Commission on 31 March 2006 rejecting the ordinary access undertaking given to it on 23 March 2005 by Vodafone Network Pty Ltd and Vodafone Australia Limited is affirmed.

IN THE AUSTRALIAN COMPETITION TRIBUNAL

File No 4 of 2006

RE: APPLICATION FOR REVIEW OF THE FINAL DECISION OF THE AUSTRALIAN COMPETITION AND CONSUMER COMMISSION DATED 31 MARCH 2006 IN RELATION TO THE ORDINARY ACCESS UNDERTAKING LODGED BY VODAFONE NETWORK PTY LTD AND VODAFONE AUSTRALIA LIMITED FOR THE GSM TERMINATING ACCESS SERVICE

BY: VODAFONE NETWORK PTY LTD and VODAFONE AUSTRALIA LIMITED
Applicants

THE TRIBUNAL: JUSTICE GOLDBERG (PRESIDENT), MR R DAVEY and MR R SHOGREN

DATE OF DECISION: 11 JANUARY 2007

WHERE MADE: MELBOURNE

INDEX

1. INTRODUCTION	[1]
2. PARTIES TO THE APPLICATION	[5]
3. THE LEGISLATIVE REGIME	[6]
4. ISSUES	[10]
5. THE MOBILE TERMINATING ACCESS SERVICE AND THE COMMISSION'S MTAS PRICING PRINCIPLES DETERMINATION	[13]
6. VODAFONE'S UNDERTAKING	[14]
7. BACKGROUND	[22]
8. THE COMMISSION'S REASONS FOR REJECTING THE UNDERTAKING	[23]
9. MARKET DEFINITION	[27]
10. VODAFONE'S COST MODELS	[32]
11. THE USE OF A FULLY ALLOCATED COST MODEL.....	[40]
12. ISSUES RELATING TO VODAFONE'S COSTS	[45]
13. ARE VODAFONE'S COSTS EFFICIENT COSTS?	[46]

14.	THE BENCHMARK OF AN EFFICIENT OPERATOR	[63]
15.	SPECIFIC ISSUES RELATING TO THE COSTS DETERMINED FROM THE PwC MODELS	[85]
15.1	Expert Reports	[85]
15.2	Summary of claimed Empirical Flaws in models	[96]
15.3	Issue C: Asset lifetimes for radio site equipment and buildings	[102]
15.4	Issue D: Error in tilted annuity calculation	[121]
15.5	Issue E: “Incorrect” routing factor – voicemail	[128]
15.6	Issue F: Incorrect allocation of short message service (SMS) centre costs	[152]
15.7	Issue G: “Inaccurate” splits of non-network asset operating costs and Issue O: Revised splits of non-network asset costs and non-network indirect costs	[159]
15.8	Issue H: Incorrect inclusion of subscriber direct assets	[193]
15.9	Issue I: Unaccounted for likelihood of decrease in per unit costs	[195]
15.10	Issue J: Incorrect SMS and GPRS conversion factors	[198]
15.11	Issue K: Price trends and changes	[202]
15.12	Issue L: Contingency costs	[219]
15.13	Issue M: Inclusion of a return on assets in the course of construction	[236]
15.14	Issue N: Exclusion of acquisition and retention costs from non-network indirect cost mark-up	[249]
15.15	Issue P: WACC – the choice of asset beta	[258]
15.16	Conclusion on specific issues in relation to the PwC models	[262]
16.	PASS THROUGH SAFEGUARD	[263]
17.	CONCLUSION	[298]

ANNEXURE A GLOSSARY AND ABBREVIATIONS

REASONS FOR DECISION

**THE TRIBUNAL: JUSTICE GOLDBERG (PRESIDENT), MR R DAVEY and
MR R SHOGREN**

1. INTRODUCTION

- 1 Vodafone Network Pty Ltd and Vodafone Australia Limited (together “Vodafone”) have applied to the Tribunal pursuant to s 152CE(1) of the *Trade Practices Act* 1974 (Cth) (“the Act”) for a review of a decision of the Australian Competition and Consumer Commission (“the Commission”) to reject an ordinary access undertaking given by Vodafone to the Commission under s 152BU(2) of the Act. The application for review was filed on 21 April 2006.
- 2 The access undertaking sets out the price and non-price terms and conditions upon which Vodafone undertakes to provide its domestic digital mobile terminating access service on its 2G/2.5G GSM network (“VMTAS”). The VMTAS is Vodafone’s provision of a mobile terminating access service (“MTAS”), a service that was declared by the Commission under Pt XIC of the Act on 30 June 2004. The undertaking was given by Vodafone on 23 March 2005. The undertaking proposed a target price of 16.15 cents per minute (“cpm”) for access to its VMTAS from 1 January 2007. The Commission rejected the undertaking in its Final Decision made on 31 March 2006 on the basis that it was not satisfied that the price and certain non-price terms and conditions specified in the undertaking were reasonable.
- 3 The hearing of the review was held immediately following the conclusion of the hearing of the review sought by Optus Mobile Pty Limited and Optus Networks Pty Limited (together “Optus”) in respect of the decision by the Commission to reject an ordinary access undertaking given by Optus to the Commission under s 152BU(2) of the Act. The Tribunal affirmed the decision of the Commission to reject Optus’ undertaking and its reasons are to be found in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8. There were a number of issues that were common to the review in the Optus matter and to this review and submissions on these issues in the Optus matter were not duplicated but were taken to have been adopted in this review. These submissions related, for example, to the nature of the legislative regime, the nature of the MTAS, the function of the Tribunal and aspects of market definition.

4 Accordingly, these reasons do not repeat the analysis and reasoning of the Tribunal in relation to the legislative regime, the MTAS, the Commission's MTAS Pricing Principles Determination on 30 June 2004 and aspects of market definition. We incorporate that analysis and reasoning in these reasons which should be read in conjunction with that analysis and reasoning. Annexure A contains a glossary of terms used in these reasons.

2. PARTIES TO THE APPLICATION

5 The following parties were granted leave to intervene in the proceeding:

- the Commission;
- Telstra Corporation Limited ("Telstra");
- Optus Mobile Pty Limited and Optus Networks Pty Limited;
- AAPT Limited ("AAPT");
- Hutchison 3G Australia Pty Limited and Hutchison Telecommunications (Australia) Limited (together "Hutchison");
- Macquarie Telecom Pty Limited ("Macquarie");
- PowerTel Limited ("PowerTel"); and
- Primus Telecommunications Pty Ltd ("Primus").

Telstra, Optus, AAPT, Hutchison, Macquarie, PowerTel and Primus all currently acquire the VMTAS from Vodafone.

3. THE LEGISLATIVE REGIME

6 The telecommunications access regime under Pt XIC of the Act was considered and explained recently by the Tribunal in *Telstra Corporation Limited* [2006] ACompT 4 and in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra). We adopt that consideration and explanation in these reasons. In summary, an access provider must, if requested, supply a declared service to an access seeker in accordance with the standard access obligations set out in s 152AR of the Act.

7 A carrier or carriage service provider may submit an ordinary access undertaking to the Commission under which it undertakes to comply with the terms and conditions specified in the access undertaking in relation to the applicable standard access obligations: s 152BS(1). The Commission must accept or reject the undertaking: s 152BU(2), but it must not accept

an undertaking unless it is satisfied that the terms and conditions specified in the undertaking are reasonable: s152BV(2)(d).

8 The sections critical to the review are ss 152AH and 152AB. Section 152AH(1) sets out the matters to which regard must be had by the Commission (and by the Tribunal on review) in determining whether particular terms and conditions of an access undertaking are reasonable:

- “(a) whether the terms and conditions promote the long-term interests of end-users of carriage services or of services supplied by means of carriage services;*
- (b) the legitimate business interests of the carrier or carriage service provider concerned, and the carrier’s or provider’s investment in facilities used to supply the declared service concerned;*
- (c) the interests of persons who have rights to use the declared service concerned;*
- (d) the direct costs of providing access to the declared service concerned;*
- (e) the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility;*
- (f) the economically efficient operation of a carriage service, a telecommunications network or a facility.”*

Section 152AH(2) provides that subsection (1) does not, by implication, limit the matters to which regard may be had.

9 Section 152AB(2) provides, relevantly, that in determining whether the terms and conditions of an undertaking promote the long-term interests of end-users of carriage services or services supplied by means of carriage services (“listed services”), regard must be had by the Commission (and by the Tribunal on review) to the extent to which the terms and conditions are likely to result in the achievement of the following objectives:

- “(c) the objective of promoting competition in markets for listed services;*
- (d) the objective of achieving any-to-any connectivity in relation to carriage services that involve communication between end-users;*
- (e) the objective of encouraging the economically efficient use of, and the economically efficient investment in:*
 - (i) the infrastructure by which listed services are supplied; and*
 - (ii) any other infrastructure by which listed services are, or are likely to become, capable of being supplied.”*

Section 152AB(3) provides that subsection (2) is intended to limit the matters to which regard may be had. Subsequent subsections of s 152AB expand upon the manner in which the Commission (and the Tribunal on review) is to have regard to those objectives.

4. ISSUES

10 We repeat our observation in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra) that where we are determining whether terms and conditions of access are reasonable and whether underlying costs are reasonable, there are no absolute answers, nor is there necessarily only one correct approach: *Telstra Corporation Limited* (supra) at pars [63]-[67].

11 The principal issues for determination are whether Vodafone's price term of 16.15 cpm for the period 1 January 2007 to 30 June 2007 and subsequent validity periods and the terms in "Part C – Pass Through Safeguard" of the Service Schedule to the undertaking are reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. Those issues have led to an inquiry whether Vodafone's costs, and its method and approach in estimating those costs, are reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. There are also issues relating to the reasonableness of certain non-price terms and conditions relating to credit management and security, termination and suspension, limitation of liability and confidential information. Ultimately, we must not accept the undertaking unless we are satisfied on the whole of the material before us that the terms and conditions specified in the undertaking are reasonable: s 152BV(2)(d).

12 From time to time in these reasons we refer to the "reasonableness of the price" and the "reasonableness of the costs" and the "reasonableness" of particular costs, methods or structures. We use these expressions as shorthand expressions to describe and explain the task that is committed to us by ss 152AH and 152AB. We are considering whether a particular price, cost or method of calculating and determining a cost, is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. We are not considering the reasonableness of such price, cost or method in the abstract, unrelated to the matters specified in s 152AH and the objectives set out in s 152AB.

5. THE MOBILE TERMINATING ACCESS SERVICE AND THE COMMISSION'S MTAS PRICING PRINCIPLES DETERMINATION

13 The basic workings of the MTAS and the Commission's MTAS Pricing Principles Determination are explained in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra) at pars [21] to [29].

6. VODAFONE'S UNDERTAKING

14 Vodafone's undertaking was, relevantly, in the following terms:

"2. COMMENCEMENT AND DURATION

(a) *Provided that the Commission has not already accepted Vodafone's Access Undertaking submitted to the Commission on 26 November 2004 under Division 5 of Part XIC of the TPA, this Undertaking becomes effective immediately after this Undertaking is accepted by the Commission under Division 5 of Part XIC of the TPA, and either:*

- (i) *any applicable appeal period in relation to the acceptance by the Commission of this Undertaking has expired; or*
- (ii) *if an appeal is lodged, there is a final resolution of that appeal and any subsequent appeals in a way which permits this Undertaking to take effect.*

(Commencement Date)

(b) *This Undertaking continues until the earlier of:*

- (i) *3 years from the Commencement Date; or*
- (ii) *the withdrawal or termination of this Undertaking by Vodafone in accordance with the TPA; or*
- (iii) *the Commission's acceptance of Vodafone's Access Undertaking submitted to the Commission on 26 November 2004 under Division 5 of Part XIC of the TPA.*

3. UNDERTAKING

(a) *Vodafone undertakes to the Commission that it will comply with the terms and conditions specified in Attachment A of this Undertaking in relation to the standard access obligations applicable to Vodafone in respect of the Declared Service.*

(b) *For the avoidance of doubt, this Undertaking:*

- (i) *...*
- (ii) *...*
- (iii) *only applies to the supply of the Declared Service in respect of voice calls on Vodafone's GSM network."*

15 Attachment A comprised a form of “VODAFONE AGREEMENT FOR THE PROVISION OF MOBILE TERMINATING ACCESS SERVICE” (“the Agreement”) to be entered into between Vodafone and an access seeker. The Agreement set out the terms on which Vodafone agreed to supply the VMTAS which was described as:

“... an Access service for the carriage of voice calls from a Point of Interconnection to a B-party directly connected to the Vodafone Network (the Service).”

16 The charges for the VMTAS were set out in the Agreement in the following terms:

“1 RATES

1.1 The Rates payable by the Access Seeker for the Service comprise:

- (a) a Usage Charge as set out in this Service Schedule; and*
- (b) a Network Conditioning Charge for Network Conditioning in Vodafone’s Network beyond Vodafone’s Interconnect Gateway Exchanges to enable the provision of the Service to the Access Seeker, which will be based on the labour, materials and incidentals involved in undertaking the work required. Such work will not commence until the Access Seeker has accepted a quotation for such work provided to the Access Seeker by Vodafone.*

1.2 The Usage Charge payable by the Access Seeker for use of the Service during the applicable Validity Period is specified in Table 1 below:

<i>TABLE 1</i>	
<i>VALIDITY PERIOD</i>	<i>USAGE CHARGE</i>
<i>1. 1 July 2004 – 31 December 2004</i>	<i>21 cpm</i>
<i>2. 1 January 2005 – 31 December 2005</i>	<i>19.38 cpm</i>
<i>3. 1 January 2006 – 31 December 2006</i>	<i>17.77 cpm</i>
<i>4. 1 January 2007 – 30 June 2007</i>	<i>16.15 cpm</i>
<i>Any subsequent Validity Periods</i>	<i>16.15 cpm</i>

17 The Agreement contained a section entitled “PART C – PASS THROUGH SAFEGUARD” in the following terms:

“1 PASS THROUGH PRINCIPLE

The aim of this Part C is to ensure that end-users who make fixed to mobile calls realise the benefits of reductions in Usage Charges by ensuring those reductions are passed through to end-users or customers in the form of reduced retail rates for fixed to mobile calls. This benefits end-users or customers of fixed to mobile calls, since they will enjoy price reductions, as

well as providers of fixed to mobile calls and providers of mobile termination services, since the volume of originated and terminated calls is likely to increase if the retail price falls (**Pass Through Principle**).

2 PASS THROUGH OBLIGATION

The Access Seeker must reduce its Average Retail Price (excluding GST) for calls which terminate on the Vodafone Network during each Validity Period so that it is equal to or less than the Target Average Retail Price specified in Table 2 below (**Pass Through Obligation**).

3 TABLE 2

TABLE 2	
VALIDITY PERIOD	TARGET AVERAGE RETAIL PRICE
1. 1 July 2004 – 31 December 2004	38.5 cpm
2. 1 January 2005 – 31 December 2005	32.72 cpm
3. 1 January 2006 – 31 December 2006	26.93 cpm
4. 1 January 2007 – 30 June 2007	21.15 cpm
Any subsequent Validity Periods	21.15 cpm

4 COMPLIANCE AND PASS THROUGH DISPUTES

- 4.1 The Access Seeker must provide written notice to Vodafone within 20 Business Days of the end of each Validity Period, signed by a Director, stating whether and how the Access Seeker has complied with the Pass Through Obligation for that Validity Period (**Certification of Pass Through**).
- 4.2 Within 2 months following the end of each Validity Period, if Vodafone reasonably considers that the Access Seeker has not complied with the Pass Through Obligation, Vodafone may, by way of written notice, notify the Access Seeker of a dispute (**Pass Through Dispute Notice**).
- 4.3 On receipt of a Pass Through Dispute Notice, the Parties must use their reasonable endeavours to resolve the dispute. In attempting to resolve the dispute in accordance with this clause 4.3, the Parties must act in good faith at all times.
- 4.4 If the Parties cannot resolve the dispute within 10 Business Days following the date of the Pass Through Dispute Notice, either Party may within 20 Business Days following the date of the Pass Through Dispute Notice refer the dispute for expert determination in accordance with clause 5 provided that Party has complied with its obligations under clause 4.3.”

Clause 5 contained a dispute resolution clause which provides for expert determination of a dispute.

18 Clause 6 was headed “NON COMPLIANCE” and provided:

- “6.1 *If the expert determines that the Access Seeker has not complied with the Pass Through Obligation for a Validity Period, the Access Seeker must pay to Vodafone in accordance with the terms of this Agreement, the rebate calculated in accordance with clause 6.2 (**Pass Through Rebate**).*
- 6.2 *The Pass Through Rebate for a Validity Period will be an amount equal to the number of Conversation Minutes for that Validity Period, multiplied by the difference between:*
 - (a) *the Usage Charge set out in Table 1 for that Validity Period; and*
 - (b) *the Usage Charge for the earliest prior Validity Period in which the Access Seeker’s Average Retail Price is less than the Target Average Retail Price for that Validity Period, as specified in Table 2.*
- 6.3 *If the Access Seeker does not provide sufficient information to the expert when requested, the Validity Period for the purposes of clause 6.2(b) is Validity Period 1.”*

19 Clause 7 related to “TRANSIT TRAFFIC” and provided:

- “7.1 *This clause 7 applies to traffic sent to Vodafone by the Access Seeker for which the retail price is set by a Carriage Service Provider other than the Access Seeker (Transit Traffic), if the total Transit Traffic being sent by the Access Seeker exceeds 750,000 minutes/month.*
- 7.2 *The Access Seeker must ensure that at any time at which this clause 7 applies, each Carriage Service Provider to which it supplies transit services (**Transit Carriage Service Provider**) complies with the Pass Through Obligation, including this Part C.*
- 7.3 *If the Access Seeker sends Transit Traffic to Vodafone for termination, then the Access Seeker must:*
 - (a) *ensure that each Transit Carriage Service Provider:*
 - (i) *is also subject to an obligation to comply with the Pass Through Obligation; and*
 - (ii) *complies with that obligation; and*
 - (b) *ensure that any disputes about the compliance of the Transit Carriage Service Provider with its Pass Through Obligation are:*
 - (i) *capable of resolution is [sic] a manner identical to that specified in clause 5; and*
 - (ii) *resolved in accordance with the procedure specified in clause 5; and*
 - (c) *provide a separate Certification of Pass Through for each Transit Carriage Service Provider that:*

- (i) *identifies each relevant Carriage Service Provider; and*
 - (ii) *specifies the volume of Transit Traffic of each Carriage Service Provider; and*
 - (d) *co-operate and provide all reasonable assistance to ensure that each Transit Carriage Service Provider complies with the Pass Through Obligation and that Transit Traffic is not used as a means to avoid or circumvent the Pass Through Principle.*
- 7.4 *If the Access Seeker cannot or does not comply with this clause 7, the Access Seeker must not send any Transit Traffic to Vodafone for termination.”*

The expression “Average Retail Price” was defined as meaning:

“... an Access Seeker’s revenues from fixed to mobile calls which terminate on the Vodafone network divided by that Access Seeker’s total Conversation Minutes for fixed to mobile calls which terminate on the Vodafone Network during the relevant Validity Period.”

20 Vodafone’s final price of 16.15 cpm in its undertaking was based upon the output of a fully allocated cost modelling exercise undertaken by PricewaterhouseCoopers (“PwC”) for Vodafone. The model used Vodafone’s data for Vodafone’s 2002/2003 financial year and the exercise was, according to Vodafone, verified by PwC using Vodafone’s 2003/2004 financial year data.

21 Vodafone contended that the prices in its undertaking were reasonable because:

- although they were based on a fully allocated cost model, this model was the subject of a number of adjustments such that it represented a close approximation to a Total Service Long Run Incremental Cost (“TSLRIC”) model;
- the PwC Cost Model allocated common costs on a basis similar to an equi-proportionate mark-up (“EPMU”) basis and did not involve any mark-up for network externalities. Vodafone would have been entitled if it so chose to produce a model which allocated common costs according to Ramsey principles and which incorporated recovery of an amount for network externalities;
- when account was taken of the allocation of fixed and common costs according to Ramsey principles and the recovery of network externalities, it confirmed that the result of the PwC Cost Model represented a conservative estimate of the TSLRIC+ cost of supply of the MTAS by Vodafone.

7. BACKGROUND

22 Unlike its two main competitors, Telstra and Optus – which supply both fixed line and mobile services, Vodafone is a standalone mobile operator. It operates a 2G/2.5G GSM network and a 3G network. Its GSM network covers 93% of the Australian population. Vodafone was awarded the third Australian mobile telecommunications carrier licence in December 1992. By March 2004, Vodafone’s share of the Australian mobile telecommunications market was almost 17%, the rest of the market at that time being held as to 45.7% by Telstra, 35.4% by Optus and 3.1% by Hutchison.

8. THE COMMISSION’S REASONS FOR REJECTING THE UNDERTAKING

23 At the conceptual level, the Commission considered that the approach adopted by Vodafone, using a top-down fully allocated cost model based on Vodafone’s 2002/2003 data, was likely to overstate the costs that would be incurred by an efficient provider of the MTAS in Australia when compared with a TSLRIC+ model. The Commission was concerned that Vodafone had used data from 2002/2003 as a basis for estimating the forward looking efficient costs of the MTAS without adjustments to reflect cost volume trends. The Commission considered that the appropriate costs to recover in determining the costs of supplying the MTAS were likely to be those of an “efficient operator”. (Vodafone objected to this standard.) The Commission did not accept that Vodafone’s costs would be likely to represent those of an efficient operator. The Commission also had concerns at the empirical level with a number of the model inputs and assumptions that underpinned the PwC model. These inputs, assumptions and certain errors suggested to the Commission that even if PwC’s conceptual modelling approach was considered appropriate, its price of 16.15 cpm was likely to overstate substantially Vodafone’s “forward-looking efficient economic costs” of supplying the VMTAS on its GSM network.

24 The Commission considered that Vodafone’s proposed Pass Through Safeguard was not necessary, given the likelihood that the pass through of lower regulated MTAS rates to retail fixed-to-mobile prices would occur, and was likely to increase over time, as a result of a regulated reduction in the MTAS rate alone. The Commission also had significant reservations regarding the specific terms on which Vodafone proposed to implement the Pass Through Safeguard.

25 The Commission reached the view that the price terms and conditions contained in the undertaking were not reasonable when assessed against the relevant statutory criteria in s 152AH. The Commission considered that the undertaking price terms and conditions were above those required to meet the legitimate business interests of Vodafone and its investment in facilities used to supply the VMTAS.

26 The Commission also had concerns with some of the non-price terms and conditions because of the broad nature of some of the discretions given to Vodafone. These discretions generally applied in the areas of credit management and security, suspension and termination, limitation of liability and confidential information.

9. MARKET DEFINITION

27 Vodafone submitted that there were two relevant markets in which its VMTAS (as well as mobile origination services) was provided. These were:

- the overall market for mobile telephony services which was a national market with both wholesale and retail components and which encompassed the provision of mobile access or subscription, mobile termination and mobile origination to customers as well as other outgoing call services. It defined this market as the “mobile services market”; and
- the market for fixed-to-mobile services.

28 The Commission submitted that there were three relevant markets:

- the wholesale market for the supply of Vodafone’s VMTAS. It was said that only Vodafone could supply MTAS in relation to calls terminating on its 2G/2.5G GSM network and that no other service was substitutable for, or otherwise competitive with the VMTAS supplied by Vodafone;
- a national market for retail mobile services, including mobile call origination and mobile subscription services. It was said that this retail mobile services market was not effectively competitive and was highly concentrated with high barriers to entry in the form of large sunk costs and the pre-requisite of national coverage; and

- a national retail market for the pre-selected bundle of fixed-to-mobile national long-distance and international calling services.

29 The key difference between the submissions of Vodafone and the Commission was whether there is, as submitted by the Commission, a separate market for termination services or whether, as submitted by Vodafone, termination services are supplied and consumed as part of an overall retail market for mobile services.

30 In *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra) we considered the submissions of all parties in relation to the issues relating to market definition. We do not repeat our reasoning in that decision in these reasons, but simply incorporate by reference paras [74]-[90]. The observations and conclusions we reached in those paragraphs in relation to Optus apply equally to Vodafone in this review. It follows from those reasons that we do not consider that Vodafone's VMTAS is provided in the retail mobile services market. Nevertheless, in determining the price Vodafone will charge its customers for making calls, Vodafone must factor into its calculations the price it will have to pay other network operators for having its customers connected into their networks so that its customers' calls can be so connected and terminated, and the revenue it will receive from supplying its VMTAS to other network operators. It also follows from our reasoning in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra) that even if the retail mobile services market were effectively competitive, we do not consider that Vodafone would be strongly constrained in setting its VMTAS price by competition in the retail market. As we noted in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra), the mobile operators could set their termination charges on a reciprocal basis at above cost while still competing vigorously in the retail market. Again, as we noted in that decision, it was accepted that that is what they do.

31 For the reasons which we have set out in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra), we do not need to come to a definitive conclusion about market definition nor do we need to come to a definitive conclusion whether the retail mobile services market is effectively competitive.

10. VODAFONE'S COST MODELS

32 In 2004 Vodafone engaged PwC to develop a top-down fully allocated cost model for the purpose of enabling Vodafone to determine the appropriate price for calls terminating on its VMTAS. On 22 March 2005, PwC provided a report entitled "The Fully Allocated Cost (FAC) of Services on Vodafone Australia's GSM Network". The model developed by PwC was based on a fully allocated top-down cost model built from Vodafone's accounting and operational data for Vodafone's financial year 2002/2003. (We call this "the First PwC Model" and PwC's report on it, "the First PwC Report"). The model was described as "forward looking" as Vodafone re-valued its network assets in current cost terms. The model allocated all the relevant network and non-network costs associated with Vodafone's GSM network for the financial year 2002/2003 to six services:

- incoming calls (termination);
- outgoing calls (calls originating on Vodafone's network and terminating on a different network);
- on-net calls (calls originating and terminating on Vodafone's network);
- SMS messages (Short Messaging Service – a facility to send text messages);
- GPRS (General Packet Radio Service) megabytes; and
- subscription.

Costs were allocated either directly to these services or indirectly across these services by way of an EPMU approach. PwC allocated Vodafone's network asset costs directly to services using routing factors which were provided by Vodafone. A tilted annuity formula was applied to these network assets to calculate an annualised depreciation charge for these assets for 2002/2003.

33 The following features and components of the First PwC Model should be noted:

- the model was a top-down fully allocated cost model which used a mixture of Vodafone's accounting and operational data comprising input from the general ledger, the fixed asset register and call data recording systems;
- other inputs, including asset prices and routing factors were obtained directly from Vodafone;

- the model did not distinguish between costs that were incremental to the services being modelled and costs that were common across two or more services, that is costs which were fixed, common or joint;
- for network capital costs (depreciation and return on investment) the accounting based straight-line method of depreciation was replaced with a tilted annuity calculation which reflected changes in the value of assets over time and which was underpinned by a current cost valuation of the asset base based upon the actual deployment of Vodafone's network;
- the model allocated costs either directly to services or indirectly to services through secondary allocations. Indirect costs were broken down into network indirect costs and non-network indirect costs;
- SMS messages and GPRS megabytes were converted to minute equivalents to enable the allocation of network costs between the different conveyance services; and
- routing factors, reflecting the extent to which the different services drove network usage for the main network elements, were provided by Vodafone.

34 Based on the outputs from the First PwC Model, PwC concluded that a reasonable estimate of the average cost of terminating calls on Vodafone's GSM network was 16.15 cpm. It is on this price, derived from the First PwC Model, that Vodafone based its undertaking given to the Commission on 23 March 2005.

35 On 20 October 2005, PwC submitted a further report entitled "The Fully Allocated Cost (FAC) of Services on Vodafone Australia's GSM Network – Model update incorporating data for the financial year ended 31 March 2004". This report (which we call "the Second PwC Report") set out further modelling work performed using data for the financial year ended 31 March 2004. PwC said that the 2003/2004 model (which we call "the Second PwC Model") included further refinements and enhancements to allocation bases. It took into account comments received on the First PwC Model and corrected for model errors relating to the exclusion of some traffic, the uplift for working capital on network assets, the treatment of short message service (SMS) centre costs, the specification of the tilted annuity formula and the allocation of indirect network operating expenses.

36 PwC made the following observation in relation to the modelling approach in the Second PwC Report:

“The high-level cost model that was originally prepared has been updated with data for the financial year ended 31 March 2004. The nature of the model and its functionality remains unchanged. However, apart from changes to the inputs, there have also been changes to some of the allocation assumptions as a result of a more detailed interrogation of the underlying financial data.”

We consider later in these reasons particular issues relating to the changes to the inputs, the changes to the allocation assumptions and the more detailed interrogation of the underlying financial data. In summary, the Second PwC Model produced a cost of termination of [X] cpm. What is significant is that the Second PwC Report stated:

“The 2003/04 model updates and replaces the 2002/03 model as the best and most recent estimate of the forward looking fully allocated cost of terminating voice calls on Vodafone’s GSM network”.

Notwithstanding this statement in the Second PwC Report, the target price in Vodafone’s undertaking remained at 16.15 cpm derived from the First PwC Model. We return to the significance of the Second PwC Model and the Second PwC Report later in these reasons.

37 Vodafone also relied upon a report submitted by Frontier Economics entitled “Modelling Welfare Maximising Mobile Termination Rates: A Report Prepared for Vodafone”.

38 The First PwC Model used Vodafone’s 2002/2003 data to estimate the forward looking efficient costs of providing the VMTAS without any adjustments to the data to reflect costs-volume trends that might operate during the period post-2002/2003 to 1 January 2007. The Commission considered that the per-unit costs of supplying the VMTAS was likely to be lower, perhaps significantly lower, by 1 January 2007.

39 The modelling approach adopted by PwC gave rise to the following issues of principle and issues of detail:

- the use of a fully allocated cost model as distinct from a model based on a TSLRIC+ approach;
- whether Vodafone’s costs are efficient costs, setting aside issues of scale and scope;

- the benchmark by reference to which Vodafone's costs are to be assessed. In particular whether, as the Commission contended, the benchmark is that of an "efficient operator";
- the recovery of network capital costs and the use of forward looking asset valuations;
- the use of 2002/2003 and 2003/2004 data;
- the use of 2G/2.5G costs as opposed to 3G costs; and
- what were claimed by the Commission to be empirical flaws in the model.

11. THE USE OF A FULLY ALLOCATED COST MODEL

40 Vodafone submitted that the use of a fully allocated cost model was reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. Vodafone relied upon a report dated 6 February 2006 from NERA Economic Consulting ("NERA") which it had retained to provide an independent assessment in relation to aspects of its undertaking.

41 NERA addressed the differences between a fully allocated cost model and a model based on TSLRIC+. NERA concluded:

"In most respects PwC's model of Vodafone's network bears a close resemblance to a top-down TSLRIC model. Where it differs significantly is that it does not use forward-looking valuations for non-network assets and does not distinguish between incremental and common fixed costs. For the reasons given in 8.1.2, the first of these differences may not lead to a material divergence between the cost estimates produced by the two models. The situation regarding the second difference is less clear."

In section 8.1.2, NERA noted that the PwC model had the characteristics of a top-down TSLRIC model in respect of its valuation of network assets but not in its valuation of non-network assets. PwC re-valued Vodafone's network assets on a current replacement cost basis rather than using historical cost asset values. Non-network capital items were not re-valued and historical cost values were used for them. NERA observed that Vodafone's view was that the distortion caused by not using forward looking asset values and depreciation for non-network assets was not likely to be material, bearing in mind that they accounted for only [X]% of the total net book value of assets. Vodafone's view in this respect, was supported by Analysys Consulting Limited ("Analysys") who carried out a

review of the PwC models on behalf of the Commission. Analysys considered whether Vodafone's undertaking was based on a reasonable fully allocated cost top-down model.

42 Analysys stated:

“Inevitably, a FAC [Fully Allocated Cost] estimate relies on a degree of judgement. Alternative allocation rules to those applied by PwC might have yielded different FAC estimates. For the purposes of setting cost-based prices, the regulatory objectives may mean some approaches to FAC modelling are preferable to others. For example, the allocation rules for indirect costs that PwC has used bear resemblance to equi-proportionate mark-ups, sometimes used by regulators to adjust LRIC estimates. To the extent that the indirect costs in PwC's model correspond to common costs (as estimated within a LRIC framework), this may make the final outputs of the model attractive if the regulator favours prices based on LRIC plus an EPMU.”

Analysys accepted Vodafone's contention that:

“... since non-network assets account for only about [X]% of net book value, the failure to convert the costs of these assets into a gross replacement cost is unlikely to significantly affect the final results of the model.”

43 Telstra and the Commission accepted that a fully allocated cost model was not unreasonable and was capable of approximating the outcomes of a TSLRIC+ approach, thereby providing a reasonable estimate of efficient costs, so long as the fully allocated cost model made appropriate adjustments.

44 We do not consider that the use of a fully allocated cost model, as distinct from a TSLRIC+ model is, of itself, unreasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. We accept that in *Re Seven Network (No 4)* (2004) 187 FLR 373 at 410, the Tribunal expressed the view that it would generally not be in the long-term interests of end-users to depart from TSLRIC pricing where access is regulated. However, we would repeat the observation of the Tribunal in *Telstra Corporation Limited* (supra) at par [63]:

“In this area of analysis there is no one correct or appropriate figure in determining reasonable costs or a reasonable charge. Matters and issues of judgment and degree are involved at various levels of the analysis.”

Nevertheless, we still consider that in general terms the prices in access undertakings should reflect and not exceed forward looking efficient economic costs: *Telstra Corporation Limited* (supra) at par [46].

12. ISSUES RELATING TO VODAFONE'S COSTS

45 Vodafone distilled the Commission's and other parties' submissions against it into a number of issues. The other parties accepted that list and the hearing proceeded largely on the basis of argument under each of the headings in the list. Those issues are:

- the efficiency of Vodafone's costs, setting aside issues of scale and scope;
- whether efficient costs should be determined by reference to an efficient benchmark operator rather than by reference to a firm of Vodafone's actual size; that is, whether Vodafone's actual costs should be adjusted to reflect economies of scale and scope that could be achieved by such a benchmark operator; and
- what were described by the Commission as "empirical flaws" in the PwC models.

13. ARE VODAFONE'S COSTS EFFICIENT COSTS?

46 As we observed in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra), the matters and objectives to which we must have regard in determining whether Vodafone's price terms are reasonable, and whether they promote the long-term interests of end-users, as set out in ss 152AH and 152AB, lead to a consideration whether Vodafone's costs of supplying its VMTAS are efficient costs. Section 152AH(1)(f) requires us to have regard to "the economically efficient operation of" Vodafone's VMTAS and s 152AB(2)(e) requires us to have regard to the extent to which the price term is likely to result in the achievement of "the objective of encouraging the economically efficient use of, and the economically efficient investment in", the infrastructure by which the VMTAS is supplied.

47 The Commission submitted that Vodafone had not put before it (and therefore, before us) sufficient material to establish that its historical costs, upon which the First PwC Model and the Second PwC Model were based, were efficient. It followed, submitted the Commission, that the undertaking could not be reasonable even if we were to decide that all of Vodafone's methodologies, inputs and assumptions by which it derived its costs of supplying its VMTAS were reasonable.

48 Vodafone submitted that there was no material capable of casting sufficient doubt on the efficiency of its inputs into the PwC models to affect any conclusion that the prices and terms in the undertaking were reasonable. In support of this submission, Vodafone relied upon the following matters:

- neither the Commission nor any of the intervenors had nominated any specific cost, item or aspect of Vodafone's business or network which was said to be inefficient;
- the preparation of the PwC models involved a revaluation of network assets to current day values and this would remove any suggestion that Vodafone's network assets were overpriced;
- Vodafone's network was developed, and its non-network costs incurred, in a highly competitive environment. It followed that Vodafone's costs were efficient because of the competitive market in which Vodafone operated; and
- the consultant Analysys considered that for the purposes of producing top-down fully allocated cost results, the use of Vodafone's actual costs was reasonable.

49 We do not consider that Vodafone's submission poses the correct question. As we observed in *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* (supra) at par [118]:

"Although there is merit in the proposition that a firm in a competitive market has an incentive to be efficient and to incur its costs efficiently, there is still a need for the Commission (and, on review the Tribunal), to be satisfied, having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act, that the firm's costs are efficiently incurred."

We repeat the observation in *Telstra Corporation Limited* (supra) at par [46]:

"...we would point out that whenever an access provider seeks approval of an access undertaking from the Commission which involves a consideration of a price term by comparing it with costs, it would be necessary, in order to satisfy the statutory framework, that the access provider establish that its costs are efficient costs."

It is not to the point that there is no material before us capable of casting sufficient doubt on the efficiency of Vodafone's inputs into the PwC models. Rather the point is whether we are satisfied, having regard to all the material placed before us, that Vodafone's costs are efficiently incurred.

50 Further, we do not accept Vodafone's submission that Analysys considered that for the purposes of producing top-down fully allocated cost results, the use of Vodafone's actual costs was reasonable. The passage in the Analysys report relied on by Vodafone for this submission related to a different issue. What Analysys in fact said was:

"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 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."

This passage does not support the proposition that Analysys accepted that Vodafone's costs were, in fact, reasonable or efficiently incurred.

51 It is significant that Analysys also observed that the fully allocated cost model does not make adjustments to eliminate inefficient costs. Vodafone's response to this observation was that there was no basis for assuming that its relevant architecture and operating expenditure were inefficient given that it incurred these costs in a competitive environment. Putting to one side whether the retail mobile services market is competitive, we do not accept that an assumption that costs are incurred efficiently can be made simply upon the basis of the nature of the market within which the costs are incurred.

52 We also note that Vodafone's independent consultant, NERA concluded that:

"Whether Vodafone is efficient or not is also an empirical question, the answer to which cannot be assumed without further analysis. In our view some kind of efficiency assessment of Vodafone is needed before any definitive conclusion can be reached."

53 The Commission and the intervenors raised a number of specific arguments regarding the efficiency of Vodafone's costs which can be summarised as follows:

- the PwC models were based on Vodafone's existing architecture and technology which was not forward looking;
- the use of cost inputs to the PwC models from 2003, which were unadjusted, was not an appropriate basis for prices that could apply until 2010. No allowance was made for increases in traffic over the life of the undertaking;
- whether Vodafone had invested in an inappropriately large network coverage;
- whether Vodafone's costs should have been "optimised" to take account of newer and more efficient ways of designing and operating a mobile network than those applying at the time when Vodafone incurred its costs; and
- whether an efficient operator would have chosen to share infrastructure costs with another operator or operators, contrary to Vodafone's actual mode of investment.

54 Vodafone's principal response to these criticisms was that it was entitled to base prices on its actual costs since they involved no waste and its incentives were to minimise them. It also called into question the expertise of one of the consultants upon whose reports other parties relied. We consider this issue later in our consideration of empirical flaws in the PwC models.

55 We consider that the main conceptual issues in relation to whether we can be satisfied that Vodafone's costs were efficiently incurred to be:

- the weight that can be placed on the market environment and the degree of competition in which Vodafone operates;
- the degree to which the costs are sufficiently forward looking; and
- other matters relating to Vodafone's network configuration.

56 We do not accept the proposition that Vodafone's actual costs can be taken to be efficiently incurred simply because Vodafone operates in a competitive market. While that market certainly exhibits some evidence of vigorous competitive processes, for example, in the marketing of various pricing plans, it does not follow that no scope exists for inefficiency. The very nature of mobile termination, where calls to each operator's customers can only be completed by that operator, argues for caution in concluding that inefficiency is absent. Furthermore, taken to its logical conclusion, the proposition would also lead to the view that

Vodafone's actual VMTAS prices must be reasonable and thus warrant no regulatory examination.

57 More specifically, with only three operators in the market during the period of Vodafone's initial investment and roll-out of infrastructure, economic theory does not support the contention that those firms will, *ipso facto*, have made efficient investments. Services provided in the market are far from homogeneous, and the operators appear to have made great efforts to differentiate their services, build strong brand names, and appeal to varying groups of consumers.

58 This differentiation to some extent may, as it is intended to do, constrain the effects of competition on prices. Prices may be sustained above marginal costs. The evidence was clear that operators shift costs between services as part of their strategies of expanding the market and maximising profits. This is unobjectionable. But in such a business environment, we cannot be satisfied that costs are automatically incurred efficiently.

59 It is relatively easy to suggest ways in which Vodafone's network may, at the conceptual level, differ from what would be put in place by a hypothetical efficient new entrant. In the absence of evidence to support suggestions that Vodafone invested in "too much" coverage or forwent opportunities for more efficient infrastructure sharing, we place no weight on such possibilities. On the other hand, we are inclined to accept that changes in technology, such as the increasing use of optic fibre and digital processing since Vodafone was awarded its licence in 1992, mean Vodafone's actual costs are unlikely to be forward looking in the absence of some adjustments. Merely revaluing network assets is insufficient.

60 We consider that Vodafone is obligated to adduce some evidence that its costs were efficiently incurred. In saying this, we have no wish to impose a requirement that the submitter of an undertaking to the Commission foresee every possible speculative criticism of its investment and other business decisions. There are limits to the second-guessing of an operator's basic strategic decisions regarding the size of its network, the geographical area it seeks to cover, the level of market demand it seeks to satisfy and the manner of its product development. Nevertheless, it cannot be sufficient simply to assert, without any supporting material, that costs were efficiently incurred.

61 We consider that, for the most part, the objections to Vodafone's costs made in the reports by Gibson Quai-AAS Pty Ltd ("Gibson Quai"), Analysys and Marsden Jacob and Associates ("Marsden Jacob") restate in-principle arguments rather than produce specific evidence of inefficiency. However, Gibson Quai did give some specific examples of how a modern network would differ from Vodafone's network. Vodafone did not respond to those specific points except in general terms. Taken together, and in the absence of material supporting Vodafone's contentions regarding the efficiency of its costs, the points raised are sufficient to add to our lack of satisfaction that Vodafone's costs were efficiently incurred.

62 We therefore conclude that we are not satisfied that Vodafone's costs were efficiently incurred. We have reached this conclusion having regard, in particular, to the matters specified in s 152AH(1)(f) and the objectives set out in s 152AB(2)(e) (summarised in par [46] above).

14. THE BENCHMARK OF AN EFFICIENT OPERATOR

63 The Commission submitted that Vodafone's prices could not be reasonable if they exceeded those that would be incurred by an efficient operator with the scale and scope achievable by all mobile network operators ("MNOs"), namely the efficient costs of an operator with a 25% market share (there being four MNOs).

64 The Commission argued that to base the prices of an MNO for MTAS with a market share of, say, 1%, on its actual costs, would constitute a subsidy from access seekers for its inefficient costs. On the other hand, the Commission's position was that an operator's actual costs provide an upper bound as a basis for prices, so that an operator with more than 25% market share should not be able to adjust its costs upwards to take account of the lesser economies of scale and scope it would enjoy were it smaller; that is, were it the size of the benchmark operator. The Commission saw no inconsistency in arguing that the larger operator's legitimate business interests, relevant under s 152AH(1)(b), dictate that it receive no more than its actual costs.

65 There was little evidence before us as to the extent of any economies of scale and scope. In its assessment of Vodafone's undertaking, the Commission came to no firm conclusions, noting only that there were "probable" scale economies and "possible" scope economies.

Argument generally proceeded on the assumption that a larger operator would have lower unit costs.

66 Vodafone submitted that basing prices on the costs of a benchmark operator would deter or prevent new entry by operators intending to provide mobile termination services. Such new entrants could not, immediately upon entry, have access to economies of scale, and possibly of scope, achievable by all MNOs. Vodafone quoted Frontier Economics to the effect that operators of lesser scale and operators that could not take advantage of economies of scope could be eliminated, to the detriment of competition. To some extent this was portrayed as undervaluing dynamic efficiency at the expense of overvaluing productive and allocative efficiency.

67 Vodafone also appealed to statements by Ofcom, the United Kingdom telecommunications regulator, and to the decision of the Full Court of the Supreme Court of Western Australia in *Re Michael; Ex parte Epic Energy (WA) Nominees Pty Ltd* (2002) 25 WAR 511 in relation to the pricing of the services provided by a gas transmission pipeline. While both the Ofcom statements and *Re Michael; Ex parte Epic Energy (WA) Nominees Pty Ltd* (supra) dealt with different regulatory schemes from that applying in this proceeding, much the same issues of principle arose.

68 The starting point in assessing the submissions on this issue is, as throughout this proceeding, the principle that prices should be based on the forward looking costs of an efficient operator. The basic objective is to set prices that promote economic efficiency, which is the outcome that could be expected in a competitive market. It is because mobile termination has been declared as a service that inherently lacks the discipline of competitive forces that it is subject to Pt XIC of the Act.

69 Of course, the basis of reasonable prices in terms of s 152AH must proceed from the terms of that section, and it is those terms that direct the assessment process towards considerations of efficiency and competitive outcomes.

70 What outcomes would eventuate in a competitive market? In such a market, pricing above the costs that would be incurred by a new entrant having access to the latest and most cost-effective technology would invite the entry of such an operator. Regardless of the actual

costs, capital equipment and modes of operation of the incumbent operators, competition would force them to price as if they were using the latest technology. This would extend beyond the age and type of their capital equipment even to the design of their networks.

71 Moreover, no exemption would be given by the forces of competition to existing operators who might be smaller and consequently, or for other reasons, have higher costs than some other operators. For that matter, competitors would not allow a new entrant the luxury of charging in accordance with the higher unit costs associated with starting up a new venture.

72 These are the considerations that lead to the benchmark of the costs that would be incurred by an efficient, forward looking new entrant. However, it is relevant that an efficient new entrant – even, if realistic markets are envisaged, a hypothetical one – would not itself have immediate access to the economies of scale and scope that might be achievable over time.

73 It can be seen that, in seeking to emulate the outcomes realisable in a competitive market, some regard must be had to the actual process (the dynamics) by which operators compete and establish themselves in markets. It is not obvious that objectives of economic efficiency lead to basing prices on the costs that an efficient new entrant could achieve after some indefinite period. Similarly, the terms of s 152AH direct the assessment of reasonableness towards some aspects of market outcomes that go beyond over-simplified assumptions that could only be appropriate were perfect competition a realistic outcome.

74 As might be expected, this means that the task of deciding how to assess the efficient forward looking costs of a new entrant must involve some balancing of opposing considerations and must take account of the actual markets in which the relevant services are provided. This is difficult, not least because, for example – but typically for a regulated service – a competitive market in mobile termination services can only be hypothesised. That market lacks competition because it has structural, and perhaps institutional and regulatory, features that preclude effective competition. The lack of competition is not necessarily a temporary phenomenon, nor one that will be cured by any foreseeable changes in the market itself.

75 The Commission has dealt with this balancing requirement and the need to take actual circumstances into account by developing the idea of an efficient operator with the scale and scope achievable by all MNOs. In present circumstances that involves the efficient costs

associated with a 25% market share. (We note that earlier in its assessment of Vodafone's undertaking, when it released a draft determination, the Commission took the harder position that costs should be assessed by reference to the "most efficient operator".)

76 As implied above, there is sense in benchmarking against the most efficient operator on the grounds that in a competitive market no operator would be able to charge more than the most efficient operator. However, whether this would occur in real-life markets, even those considered effectively competitive but subject to normal features such as product differentiation, is another matter. The most efficient operator may well be able to price somewhat above its costs. In the sort of highly competitive market often hypothesised it is difficult to see how any less efficient operators could survive. The question is how close prices would actually be to this benchmark.

77 But even if the most efficient operator were chosen as the benchmark, the other difficulty remains that that operator would not be forced to base its prices on the costs of a hypothetical network optimised for all-new design and technology. For that to happen the threat of new entry would have to be based on an ability, unrealisable in actuality under even the best of circumstances, to bring the new design and technology to bear immediately in a legacy-sized network.

78 It might therefore be thought that the concept of basing prices on the costs of an efficient operator with the scale and scope achievable by all MNOs represents a compromise between these somewhat offsetting elements of how a competitive market – even a hypothetical one – would operate and the outcomes that it would produce.

79 However, the question of how to estimate that achievable scale and scope needs to be answered. What size is achievable by all MNOs?

80 In the present proceedings, we do not consider that a convincing case has been made that "achievable" translates into a 25% market share. Whether each of four operators in a market could achieve a 25% market share ignores questions about how the market is defined. Do all operators aspire to serve the whole market? What if some prefer certain market niches? Why should a business plan based on serving only a particular geographic area be ruled out?

81 Moreover, it may be that, for example, an operator that did seek to serve only a limited geographic area would enjoy the absence of some diseconomies of scale faced by a firm operating nationally. That is, it might not suffer from a lack of economies of scale at all. Alternatively, government-imposed roll-out obligations, if there were any, could be relevant. No materials were before us on that matter.

82 Furthermore, no evidence was presented regarding the minimum efficient scale in this industry. It is possible that in the long run, four operators, each with a 25% market share, is not a sustainable outcome. But in any case, minimum efficient scale may be virtually impossible to determine. For example, it might itself vary for operators with differing business plans.

83 In proceedings where it was necessary to determine the issue of an appropriate benchmark operator in terms of scale and scope, that is, size or market share, materials supporting the proposed approach would be needed. It would be necessary to have regard to market realities.

84 Having regard to the conclusions we have reached in relation to other aspects of Vodafone's cost models and in relation to the Pass Through Safeguard, it is not necessary for us to reach a concluded view on what is the benchmark of an efficient operator by reference to which an MNO's costs are to be assessed for their efficiency.

15. SPECIFIC ISSUES RELATING TO THE COSTS DETERMINED FROM THE PwC MODELS

15.1 Expert Reports

85 A number of expert reports were included in the material placed before us and we wish to make some observations about how those reports came into existence, and the manner in which the parties used and relied on them.

86 On 14 April 2005, the Commission issued a Discussion Paper and invited interested parties to submit their views on Vodafone's undertaking and the supporting submissions.

87 Submissions in response to the Commission's invitation included two reports prepared for Hutchinson: one by Marsden Jacob dated 17 August 2005 ("the Marsden Jacob Report"), and the other by Gibson Quai dated August 2005 ("the Gibson Quai Report").

88 The Commission retained Analysys to examine the two PwC reports. Analysys produced two reports for the Commission, one on 23 November 2005 ("the First Analysys Report) and the other on 23 December 2005 ("the Second Analysys Report"). The First Analysys Report which records its examination of the First PwC Model also draws on:

- a set of questions sent to Vodafone by the Commission on 3 October 2005 and Vodafone's response, dated 17 October 2005;
- the Marsden Jacob Report; and
- the Gibson Quai Report.

The Second Analysys Report, which records its examination of the Second PwC Model, lists:

- specific concerns with revised aspects of the PwC model; and
- concerns presented in the First Analysys Report which "still apply".

89 Vodafone submitted to the Commission an evaluation, dated 6 February 2006, of PwC's modelling by NERA ("the NERA Report"). The NERA Report "... focused on the revised version of the [Second PwC] model as it corrects a number of errors in the first version and uses more up to date cost and input data." PwC responded to the Analysys reports on 8 February 2006 in a report entitled "Response to Analysys papers on PwC Models".

90 Vodafone put in issue the statement in a disclaimer appearing on page one of the Gibson Quai Report that in making the report Gibson Quai "... has used its professional skills and judgement to provide the conclusions contained in this report but makes no representation or gives any warranty in relation to the information, conclusions and statements included in this report."

91 Also, on the assumption that the author of the Gibson Quai Report was Mr Dominic Quai, Vodafone queried the weight that should be given to the report. Vodafone referred to Mr Quai's curriculum vitae and submitted that his practical experience appeared to have ended in 1987 (which was before the introduction in 1993 of GSM networks) and that the Gibson Quai Report was not one which would demand a great deal of consideration.

92 While a disclaimer of the kind put in issue by Vodafone may be somewhat incongruous in an expert's report relied upon before a tribunal or a court, its existence is not such an issue as to lead us to reject, or give less weight to, the report. Indeed, if it were, it might also lead us in that direction in respect of other reports before us. For example, the First PwC Report, which Vodafone advanced as the foundation of its 16.15 cpm target price, contained the disclaimer that "PricewaterhouseCoopers LLP does not accept any responsibility and disclaims all liability (including negligence) for the consequences of any person other than Vodafone Australia acting or refraining from acting as a result of the contents of this Report".

93 However, Vodafone's submission exposes an issue which arises where a tribunal in our position is reviewing a matter on the merits on the basis of the material which was before the Commission without the opportunity to test or evaluate the experts' evidence by hearing them or through cross-examination. In that situation, the qualifications and experience of the persons responsible for the expert reports assume greater significance.

94 It is instructive to consider Vodafone's submission with respect to the weight to be given to a report having regard to the author's experience in the context of our function in reviewing the matter. A party seeking to have the Commission accept or reject an undertaking should have in mind that if the Tribunal were required to review the Commission's decision, the Tribunal may have regard only to information given, documents produced or evidence given to the Commission in connection with the making of the Commission's decision to which the review relates: s 152CF(4)(a). Thus, where a party seeks to rely on an expert's report to advance its case, the expert's qualifications, background and experience should, ideally, form part of the report and the relevance of the qualifications, background and experience should be linked directly to the subject matter of the report. A statement prepared to demonstrate the relevance of an expert's qualifications, background and experience to the matter under consideration by the Commission (or, on review, by the Tribunal) is far preferable to what appear to be pro forma statements such as those submitted in connection with the First PwC Report, Second PwC Report, Gibson Quai Report, Marsden Jacob Report, NERA Report, First Analysys Report and Second Analysys Report.

95 Also, while it may be correct to say, as Mr Hutley QC did, that it appears from Mr Quai's curriculum vitae that he left the employ of Telecom Australia prior to the 1987 introduction of its analogue Advanced Mobile Phone System, it does not necessarily follow that his

subsequent experience is irrelevant to the matter before us or that the Gibson Quai Report should be given no weight.

15.2 Summary of claimed Empirical Flaws in models

96 It is material to the issue whether we are satisfied that the target price is reasonable that the two modelling exercises produced different results. The target price of 16.15 cpm in Vodafone's undertaking is based on the First PwC Model, as outlined in the First PwC Report. The Second PwC Model, which Vodafone submitted "verified" the First PwC Model, included refinements and enhancements and corrected errors (see par [35] above) in the First PwC Model to arrive at a price [X] cpm above the target price in the undertaking.

97 It is also of significance that notwithstanding that the First PwC Model upon which the target price of 16.15 cpm is based contained five "errors" which were "corrected" in the Second PwC Model, Vodafone submitted we should accept the product of the First PwC Model, its target price of 16.15 cpm, as reasonable.

98 The Commission submitted that even if Vodafone's conceptual approach were accepted, empirical flaws in the First PwC Model, which the Commission was able to quantify, resulted in an overstatement in the cost of supplying Vodafone's MTAS of at least 4.76 cpm. The following table summarising the impact of correcting the First PwC Model for the empirical flaws the Commission quantified was put in support of the Commission's submission:

<u>Target price specified in Undertaking</u>	<u>16.15 cpm</u>
Correction for too short asset lifetimes	-0.65 cpm
Correction for error in tilted annuity calculation	-0.97 cpm
Correction for incorrect routing factors	-0.81 cpm
Correction for short message service centre costs	-0.07 cpm
Correction for inaccurate splits of non-network costs	-2.42 cpm
Correction for inclusion of subscriber direct assets	+0.16 cpm
<u>Corrected target price</u>	<u>11.39 cpm</u>

99 The Commission further submitted that while the Second PwC Model corrected the errors in:

- the tilted annuity calculation; and
- the allocation of SMS centre costs,

it introduced the following five new empirical flaws:

- unreasonable price trends;
- unsupported contingency costs;
- incorrect inclusion of a return on assets in the course of construction;
- incorrect exclusion of acquisition and retention costs from the non-network indirect costs mark-ups; and
- unsupported revised splits of non-network asset costs and non-network operating costs.

100 Mr Hutley QC provided an issues paper in his opening submissions on behalf of Vodafone listing the issues which had been raised in relation to Vodafone's pricing principles, its price and its methodology. It included, by reference to the First and Second PwC Models, the items in the table provided by the Commission and the new empirical flaws the Commission submitted were introduced by the Second PwC Model. The list set out the following issues:

Methodology

- A. Efficiency of costs (other than scale or scope) – inefficiency in infrastructure configuration (capital costs) and/or operating costs.
- B. Economies of scale and scope – is Vodafone an “efficient” benchmark operator?

First PwC Model run 2002/2003 data

- C. Asset lifetimes for radio site equipment and buildings.
- D. Error in tilted annuity calculation.
- E. “Incorrect” routing factor – voicemail.
- F. Incorrect allocation of short message service costs.
- G. “Inaccurate” splits of non-network asset and operating costs.
- H. Incorrect inclusion of subscriber direct assets.
- I. Unaccounted for likelihood of decrease in per unit cost.
- J. “Incorrect” SMS and GPRS conversion factors.
- K. Price trends and changes.

Second PwC Model run 2003/2004 data

- L. Contingency costs.
- M. Inclusion of a return on assets in the course of construction.
- N. Exclusion of acquisition and retention costs from non-network indirect cost mark-ups.
- O. Revised splits of non-network asset costs and non-network indirect costs.
- P. Weighted Average Cost of Capital (“WACC”) – the choice of asset beta.

We have already addressed Issues A and B.

101 The following reasons address items in the Commission’s table at par [98] and what it described as the additional empirical flaws using the alphabetical identification attributed to them by Mr Hutley QC.

15.3 Issue C: Asset lifetimes for radio site equipment and buildings

102 In order to calculate Vodafone’s capital costs and a depreciation profile for an appropriate return of capital (as distinct from a return on assets which is the function of the WACC), both PwC models relied on an estimate of the useful economic life of each relevant Vodafone asset.

103 While the First PwC Report was silent on the basis for the estimate of the useful economic life of each relevant Vodafone asset, the Second PwC Report provided the following explanation:

“The expected economic life was also estimated by Vodafone’s engineers. The process followed was to use the accounting lives as a starting point, and consider whether there were or were not any specific reasons why the accounting life would not be suitable for use in the model, given the requirement for the financial statements to fairly present the Net Book Value of Vodafone’s assets. It was concluded that the accounting lives were suitable for all asset categories.”

104 Hutchison, Telstra and the Commission put in issue the estimate of [X] years for the useful economic life of radio site equipment and buildings submitting that the estimate was too short. Hutchison submitted that an appropriate estimate of the useful life of such assets was 25 years, consistent with the approach adopted in other jurisdictions such as Sweden. Telstra submitted that such asset life should be at least 15 years. The Commission submitted that asset life should be at least 15 years, if not 25 years. A number of the expert reports

supported the proposition that the useful economic life of these assets used in the PwC models was too short. Gibson Quai believed that:

“The economic lives of buildings such as switch buildings should be at least 25 years, not [X] years as suggested by PwC.”

Marsden Jacob said:

“We have compared the asset lives in the PwC model with those in publicly available models. Our review indicates the asset lives in the PwC model are too short and hence will tend to overstate annualized costs.”

Analysys in its First Report believed that a [X] year lifetime was short, and that 15-20 years was more appropriate. In its Second Report Analysys said under the heading “Concerns presented in our previous report which still apply” that the asset lifetime of [X] years for site acquisition was short.

105 Vodafone’s consultant, NERA, did not expressly support the reasonableness of the estimate. NERA said:

“Based on NERA’s experience of building mobile TSLRIC models, [X] years would appear to be rather a short asset life for sites and 15 years would be much more typical. However, Vodafone have argued that the [X] year lifetime is effectively an average of [X] years for the average site lease term and less than [X] years for ancillary costs such as power, cabinets and air conditioning. If that is the case, the use of a composite asset life of [X] years, which is broadly consistent with an average site lifetime of 15 years, may not be unreasonable.”

106 The effect of adopting an unreasonably short life is to increase the cost of the VMTAS, all other things being equal. Analysys estimated adjusting this asset life would reduce the VMTAS cost estimate by 4%. The Commission submitted that the adjustment would reduce the VMTAS cost estimate by 0.65 cpm.

107 During the hearing, an issue arose whether the [X] year asset lifetime assumption for radio site equipment and buildings as calculated by Analysys related just to the lease or to all of the costs of establishing a site, that is, the lease and the equipment such as macrocells, microcells, and picocells. Having regard to all the material before us we do not consider that the assets in issue include base station receivers. Further, we do not consider that the lifetimes of similar assets adopted by Optus are relevant to our consideration.

108 In the course of its consideration of the undertaking the Commission on 3 October 2005 asked Vodafone to respond to a number of questions. One question was “Is the economic life really [X] years for radio and switch sites? What data is available to support a [X]% annual replacement of radio sites today?” Vodafone replied on 17 October 2005:

“The lives used in the model are Vodafone’s accounting lives – they represent a view of economic value given uncertainty and risk. Vodafone considers that an economic life of [X] years for radio and switch sites is reasonable and appropriate for a number of reasons.

Vodafone believes it is appropriate to consider the nature of leases for radio sites when determining whether an economic life assumption is appropriate. Vodafone estimates that the average term of site leases is [X] years. The average lease term could be said to give an upper limit for the life of the site acquisition and preparation as some of the up-front capital spend would not necessarily last for the whole life of the lease, e.g. the cabinet, power equipment, air conditioning. Therefore, the weighted life of the site acquisition and preparation is below the average lease term.

Further, there is considerable risk to Vodafone that it will be required to relocate or remove its equipment from a site for a variety of reasons including:

- (1) when the lease of a site has expired, there is considerable risk that the landlord will not enter into a new lease;*
- (2) in relation to rooftop installations, a landlord is typically able to terminate a lease within its term if the landlord wishes to renovate or demolish the building where the site is located;*
- (3) the suitability of the site may alter during the term of the lease (e.g. interference) requiring Vodafone to terminate the lease and relocate to another site;*
- (4) Vodafone’s anticipates, given its investment in a 3G network, that it will be seeking to decommission some 2G sites over the next three or so years;*
- (5) Discussions are taking place with other carriers about network sharing for 2G assets. While these discussions are preliminary and would be subject to the necessary regulatory approvals, this also adds to the uncertainty regarding the life of Vodafone’s 2G sites;*
- (6) the community concerns regarding electromagnetic emissions (EME) also increase the risks to Vodafone that it will be required to relocate its equipment from existing sites (e.g. sites close to schools).*

Based on all the above considerations, Vodafone has concluded that there is no reason to diverge from the accounting life which has been assessed by Vodafone’s independent auditors who concluded that a life of [X] years is appropriate.”

We note that Vodafone did not supply to the Commission any data to support its contentions, nor did it give any examples of the occurrences or circumstances to which it referred.

109 PwC, in a paper dated 8 February 2006, responded to the reports submitted by Analysys relating to the PwC models. In relation to the lifetime of assets for site acquisition, PwC made the following observation:

“PwC recognises that its assumption for the economic life of the site acquisition categories is below the assumptions that Analysys has made when it has built models for regulators in other jurisdictions. PwC has discussed this issue with Vodafone’s network engineers and believes an assumption of a [X] year life is reasonable for the reasons explained to Analysys in the letter dated 17 October 2005 [see par [108] above]. Vodafone’s arguments are based on events for which a significant risk exists in the future, e.g. the removal of sites for health concerns. It is not possible to empirically test this argument, but PwC believes the threat should be factored into the forward-looking useful economic life and therefore an assumption below the average length of site leases is not unreasonable. Therefore, PwC believes that a useful life assumption that is consistent with Vodafone’s statutory accounts is not unreasonable.”

110 PwC’s belief may not, on its own, be unreasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB, but it has to be considered in the light of the material and evidence from the other experts. In the light of that consideration the question arises whether we are satisfied, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, that the estimate in the model of [X] years for asset lives for radio life equipment and buildings is reasonable.

111 As a general proposition, Vodafone submitted that many of what the Commission described as “flaws” in the model involved matters of legitimate disagreement between experts about the proper approach to modelling with none of them being either strictly wrong or right. The “flaws” were, it submitted, essentially matters of judgment as explained by the Tribunal in *Telstra Corporation Limited* (supra) at par [63]:

“In this area of analysis there is no one correct or appropriate figure in determining reasonable costs or a reasonable charge. Matters and issues of judgement and degree are involved at various levels of the analysis. In considering whether Telstra’s estimates of its costs are reasonable we are not driven to considering whether the Commission’s or other parties’ views or assessment of those costs are more reasonable. Nor do we enquire whether Telstra’s method or approach in estimating its costs is the correct or

appropriate approach. If Telstra's method or approach in estimating its costs is reasonable having regard to the statutory matters set out in ss 152AH and 152AB then the matter rests and a comparison with the \$9.00 monthly charge is then to be made ... Put shortly, our inquiry is whether the method employed by Telstra at each level of determining the costs of its LSS [Line Sharing Service] is reasonable having regard to the statutory matters identified in s 152AH and the objectives set out in s 152AB."

112 We are faced with conflicting expert evidence with regard to these "flaws". As noted earlier we may have regard only to information given, documents produced or evidence given to the Commission in connection with the making of the Commission's decision. The limitation on the material to which we may have regard denies us the means of testing and assessing an expert's opinion which might be available in other proceedings. For example, we do not have the benefit of listening to oral evidence and cross-examination, or the exchange of views between experts in a "hot tub". Limited as we are, faced with experts' reports expressing divergent opinions, we must look at all the material before us to see whether there is anything in it which might properly lead us to prefer one opinion over another. In undertaking that exercise, we have in mind that an applicant seeking to have the Tribunal accept an undertaking has two tasks:

- first, satisfying the Tribunal that the applicant's expert's opinion is to be preferred; and
- secondly, satisfying the Tribunal that any term or condition in the undertaking based on that opinion is reasonable.

As we are not bound by the rules of evidence (s 103(1)(c) of the Act), an applicant's task should not be overly onerous. For example, hard information might be contained in the form of a statement from relevant personnel to which an expert may refer and draw on to lay the foundation for an opinion.

113 In relation to the issue of the estimate in the models of asset lifetime for radio equipment and buildings a statement could have been made by a suitably qualified officer or employee of Vodafone providing information on any examples in Vodafone's 13 years of operations in Australia of the occurrence of risks of the kind it identified (par [108] above). For example, material might be forthcoming as to the number of times:

- a landlord has not entered into a new lease when one has expired;
- a landlord has terminated a lease in relation to rooftop installations within its term because the landlord wished to renovate or demolish the building where the site is located;
- the suitability of a site has altered during the term of the lease (for example, because of interference) requiring Vodafone to terminate the lease and relocate to another site; or
- community concerns regarding electromagnetic emissions required Vodafone to relocate its equipment from existing sites (for example, a site close to a school).

Such a statement would be of more assistance to us in considering whether we are satisfied that the asset lifetimes used in the model are reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB than the mere assertion of the risk of those events occurring as was given in Vodafone's response to the Commission's questions (par [108] above).

114 Also, else a conclusion be drawn that a foundation for an expert's opinion is *ex post facto* or contrived, it is in an applicant's interest if it is to be transparent that the foundation is laid prior to the expert expressing his or her opinion, rather than (as is the case here) after the opinion is called into question. In this respect we note that the explanations extracted in pars [103], [108] and [109] above for the foundation of PwC's estimates were provided only after the estimates were called into question.

115 Furthermore, if an applicant is to satisfy the Tribunal that the applicant's expert's opinion is to be preferred to the opinion of another expert, the expert's opinion must be free of ambiguity and expressed positively rather than, as is the case here, being expressed:

- in the negative ("may not be unreasonable" and "is not unreasonable": PwC's Response to Analysys reports on PwC models and the NERA Report see pars [105] and [109] above); and
- in language that is open to more than one interpretation whether the opinion expressed supports a finding of reasonableness ("... [X] years would appear to be rather a short asset life for sites and 15 years would be much more typical": see par [105] above).

116 Here we are faced with considering whether we should make a determination that we are satisfied that Vodafone's target price is reasonable based on, amongst other things, whether we prefer Vodafone's experts' opinions (PwC and NERA) over contra expert opinions (Gibson Quai, Marsden Jacob and Analysys) as to the reasonableness of Vodafone's estimates of relevant asset lives.

117 Oral submissions did not go beyond the material to which we have referred above. Nor is there anything in the material before us by way of hard information or raw data which lays an a priori foundation for PwC's estimate or NERA's tentative endorsement of the estimate.

118 Explanations of the basis upon which the estimates are made are *ex post facto* and less than satisfactory in that they are based on mere assertion, rather than hard information or raw data. Furthermore, while PwC may be correct to say "It is not possible to empirically test ... [an] ... argument ..." in relation to future events, as indicated in par [109] above, a statement from a suitably qualified officer or employee of Vodafone providing raw data of the number of times other risks identified by Vodafone have materialised in its 13 years of operation in Australia, is not beyond the realms of possibility. We note that the First Analysys Report stated:

"... the various site deployment risks facing Vodafone, whilst undoubtedly real, are not valid reasons for reducing the effective lifetime of the investments. This might be considered prudent in an accounting audit, but only to the extent that such risks result in real events would they be relevant from an actual lifetime perspective."

119 The opinions of both PwC and NERA on the issue of the reasonableness of the asset lives are expressed somewhat tentatively and negatively and, in the case of NERA, in a manner that is open to more than one interpretation (see par [115] above).

120 In the light of the matters to which we have referred, we are not satisfied having regard to the matters specified in s 152AH and the objectives set out in s 152AB that PwC's estimates of assets lives is reasonable. PwC's estimates of asset lives is one element in a series of elements used:

- in the First PwC Model, to arrive at Vodafone's target price; and
- in the Second PwC Model, to arrive at a price which Vodafone submits verifies that a reasonable target price is at or around 16.15 cpm.

Vodafone's failure to satisfy us of the reasonableness of PwC's estimates of asset lives is a factor we must take into account in considering whether we can be satisfied that Vodafone's target price is reasonable.

15.4 Issue D: Error in tilted annuity calculation

- 121 The Commission submitted that the First PwC Model contained a coding error in the tilted annuity calculation which resulted in the overstatement of Vodafone's network capital costs for 2002/2003. The Commission submitted that correction of this error would result in a reduction of 6% or around 0.97 cpm in the cost of the VMTAS. The error was identified by Analysys and related to the part of the calculation used in the model which adjusted the cost profile to reflect the period between Vodafone paying for the asset and the asset commencing productive service.
- 122 Vodafone agreed that the error existed and said it was corrected when the 2003/2004 data was run through the Second PwC Model. The Commission pointed out that Vodafone's price was based on the First PwC Model which contained the error and not on the Second PwC Model which corrected the error. The Commission observed that the Second PwC Model was submitted by Vodafone merely to provide "verification" of the First PwC Model.
- 123 Vodafone challenged this characterisation of the Second PwC Model. Vodafone's proposition was that the price derived from the First PwC Model was verified using Vodafone's 2003/2004 financial year data rather than that the Second PwC Model provided verification of the First PwC Model. Vodafone relied on the outputs of the two PwC models as evidence that its cost of providing its VMTAS is at or around 16.15 cpm.
- 124 Vodafone submitted that the relevant question before the Tribunal was whether the price of 16.15 cpm was reasonable and that all the evidence that related to that price must be considered. It contended that the Second PwC Model could not be disregarded by a misreading of Vodafone's submission as to that model's significance.
- 125 There is no dispute between the parties that a coding error in the tilted annuity calculation in the First PwC Report resulted in the VMTAS target price of 16.15 cpm in Vodafone's undertaking being overstated by 0.97 cpm.

126 Vodafone's submission that the Second PwC Report verified the target price of 16.15 cpm might find acceptance if the overstatement brought about by the coding error in the tilted annuity calculation was *de minimis* and the output of the Second PwC Model arrived at a figure that cancelled out the overstatement. That is not the case. The [X] cpm higher price resulting from the Second PwC Model does not cancel out a 0.97 cpm overstatement of the price in the undertaking, and would, all things being equal, suggest that the target price in the undertaking is overstated by a percentage of approximately [X]% or an amount of [X] cpm.

127 Also, addressing the coding error in the tilted annuity calculation as a singular issue ignores the possibility that an aggregation of some or all of the eleven empirical flaws identified by the Commission (the six in the First PwC Model and the five in the Second PwC Model, see pars [98] and [99] above) may lead to a conclusion that the cost of providing the VMTAS is not, as Vodafone would have it, "... at or around 16.15 cents per minute ..." but an amount less than 16.15 cpm such as to preclude us from being satisfied that the undertaking is reasonable.

15.5 Issue E: "Incorrect" routing factor – voicemail

128 Routing factors are used to reflect the fact that various services provided over the network will use the elements of the network with varying intensity. Routing factors are arrived at by examining the several network elements cost centres and, in respect of each element, determining the proportion of costs attributed to each centre that should be allocated to incoming calls. Because a number of incoming calls may go unanswered, and not use all the network elements they would if answered (in particular, base station controllers and base transceiver stations), an issue arose whether Vodafone was correct in treating incoming calls the same as outgoing calls in its determination of the proportion of costs attributed to each network element that should be allocated to incoming calls.

129 The Commission submitted that the direct cost allocation in the First PwC Model was based on routing factors that did not account for the fact that a proportion of incoming calls did not reach customers' mobile handsets. It contended that the routing factors used by Vodafone to allocate network asset costs were allocated equally between incoming and outgoing calls and that as not every incoming call was answered, the costs allocated to incoming calls, and therefore to the VMTAS, were overstated. Relying on the First Analysys Report, which stated the potential impact of a reduction of radio routing factors to reflect calls diverted to

voicemail was a 5% reduction in the unit cost of termination (par [133] below), the Commission submitted correcting this error would reduce the cost of providing the MTAS by 0.81 cpm.

130 The First PwC Report stated:

“Routing factors, reflecting the extent to which the different services drive network usage for the main network elements, were provided by Vodafone. ... Some routing factors are universal – for example off-net calls will use one radio network per unit of output, whereas an on-net call will use two; others – for example backhaul transmission links – will reflect the network architecture in question. They are based on engineering measurements drawn from Vodafone’s actual network as provided by Vodafone; where the necessary network engineering data have not been available, the figures have been estimated by Vodafone’s network engineers.”

131 In the course of its consideration of the undertaking, the Commission, on 3 October 2005, asked Vodafone to respond to the following question, among others:

“Why have incoming and on-net radio routing factors not been adjusted (downwards) for the proportion of incoming and on-net minutes which are diverted to voicemail or diverted to another number – therefore not utilising the radio network for call completion? What is the proportion of incoming and on-net minutes which are diverted?”

Vodafone replied on 17 October 2005:

“In addition to typical voicemail services where customers call their voicemail, Vodafone offers its customers a call back option called RingAlert (which is free) whereby the customer’s handset is called enabling the customer to listen to their voicemail messages. Under these circumstances, the incoming call is effectively in two parts, one of which does utilise the radio network. Vodafone does not have accurate data splitting the voicemail calls that are retrieved in this way vis-à-vis those retrieved by customers actively calling their voicemail. Vodafone does not also have accurate data for the number of minutes diverted to other numbers. Furthermore, PwC is not aware of any mobile cost model which seeks to adjust the routing factors for this effect (e.g. UK, Sweden, Greece, Israel, Tanzania).”

This issue was the subject of consideration by other experts. Analysys said:

“Although consistent with cost modelling approaches in other jurisdictions, using radio routing factors of [X] neglects the proportion of calls that are diverted to voicemail systems. This has been queried by GQ-AAS [the Gibson-Quai Report]. Vodafone has also noted that some incoming calls deposited on the voicemail system are automatically completed by a call-back – therefore effectively comprising a ‘normal’ incoming call in two parts.

Deciding whether or not to remove the cost of components of the radio resources which are avoided when incoming calls are left on voicemail effectively amounts to a decision for ACCC on which parties (incoming caller and/or mobile subscriber) benefit from incoming calls diverted to voicemail, and therefore whether these costs should be recovered in the MTAS charge.”

132 Commenting on the First PwC Model, Gibson Quai said:

“The routing factors for incoming calls, which use the MTAS, are higher than we would expect, especially the routing factors for BTS [Base Transmission Station] and BSC [Base Station Controller] given that many incoming calls do not get answered by the called handset.”

Having set out the routing factors used by PwC together with comments and variations that Gibson Quai believed would apply to a typical GSM network, Gibson Quai quantified this observation as follows:

- “100. It would not be unreasonable to assume that more than 30% of incoming calls are not answered by the called service and thus do not use the BTS or BSC. This may be due to a number of reasons such as*
- a Receiving party is on another call,*
 - b Receiving party is out of range,*
 - c Receiving party is cancelled or suspended, and*
 - d Call is diverted to voicemail or another number.*
- 101. The incoming call routing factors for the BTS and BSC could therefore be reduced to say 0.7. About 60% of total costs of a mobile network can be attributed to the BTS and BSC systems. This is a conservative estimate. Thus a reduction in the routing factor for BSS [Base Station Sub-System] element for incoming calls would reduce the cost of providing the MTAS substantially.*
- 102. We have previously noted that the Vodafone GSM technology is less traffic-efficient than other forward-looking technologies. Thus more traffic elements and BTSs are required to handle the traffic. Reducing the routing factor for these network elements for inbound calls would reduce the proportion of these costs allocated to the MTAS and so would substantially reduce the cost Vodafone incurs in providing this service.”*

Vodafone submitted that the Gibson Quai Report was not authority for the proposition that approximately 30% of incoming calls are not answered. However, it is the opinion of an expert which, as we have noted earlier, we are entitled to take into account.

133 Analysys was also concerned with the radio routing factors used in the First PwC Model. It observed in the First Analysys Report:

“The radio routing 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 routing factor to account for this effect amounts to a specific exclusion of the recovery of voicemail deposit and retrieval costs from incoming callers.”

Analysys estimated that 15% of incoming and on-net calls are diverted to voicemail and that the reduction of radio routing factors to reflect this diversion resulted in a consequent [X]% reduction in the unit cost of termination. Again, Vodafone submitted that Analysys’ report is not authority for the proposition that 15% of incoming and on-net calls are diverted to voicemail. It is the opinion of an expert which we are entitled to take into account.

134 Analysys maintained its concerns about the radio routing factors in the Second Analysys Report but it did not include the [X]% reduction in the unit cost of termination attributable to the radio routing factors in a table summarising its views in that report. That table did not repeat the cost impacts which still applied as a result of its consideration of the First PwC Model but which had not been addressed by PwC in the Second PwC Model. NERA assumed that this exclusion occurred because Analysys recognised that, if incoming call routing factors were adjusted downwards, voicemail deposit and retrieval costs would not be recovered from incoming callers. That assumption is erroneous and there is no basis for it to be found in the Second Analysys Report.

135 Vodafone contended that Analysys did not consider the radio routing factors used in the PwC models to be an error but had rather characterised its approach to the radio routing factors as a suggested revision. That contention understates the conclusion reached by Analysys which was that the radio routing factors failed to take account of a factor which had an impact on Vodafone’s termination costs.

136 PwC responded to Analysys’ concerns about the radio routing factors by observing that while Vodafone recognised that some calls terminated in the voicemail system, given that subscribers have a ring-back facility that allowed for free retrieval of voicemail messages, calls terminating on the voicemail system should be treated as two-part terminating calls and therefore no adjustment to the radio routing factors was necessary. PwC also observed that if the Commission wished to move to the next level of detail, for example, understanding how many incoming and on-net calls are terminated in the voicemail system which are not

covered by the ring-back facility, it would be necessary to move to the next level of detail on all other network elements. PwC believed this would be extremely time-consuming to implement.

137 The Commission did not accept this proposition. While it accepted PwC's contention that it was important to strike the right balance between levels of accuracy and the time and effort that accuracy would require, it considered that an appropriate set of routing factors should, where possible, reflect relatively obvious differences in traffic patterns between different network elements. In the Commission's view, the fact that Vodafone, PwC, Analysys and Gibson Quai had accepted that a proportion of incoming calls will not use "radio" network elements supported the view that an appropriate set of routing factors should be used.

138 The Commission identified three problems with PwC's proposition (par [136] above) that calls terminating on the voicemail system should, because of the ring-back facility, be treated as a two-part terminating calls:

- first, Vodafone did not provide data as to the percentage of its customers who have access to the facility;
- secondly, Vodafone did not provide data as to the percentage of calls that are diverted to those customers' voicemail; and
- thirdly, if ten messages are diverted to a customer's voicemail, only one ring-back call is made to that customer to alert the customer to the messages.

139 The Commission submitted that the fact that Vodafone did not have the data available to make the appropriate adjustment (or even to estimate its magnitude) demonstrated that it could not satisfy the Tribunal of the reasonableness of this aspect of its undertaking. Telstra noted that Vodafone's approach made the inappropriate assumption that all incoming calls would be answered and that no such calls would be diverted to voicemail. Telstra noted that this assumption was known to be false and even after it was pointed out no alteration was made to the Second PwC Model to account for this fact.

140 Vodafone submitted that its records did not contain information separating out the percentage of unanswered calls retrieved by voicemail vis-à-vis its RingAlert service. It submitted that it did not have the data and that there was not a model anywhere that had ever applied this, and

said that there were militating factors which apply which altered any effect, such as the RingAlert service.

141 Mr Hutley QC for Vodafone submitted that in those circumstances it was not unreasonable not to seek to adjust the routing factors and that it was a reasonable approach not to do so, having regard to the nature of the exercise in which the Tribunal was engaged.

142 The difficulty with that submission is that it is known and accepted that a percentage of calls are diverted to voicemail and this has not been taken into account in the routing factors used by PwC.

143 Vodafone relied on NERA's conclusion that:

“Given that incoming calls give rise to voicemail costs, and that it is not clear that the routing factors do in fact significantly overstate the use of radio resources by incoming calls, we do not believe that the costs from the PwC model should be adjusted in the way suggested in Analysys's first report.”

144 Vodafone's response to the third problem identified by the Commission (par [138] above) was that:

“The critical value is not the number of terminating calls, but the volume of terminating call minutes. Therefore, the ring-back facility does mean that it is appropriate to characterise calls that are diverted to voicemail as two-part terminating calls because every minute of use involved in the depositing of the voicemail message by the caller is matched by the minutes of use involved in retrieving that message through the ring-back service.”

145 Again, we are faced with considering whether we should make a determination that we are satisfied that Vodafone's target price is reasonable based on, among other things, whether we prefer Vodafone's experts' opinions (PwC and NERA) over contra expert opinions (Gibson Quai and Analysys) as to the reasonableness of a critical element in the model used to derive the price and to verify it.

146 The weight that might be given to the NERA opinion is diminished because:

- it is tentative in its conclusion “... it is not clear that the routing factors do significantly overstate the use of radio resources by incoming calls ...” (see par [143] above); and

- as observed in par [134] above, its conclusion is reached after an erroneous assumption that a reduction in the cost of call termination of [X]% was not assessed by Analysys in relation to radio routing factors.

147 As we previously extracted at par [130] above, the First PwC Report observed:

*“Routing factors ... were provided by Vodafone ...**based on engineering measurements** drawn from Vodafone’s actual network ... [and] ... where the necessary network data have not been available, the figures have been **estimated by Vodafone’s network engineers.**”* (emphasis added)

PwC accepted the routing factors provided by Vodafone and applied them in its modelling exercises without a critical assessment whether they were appropriate. Its view on their appropriateness is only provided *ex post facto*, once they have been called into question by the Commission and the two Analysys reports. Its view is not backed-up by hard data. Neither the raw engineering measurements, nor the network engineers’ estimates, were in the material before us in a manner that allowed us to test whether they provided a proper foundation upon which the PwC models might derive a reasonable VMTAS target price.

148 When the routing factors are put in issue and a question asked by the Commission, Vodafone’s answer (par [131] above) admits to not having accurate data to enable it to answer the question. Nor does it have its network engineers provide estimates of the kind described in the First PwC Report. Further, PwC’s response (par [136] above) to the Analysys reports, to the effect that it would be extremely time consuming to provide the detail, is at odds with the fact that Vodafone’s target price derived from the First PwC Model is, at least in part, founded on network engineers’ estimates. Such estimates and the basis upon which they are made might be readily provided, tested and the issue resolved one way or the other.

149 In our view, Vodafone’s submission that another regulator (Ofcom) had decided to adopt routing factors the same as those used by Vodafone and that we should therefore be satisfied that they are reasonable fails. Vodafone did not provide us with sufficient information to allow us to evaluate the relevance of the other regulator’s decision: information about such matters as the structural and regulatory framework of the industry in the regulator’s country, the criteria used by the regulator in reaching the decision and the trade-offs that might have been made in reaching the decision.

150 As we identified above in par [112], an applicant seeking to have the Tribunal accept an undertaking having its foundation in an expert's opinion has two tasks:

- first, satisfying the Tribunal that the applicant's expert's opinion is to be preferred; and
- secondly, satisfying the Tribunal that any term or condition in the undertaking based on that opinion is reasonable.

By not providing data or, in the absence of readily available data, transparent estimates by its network engineers, Vodafone fails the first task. Accordingly, we are not able to be satisfied that it was reasonable for Vodafone to treat incoming calls the same as outgoing calls in its determination of the proportion of costs attributed to each network element that should be allocated to incoming calls.

151 As with PwC's estimates of asset lives, the radio routing factors are one element in a series of elements used:

- in the First PwC Model, to arrive at Vodafone's target price; and
- in the Second PwC Model, to arrive at a price which Vodafone submitted verified that a reasonable target price is at or around 16.15 cpm.

Vodafone's failure to satisfy us of the reasonableness of the radio routing factors is a factor we must take into account in considering whether we can be satisfied that Vodafone's target price is reasonable.

15.6 Issue F: Incorrect allocation of short message service (SMS) centre costs

152 The First PwC Model incorrectly allocated \$[X] million in SMS centre costs as a network indirect cost (ie, a cost that is proportionately allocated to all mobile services, including the VMTAS) rather than as a direct cost to the SMS centre. This error was acknowledged and accepted by PwC. The error reduced the target price in Vodafone's undertaking by 0.07 cpm. The error was corrected in the Second PwC Model where the annual capital cost associated with the SMS centre was directly allocated by the model.

153 The Commission submitted that while the error was corrected in the Second PwC Model, the target price was based on the First PwC Model and the Second PwC Model was submitted by

Vodafone merely to provide “verification” of the First PwC Model. We note again, as we did in pars [122]-[126] above, that Vodafone challenged this characterisation of the Second PwC Model.

154 Vodafone submitted that Analysys did not include the re-allocation of SMS centre costs in its “suggested revisions”, apparently accepting its immaterial nature. Vodafone relied on the outputs of the PwC models using 2002/2003 and then 2003/2004 data as evidence that the cost of providing the VMTAS was at or around 16.15 cpm, as opposed to mere “verification” as submitted by the Commission.

155 The relevant passage in the First Analysys Report which sets out Analysys’ conclusion on the magnitude of unit costs and a summary of it in an attached table, does not support Vodafone’s submission that Analysys accepted the error as immaterial. The passage presents a summary of Analysys’ views on the magnitude of unit cost in a table noting that:

- it has not adjusted the model calculations to include all its suggested improvements in the table;
- all but two of the adjustments included in the table reduced the cost of providing the VMTAS;
- all were material in nature (ie greater than 1%); and
- it would expect that Vodafone’s proposed model result materially overstated the result that would be achieved by adopting all Analysys’ suggested revisions.

156 Analysys may not have included the SMS centre cost error adjustment in its table, but the error nevertheless contributed to what Analysys considered to be a material overstatement of the cost of providing the VMTAS. While in percentage terms (0.43%) or even in cents per minute terms (0.07 cpm) the error adjustment may not, on first glance, appear significant, in annual terms it involves an adjustment of some \$[X] million.

157 Also, as is the case with the tilted annuity calculation (par [127] above), addressing the empirical flaws identified by the Commission as single issues ignores the possibility that an aggregation of some or all of the flaws may lead to a conclusion that the cost of providing Vodafone’s VMTAS is not, as Vodafone submitted “... at or around 16.15 cents per minute

...” but an amount less than 16.15 cpm such as to preclude us from being satisfied that the undertaking is reasonable.

158 We do not therefore exclude this error from our consideration whether we are satisfied that Vodafone’s target price of 16.15 cpm is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB.

15.7 Issue G: “Inaccurate” splits of non-network asset and operating costs and Issue O: Revised splits of non-network asset costs and non-network indirect costs

159 Issues G and O focus on whether the First PwC Model and the Second PwC Model are correct in their allocation between Vodafone’s retail operations and its network operations of indirect non-network costs associated with the totality of its business, in particular such costs of:

- computers;
- billing; and
- furniture and fittings.

Costs in the context of these issues include:

- capital expenditure (“capex”) or expenditure on the acquisition of assets; and
- operating expenditure (“opex”) or expenditure on operating or maintaining the assets.

160 The allocations determine those costs (retail) which are excluded from the PwC models and those (non-network) which are included. In an *aide memoire* the Commission explained the issue:

“The issue surrounds the allocation of non-network asset and operating costs in the PwC model, particularly how they have been allocated between ‘retail’ and network/non-network activities. These costs comprise approximately one-half of the total costs in the PwC model, so this issue is of quantitative significance.

...

Costs allocated to network and non-network feed through to the MTAS estimate. Costs allocated to ‘retail’ do not feed through to MTAS. Therefore, the greater the proportion of these costs allocated to ‘retail’ activities, the lower the MTAS estimate and vice versa.”

161 The First PwC Report outlined a number of assumptions and caveats contained in the First PwC Model which included the following:

“The granularity of Vodafone’s cost data is such that, in our experience, further disaggregation has been necessary in a number of specific instances, so as to prevent a biasing of results. In the absence of detailed data, the preferred alternative was to rely upon a combination of our experience in other jurisdictions (and, specifically, information from costing modelling undertaken for Vodafone in the UK) and estimates provided by Vodafone. These further disaggregations, and the sources used in deriving such, are set out below:

- *billing (capital costs) – split wholesale ([X]%) and retail ([X]%). Source: Vodafone UK cost model, with costs split consistent with the ratio of gross book value of assets.*
- *IT costs (to be used in allocating the hardware and software capex and opex) – split retail ([X]%) and non-network indirect ([X]%). Source: Vodafone UK cost model, with costs split consistent with the ratio of gross book value of assets.*
- *Furniture and fittings – split retail only ([X]%); network only ([X]%) and non-network indirect ([X]%). Source: Vodafone UK cost model, with costs split consistent with the ratio of gross book value of assets.*
- *‘other opex’ – split between subscription related ([X]%) and non-network indirect ([X]%). Source Vodafone estimate.”*

162 The Second PwC Model retained the billing and IT allocations used in the First PwC Model, but it varied the furniture and fittings and the other opex allocations.

163 The furniture and fittings allocation as varied was described in the following passage in the Second PwC Report:

“3.2 Furniture and fittings

In the 2002/03 model it was assumed that [X]% of furniture and fittings assets were subscription related, [X]% network related and [X]% head-office related based on the split experienced in other jurisdictions. However, from the detailed review of the fixed asset source data, it appears that furniture and fittings comprise two TB [trial balance] codes, furniture and fittings and network furniture and fittings. The network furniture and fittings comprise [X]% of the total of furniture and fittings. We have assumed the remaining [X]% of furniture and fittings costs should be allocated to subscription and head-office in proportion to the [X] split previously assumed.

Whilst we have not undertaken a similar review of the 2002/03 data, there was no material investment in fixtures and fittings in 2003/04 and therefore

the previously adopted assumption appears to be conservative and results in an understatement of the termination rate.”

The Second Analysis Report noted that:

- the Second PwC Model split furniture and fittings into [X]% retail, [X]% network and [X]% non-network;
- the split of furniture and fittings was a revised split; and
- its previous comments on the splits proposed by Vodafone still applied.

164 The other opex allocation was varied as a result of a more detailed review of the underlying accounting data described in the following passages from the Second PwC Report:

“2.1 Operating cost data

A detailed review of the underlying operating cost data was performed to ensure the inputs to the cost model are consistent with Vodafone Australia’s financial statements. ...

...

Apart from reviewing the total costs that have been included in the model, a review of the categorisation of costs has also been performed. This has been done by reviewing outputs by account code from Vodafone’s accounting system, and reviewing how the costs for the different account codes were allocated. Whilst PwC have not been able to check on a code-by-code basis (it is not always apparent what the codes relate to), it appears that Vodafone have adopted a logical approach in categorising the costs, and that the summary costs shown in the table in Appendix 1, appear to be consistent with the underlying accounting data that has been sourced from Vodafone’s accounting system.

Whilst no inconsistencies were found in the categorisation of costs, we have noted an inconsistency between the nature of the ‘other opex’ costs, and how they were treated in the original cost model with 2002/03 data. This is explained in more detail in section 3.1.

...

3.1 Other opex

In the 2002/03 model, there was a category of costs entitled ‘other opex’ that included a variety of costs which were not necessarily identified. In the absence of more detailed information at the time it was assumed that [X]% of the costs were directly related to subscription and the remaining [X]% were incurred to support all services. This assumption was based on analysis undertaken in the UK to support the Vodafone UK model.

As a result of the more detailed review of the underlying accounting data undertaken for the 2003/04 model described in section 2.1, it has been subsequently possible to determine the main elements of the ‘other opex’ costs. The main items comprise the following cost categories: Public Policy

Other; Head Office; HR Training & Learning and Managing Director. These 4 cost codes account for [X]% of the Other Opex category, and are all costs that are incurred to support the full range of services offered by Vodafone Australia. Therefore, for the 2003/04 model, other opex costs are treated [as] non-network indirect costs and recovered across all services.”

165 Commenting on the manner in which the First PwC Model split the following non-network asset classes:

- furniture and fittings (“F&F”);
- computers (hardware and software); and
- billing,

the First Analysys Report stated under the heading “4.12 Step 12: *Split non-network asset categories*” that:

“[the] ... splitting appears to recognise that non-network activities are classified broadly in Vodafone’s internal systems, and comprise a number of distinct activities:

- *retail activities*
- *mis-classified network activities*
- *business overhead activities*
- *retail billing.*

The [X]% of billing costs identified as wholesale billing is stated to be a non-Australian Vodafone benchmark, and these costs are treated as a network indirect cost. No data on this percentage has been provided by Vodafone – although, given the indirect treatment of this cost, this does not appear to represent a significant concern.

Vodafone has explicitly classified its non-network labour costs as shown in Exhibit 18. [ie: Exhibit 18 to the First Analysys Report which is not reproduced here.]

*...
It is evident from this classification – although Vodafone does not adhere to it – that explicit business overhead wages account for only [X]% of non-network staff costs. Therefore, we would question the allocation of [X]% and [X]% of F&F and computers, respectively, to network indirect costs (the equivalent of business overheads in the subsequent allocations). We believe it would be more accurate for Vodafone to identify a proportion of the [X]% and [X]% factors that relate specifically to business overhead activities compared to retail activities.*

This refinement would include Vodafone subdividing the activities of the staff categorised as “Non-network staff” in order to identify staff time or headcount dedicated to the following two areas:

- **business overhead activities:** legal, regulatory, government affairs, human resources, Ericsson JV, wholesale activities
- **retail activities:** retail customer care, retail sales and retail marketing.”

166 In commenting on the split of non-network opex categories, the First Analysys report stated:

“Two categories of non-network opex are split further:

- *non-network (IT, buildings, fixtures) staff: [X]% retail, [X]% non-network*
- *other opex: [X]% non-network, [X]% retail.*

The split of non-network staff is in the same proportion as was questioned in Section 4.12 above. As noted there, we believe it should be possible to more accurately separate the non-network staff cost into its component activities – in particular identifying business overhead activities separately from retail-related activities.”

167 In the course of its consideration of the undertaking, the Commission, on 3 October 2005, asked Vodafone to respond to the following question:

“What is the [X]% “other opex” allocated to non-net indirect?”

Vodafone replied:

“It is not possible to isolate specific costs that are included in the [X]% of other opex that has been allocated to non-network indirect. The other opex is the difference between the total opex and the opex that was able to be put into the other categories using a number of different data sources. The [X]% assumption was based on analysis from the Vodafone UK cost model. Given the efforts made by Vodafone in identifying all network related opex and general business overheads, it was assumed that the majority of the uncategorised opex should be treated as subscription related. However, it is very unlikely that all of the uncategorised opex related to subscription and therefore Vodafone decided to adopt the conservative assumption of [X]% of the uncategorised costs relating to subscription and [X]% relating to the whole range of services provided by Vodafone.”

168 In summarising its views on the issues, the First Analysys Report stated:

*“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.**” (emphasis added)*

Analysys examined the effect of the revision of non-network asset and opex allocations and concluded that the effect depended on the proportions allocated to retail activities. It

considered that the effect could be up to a 15% reduction in the unit cost of termination if significant costs were allocated to retail activities.

169 Under a heading “Concerns presented in our previous report which still apply” the Second Analysys Report stated:

“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.”

This paragraph of the Second Analysys Report does not, however, conclude with the concern expressed in the First Analysys Report (par [168] above) that:

“The same criticism applies to the allocation of certain significant non-network operating expenditures.”

170 In its response to the two reports by Analysys, PwC stated:

“Analysys claim that the treatment of non-network computer costs should be changed to allow more of the cost to be allocated to the subscription service. In the table that shows the impact of Analysys’ proposed changes to the model, the effect of allocating more opex costs to retail services is estimated at up to 15%. PwC does not agree that this is the case. If all the costs relating to computers, furniture and fittings and other opex are allocated to retail services, the modelled cost of termination only decreases by 11% (once the tilted annuity formula has been corrected). However, this would imply that all these costs are borne exclusively in the provision of retail services. From discussions with Vodafone’s financial department it is apparent that this is not the case. PwC in conjunction with Vodafone has reviewed the most material of these cost categories – non-network computers. The level of detail in the fixed asset register does not allow for a detailed summary to be prepared, e.g. many of the assets are described simply as “hardware” or “software”. However, certain types of assets have been identified. A number of groups of assets were explicitly identified in this part of the fixed asset register, including billing, data warehousing and financial systems. PwC believes that these categories are consistent with the prevailing assumption that non-network computers will include some assets that are specific to the retail service and others which support the whole range of services offered by Vodafone. Therefore, the assumption, based on UK cost-modelling, that [X]% of non-network computer costs are retail-specific and the remainder is incurred in supporting all services, appears to be a reasonable approach to have adopted.”

171 The Commission submitted, by way of an *aide memoire*, that:

- in arriving at its view that a revision of non-network asset and opex allocations could result in a reduction of up to 15% (or 2.42 cpm) in Vodafone's MTAS target price of 16.15 cpm, Analysys did not, as PwC did, in arriving at its 11% figure, restrict itself to "F&F", computers and other opex categories only;
- the upper bound (if all non-network costs were allocated to retail) is a [X]% or [X] cpm reduction. (A footnote to the Commission's *aide memoire* explained that:
 - the Commission calculated this potential reduction by allocating 100% of non-network capital and operating costs not already allocated to retail in the First PwC Model to retail; and
 - By way of comparison performing the same calculation in the Second PwC Model reduces Vodafone's MTAS target price by [X]% or [X] cpm); and
- while it is not reasonable that all of these costs should be allocated to retail, Analysys' estimate of a reduction of up to 15% or 2.42 cpm falls within the possible range.

172 The Commission's *aide memoire* also contained the submission that:

"One of Analysys's main concerns arises from the view that Vodafone should have been able to identify more accurately the proportions of these non-network cost categories (which related to asset and operating costs) that relate to retail versus business overhead activities.

Instead, Vodafone appears simply to rely largely on proportions taken from the cost model developed by Vodafone UK. Vodafone has provided no information to support the view that these proportions are reasonable in an Australian context, referring only to work done for it in the UK and the views of its own financial department."

173 Notwithstanding that Analysys found "The [X]% of billing costs identified as wholesale billing ... does not appear to represent a significant concern", the Commission took issue with that conclusion. On the basis that Vodafone would bill VMTAS to only a very small number of other mobile network operators whereas retail billing would involve potentially huge numbers, the Commission submitted that such a large percentage ([X]%) of billing costs to wholesale seemed unreasonable.

174 Vodafone's response to this submission was that wholesale billing did not just relate to billing MTAS to other mobile network operators but it also related to dealing with interconnect bills received from other mobile network operators. It said that the cost of wholesale billing is recovered across all services with an interconnecting leg.

175 The Commission challenged Vodafone's lack of methodological rigour which it submitted was illustrated by Vodafone's response to the Commission's question set out in par [167] above and, in particular Vodafone's statement that "It is not possible to isolate specific costs that are included in the percentage [X]% of other opex that has been allocated to non-network indirect". The Commission observed that:

"Vodafone argues that due to limitations in its fixed asset register it cannot provide a more detailed breakdown of these costs, although its 'financial department' and PwC did investigate a subset of these costs. However, its ultimate conclusion was to sustain the same position that was the subject of Analysys's principal criticism of the inconsistency and lack of detail in these allocations."

176 Relying on the First Analysys Report, the Commission submitted that:

- it should have been possible for Vodafone to separate more accurately its staff costs into different activities; and
- doing so could reduce Vodafone's MTAS by up to 2.42 cpm.

177 Referring to the passage quoted in par [168] above from the First Analysys Report to the effect that it would be more accurate for Vodafone to identify, by subdividing the activities of staff on the basis of time or a headcount, a proportion of the [X]% non-network "F&F" allocation and the [X]% non-network computers allocation that related specifically to business overhead activities compared to retail activities, Vodafone submitted that the level of detail in its fixed asset register did not permit a more detailed breakdown of non-network and operating costs.

178 Vodafone also submitted that it did undertake a detailed review of the most significant category of non-network asset costs which supported the assumption that [X]% of non-network computer costs were retail-specific and the remainder was incurred in supporting all services adopted by it.

179 Vodafone concluded that this assumption was supported by modelling in the United Kingdom and it relied on PwC's response, referred to in par [170] above, to the two Analysys reports.

180 Mr Hutley QC submitted that the First PwC Model's "F&F" split had been the subject of criticism by Analysys and had been dealt with in a manner which demonstrated that the first allocation was conservative. He referred us to the Second PwC Report as set out in par [170] above and indicated that Vodafone had taken up Analysys' issue with "F&F".

181 Vodafone took issue with the Commission's contention that it had not demonstrated the reasonableness of the undertaking, particularly in circumstances where Analysys considered that it should have been possible for Vodafone (or PwC) more accurately to separate the costs of Vodafone's retail activities. Vodafone submitted that Analysys did not state that it considered that it should have been possible for Vodafone or PwC to split out more accurately non-network assets and operating costs. Rather, Analysys believed it would be more accurate for Vodafone to identify a proportion of the [X]% and [X]% factors that related specifically to business overhead activities compared to retail activities.

182 Vodafone's reply noted that if all of the costs relating to computers, furniture and fittings and other operating costs were allocated to retail services, the modelled cost of termination would decrease by 11% or 1.78 cpm, not the 2.42 cpm contended by the Commission. Vodafone referred to PwC's response to the two Analysys reports (par [170] above).

183 Vodafone's concluding submission on these issues was that given that the level of detail in the fixed asset register did not permit exact identification of the split of non-network assets and operating costs between the six services between which the entirety of Vodafone's costs was allocated, the approach taken to divide these costs among the relevant services was reasonable.

184 Once again, we are required to determine issues on the basis of experts' opinions. As we have noted earlier, in circumstances where the Tribunal is to determine a matter on the basis of expert opinions without the benefit of testing and assessing them as we might in other proceedings, it is crucial that a party seeking to advance or rebut an expert's opinion focus on the words and expressions used by the expert and not ignore, substitute or otherwise vary

those words. In addressing the allocation of billing, “F&F”, computers and other opex both the Commission and Vodafone have failed in this respect.

185 The Commission’s submissions on billing ignore:

- the fact that PwC’s billing allocation was restricted to capital costs (see the passage from PwC’s First Report set out in par [161] above); and
- what is said in the First Analysys report to the effect that PwC’s [X]% wholesale billing allocation does not represent a significant concern.

Having regard to Vodafone’s explanation of its wholesale billing operation (par [174] above), and what is said in the First Analysys report to the effect that PwC’s billing allocation does not represent a significant concern, we are satisfied that PwC’s allocation of billing (capital costs) [X]% to wholesale and [X]% to retail is reasonable.

186 It does not, however, follow from our finding that Vodafone’s billing allocation is reasonable, that we reject the Commission’s submission, based on Analysys’ assessment, to the effect that a more accurate allocation could reduce Vodafone’s target price by up to 15%, that is 2.42 cpm. Analysys’ assessment was reached on the basis that Vodafone’s billing allocation did not represent a significant concern to it.

187 Vodafone’s submissions on “F&F” ignore the statements in the Second Analysys Report (par [169] above) to the effect that its concerns with the “F&F” split remain and should be based on a head count breakdown of Vodafone’s non-network staff. Accordingly, we reject Vodafone’s submission that it has taken-up Analysys’ issues with “F&F”.

188 While we accept Vodafone’s submission that Analysys does not state that it considers that it should have been possible for Vodafone or PwC to split out more accurately non-network assets and operating costs, the submission ignores the gravamen of Analysys’ opinion that what Analysys regards as a “refinement” might be undertaken by way of identifying staff time or a headcount. Thus, Vodafone’s submission to the effect that the level of detail in its fixed asset register does not permit a more detailed breakdown is not an answer to the Commission’s submission that it should have been possible for Vodafone to separate more accurately its costs into different activities.

189 This is another instance where Vodafone has not done all that it might have reasonably done (prepare an estimate of staff time or conduct a headcount) to demonstrate that its expert's opinion is to be preferred to that relied on by the Commission. Accordingly, we are not satisfied having regard to the matters specified in s 152AH and the objectives set out in s 152AB that the First PwC Model's "F&F", computer and other opex allocations are reasonable.

190 PwC's allocations are critical and significant elements used in the First PwC Model to arrive at Vodafone's 16.15 cpm target price in its undertaking. Vodafone's failure to satisfy us of the reasonableness of PwC's allocations is a factor we must take into account in considering whether we can be satisfied that Vodafone's target price is reasonable.

191 In the course of his address, Mr Hutley QC submitted that the Second PwC Model was a properly worked model which came to a figure that was greater than 16.15 cpm so that *ex hypothesi* a price of 16.15 cpm must be reasonable.

192 These submissions ignore the fact that while the Second PwC Model may have reworked the "F&F" and other opex allocations, the Second Analysis Report makes it clear that Analysis' concerns with the allocation of computers and "F&F" remain. Accordingly, we can not be satisfied that the outcome of the Second PwC Model verifies the proposition that notwithstanding that there is an error in the First PwC Model, it nevertheless produces a target price which we might be satisfied, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, is reasonable to incorporate in Vodafone's undertaking.

15.8 Issue H: Incorrect inclusion of subscriber direct assets

193 Analysis considered the First PwC Model incorrectly included subscriber direct assets, totalling \$[X] million, (which covered retail billing and other retailing assets) with network indirect operating expenses which formed part of the asset cost base for the VMTAS. PwC agreed that the subscriber direct assets should not have been included in the cost basis for the allocation of indirect network operating expenses. Analysis said that if those assets were so excluded the corresponding equi-proportionate mark-up percentage increased from [X]% to [X]%, which was 0.16 cpm.

194 This error was corrected in the Second PwC Model.

15.9 Issue I: Unaccounted for likelihood of decrease in per unit costs

195 This issue identified what the Commission submitted was an empirical flaw in the First PwC Model which was not quantified. The First PwC Model used accounting and operational data for the financial year to 31 March 2003. The Second PwC Model used accounting and operational data for the financial year to 31 March 2004. Vodafone submitted that this was a reasonable approach. The Commission submitted that, on this basis, the models did not account for the likely decrease in per-unit costs of providing the VMTAS between 2002/2003 and 2007/2008. A number of the experts considered that decreases in Vodafone's capital and operating per-unit costs were likely over that period. Vodafone contended that possible increases in other cost inputs between 2002/2003 and 2007/2008 meant that there might not be any overall decrease in costs over the relevant period and that if there were to be a decrease it was likely to be small.

196 NERA was of the view that although some increases in productivity could be expected it was far from clear that these would completely offset the impact of general price inflation and the tendency for wage growth to outstrip the general rate of inflation. NERA considered that it was quite likely that non-capital costs would increase over time and it was possible that they might offset or even more than offset the reduction in capital costs. NERA accepted that without a much fuller analysis it was not possible to reach a definite conclusion.

197 None of the parties or the experts sought to quantify the effect or consequence of the likelihood of the decrease in Vodafone's capital and operating per-unit costs over the relevant period. Having regard to the conclusions we have reached in relation to the other issues in relation to Vodafone's costs, it is not necessary to consider this issue any further.

15.10 Issue J: Incorrect SMS and GPRS conversion factors

198 To enable the allocation of network costs between the different conveyance systems, SMS messages and GPRS megabytes were converted to minute equivalents in the First PwC Model. The conversion factors were applied to SMS and GPRS traffic at all layers of the model. Analysys considered that some layers of the model should have been allocated on a per-event basis as opposed to a voice-equivalent basis. Analysys said:

“... we suggest that some refinement could be made to the application of SMS and GPRS conversions for traffic – verses event-specific network element loading.”

PwC considered that, based on its previous modelling experience, the proportion of costs allocated to the VMTAS would not change significantly if SMS was treated on a per-event basis.

199 Analysys considered that Vodafone should be in a position to supply more accurate information on how its network supported SMS and GPRS traffic. This information required specific areas to be explored in detail with Vodafone’s network engineers but Vodafone pointed to time constraints in exploring this with its network engineers.

200 We note in particular, that Analysys said that the conversion factors applied by Vodafone to SMS and GPRS traffic were developed by Analysys in 2001 as part of its work for Oftel’s Sept 01 LRIC model. Analysys said that both these conversion factors were intended “to reasonably reflect the volume of traffic carried over the radio network, rather than reflect a pure incremental costing approach”.

201 None of the parties or the experts sought to quantify the significance or consequence of this issue and having regard to our conclusions in relation to other issues relating to Vodafone’s costs, we do not need to consider this matter any further.

15.11 Issue K: Price trends and changes

202 Price trends for network assets were used as inputs into the First PwC Model and the Second PwC Model. However, different price trends were adopted in the Second PwC Model. PwC explained the basis for the adoption of these trends as follows:

“The price trend assumptions included in the model have all been provided by Vodafone’s engineering department and are based on their knowledge of cost trends both in 2003/04 and in subsequent years. Based on this knowledge, PwC still believes the price trend assumptions to be reasonable and does not think that Analysys’ estimates based on non-specific assumptions from other countries is sufficient evidence to prove that the assumptions provided by Vodafone’s engineers are not reasonable.”

203 Price trends are applied by PwC in its tilted annuity calculation. The First Analysys Report noted that rapidly declining price trends resulted in a higher annuity cost in early years, but a lower annuity cost in later years. Both the Marsden Jacob Report and the Gibson Quai Report raised queries with the price trends used in the First PwC Model.

204 The Marsden Jacob Report stated:

“With regard to price trends, a potential complicating issue is that these should not just reflect price changes to the assets, but also price changes for labour input. While prices for equipment are generally falling, this is not true of labour costs.”

The Marsden Jacob Report drew on figures from Optus which illustrated that:

“...while equipment prices have tended to decrease, build and acquisition and design which we presume have a significant labour component have been more or less constant.”

The Marsden Jacob Report then noted:

“Further, it is interesting to note that build and acquisition costs constitute more than three quarters of base station costs today compared to approximately half 10 years ago. Hence, it would result in a significant overstatement of annual costs if ‘pure’ equipment price trends were used in the tilted annuity formula to annualise the total cost of a base station.

In a modelling context such differences may be dealt with by estimating equipment installation costs separately from those of equipment costs. However, PwC seems to have bundled these costs together. No indication has been provided by PwC if such differences in price trends have been taken into account.”

205 The Gibson Quai Report noted that the price changes for the network assets are not the parameters it would consider reasonable, nor match the parameters used in other jurisdictions such as Sweden.

206 In contrast to these reports, the First Analysys Report found that the price trends used in the First PwC Model in respect of the most material classes of assets appeared reasonable.

207 The Commission focused its attention on the price trends in the Second PwC Model. It did not indicate that it had any concerns in relation to the price trends used in the First PwC Model.

208 The Commission submitted that the revised price trends used for most of Vodafone's network assets in the Second PwC Model were unreasonable. Relying on the Second Analysys Report, the Commission submitted that the price trends for Transmission DXX and Microcell equipment were excessive and resulted in the Second PwC Model overstating its estimate of providing the VMTAS ([X] cpm by 2% or [X] cpm).

209 In support of its submission the Commission referred to a finding in the Second Analysys Report that the majority of price trends used in the Second PwC Model did not appear to be out of expected bounds but that the following price trends were materially different from those used in the First PwC Model:

Equipment	First PwC Model Price Trend	Second PwC Model Price Trend
BSC	[-X]%	[+X]%
Transmission DXX	[-X]%	[-X]%
Microcell	[-X]%	[+X]%

Analysys would have expected a negative BSC and Microcell trend and a DXX trend less negative than [-X]%

210 The Commission noted that Vodafone provided no rationale for any of the price trend changes other than what was said in PwC's response to the two Analysys reports (par [202] above).

211 The Commission submitted further that the basis for the changes could not be tested and that the significant discrepancies between the original and revised price trends cast further doubt on the reasonableness of Vodafone's engineering estimates underlying both the First and Second PwC Models.

212 Telstra submitted that changes to assumptions between the PwC models suggested that the Second PwC Model was not comparable to the First PwC Model and should not be relied on in support of Vodafone's VMTAS cost estimate. Telstra referred in particular to the asset price trend adjustments set out in par [209] above and submitted that they appeared contentious due to the magnitude of the adjustments and that adoption of less extreme trends (as suggested by Analysys) would reduce the cost estimate for the VMTAS.

213 Vodafone relied on the statement in PwC's response to the two Analysys reports referred to above in par [202] to the effect that the price trends were provided by Vodafone's engineers. Vodafone also relied on the NERA Report which reworked Analysys' figures and arrived at a 1% reduction rather than Analysys' figure of 2%. NERA then stated:

"In our view, asset price trends vary substantially from one country to another and, if the asset price changes in the PwC model are those experienced recently by Vodafone, it would be appropriate to use them. In these circumstances, no adjustment to the model is required."

However this statement must be considered in the light and context of NERA's earlier observation that:

*"Analysys has also questioned some of the asset price trends in the 2003/04 PwC model. In particular it argues that the [X]% increase for BSC equipment, the [X]% decrease for DXX transmission systems and the [X]% increase for microcell equipment look considerably out of line with expectations. **NERA's experience from other jurisdictions tends to support Analysys' view.**" (emphasis added)*

214 Vodafone concluded its Submission in Reply on this issue by contending that:

"...its decision to base the price trends used in the PwC Cost Model when using 2003/04 data on the experience and knowledge of Vodafone's engineers was reasonable. To the extent that the predicted price trends diverge from actual price trends or, based on NERA's examination, Analysys' recommended adjustments were made to the relevant equipment price trends, Vodafone contends that any such divergence would have an immaterial impact on the price of the MTAS ... and as such does not cast any doubt on the reasonableness of the price terms and conditions in the MTAS Undertaking."

215 Vodafone has not provided all the material that it might reasonably have provided on this issue. It could have produced for consideration and testing the price trend assumptions provided by Vodafone's engineering department referred to by PwC. Had Vodafone done so, there would have been before the Commission (and on review, before us) hard information which would enable the Commission (and on review, us) to test the critical "if" in its expert NERA's opinion that "... if the asset price changes in the PwC model are those experienced recently by Vodafone, it would be appropriate to use them". Vodafone's failure to produce the price trend assumptions provided by its engineering department means our guidance for determining whether the price trends used in the two PwC models are reasonable and, all

things being equal, evidence that the cost of providing the MTAS on Vodafone's network is at or around 16.15 cpm lies in the expert opinions available to us.

216 While the Marsden Jacob Report and the Gibson Quai Report (pars [204] and [205] above) raised queries about the price trends used in the First PwC Model, neither is conclusive; Marsden Jacob, because the issue whether PwC bundles installation costs with equipment costs is, on the material before us, left unresolved; Gibson Quai, because it fails to demonstrate why the price trend parameters used in the First PwC Model are not reasonable or why they fail to match parameters used in other jurisdictions. The First Analysis Report finds the price trends used in the First PwC Model reasonable. We are satisfied that price trends used in the First PwC Model are reasonable.

217 To guide our assessment of the reasonableness of the price trends used in the Second PwC Report, we have available the First Analysis Report, PwC's response to that report, Telstra's submission and the NERA Report. As may be seen from the quotation in par [213] above, while Analysis and NERA may differ about the magnitude of the reduction that may flow from the use of certain price trends in the Second PwC Model, they are *ad idem* in their views that some of the price trends used are out of expected bounds. Telstra's submission supports their views. While NERA'S conclusion may be read as qualifying its view, the conclusion is, as observed in par [213] above, dependent on a critical *if* which Vodafone failed to address. The failure to produce for consideration and testing the price trend assumptions provided by Vodafone's engineering department also taints PwC's response to the Second Analysis Report. As noted above, Analysis and NERA differ about the magnitude of the reduction that may flow from the use of certain price trends in the Second PwC Model. Analysis puts the consequential reduction in Vodafone's MTAS at 2%, NERA at 1%.

218 Having regard to the First Analysis Report, Telstra's submission, the NERA Report and what is said in the previous paragraph, we are not able to be satisfied, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, that the price trends used in the Second PwC Model are reasonable. The price trends are but one element of many used in the Second PwC Model to arrive at the figure of [X] cpm which Vodafone contends evidences the reasonableness of the 16.15 cpm target price in its undertaking. Vodafone's contention must, however, be read in the light of the [X] cpm product of the second model being reduced by:

- either Analysys' 2% or NERA's 1%; and
- an aggregation of some or all of the product of other flaws which the Commission submitted exist in the Second PwC Model.

15.12 Issue L: Contingency costs

219 The First PwC Model did not include any contingency costs. The Second PwC Report outlined the introduction of contingency costs into the Second PwC Model in the following terms:

"Where estimates have been constructed using bottom-up techniques, a contingency has been included to ensure that the estimates reflect the actual expected replacement costs rather than some 'perfect world' outcome. The maximum contingency included was [X]%."

220 Telstra challenged the inclusion of the contingency and submitted that its inclusion was likely to result in a material overstatement of the costs of supplying the VMTAS. Telstra was concerned to ensure that that the underlying unit cost did not already include such an allowance and that any allowance was only as great as was required to cover reasonably expected variances. Telstra contended that unit costs were based on Vodafone's global price book, and that it was not clear that this price book included an allowance for contingencies. If it did, the further inclusion of a contingency allowance might lead to an overstatement of the gross replacement cost. Telstra considered that construction of mobile network assets has a much higher degree of certainty than the construction of other network assets such as gas pipelines and, as such, any contingency should be of a lower order of magnitude.

221 The Commission submitted that Vodafone was entitled to a reasonable contingency if it could be supported, but concluded that the [X]% contingency could not be supported. It acknowledged that the Tribunal had accepted such a contingency in *Application by East Australian Pipeline Limited* [2004] ACompT 8; [2005] ACompT 3 (set aside in part on review by the Full Court [2006] FCAFC 127) but submitted that in that case there was material put before the Tribunal on the issue not only as to whether the contingency should be allowed but also as to its quantum.

222 PwC responded to the criticism that the contingency allowance had not been verified with either top-down or bottom-up data by stating:

“Whilst the estimate cannot easily be verified, it is based on the engineering department’s experience of undertaking large capital expansion projects and the level of headroom that is always factored into the budgeting process, over and above the known cost of equipment to be deployed. Therefore, PwC remains of the view that this allowance is reasonable, and notes that Analysys do not recommend its removal without supporting evidence.”

223 In its Second Report Analysys addressed the inclusion of the [X]% contingency allowance in the following terms:

“Vodafone asserts that bottom-up unit prices derived by its network engineers would be insufficient to cover all likely expenditures for network asset deployment. We agree that all necessary expenditures should be included in the model, assuming they are efficiently incurred.

*The existence of real world contingencies is, of course, entirely plausible, and a [X]% uplift is not outside the bounds of our expectation. However, we have no **bottom-up** or **top-down** [emphasis in original] way of verifying what the exact uplift to bottom-up prices required by Vodafone in Australia should be – since the top-down comparison which Vodafone has supplied is high level and does not back-track the bottom-up calculated to network GRC [gross replacement cost] to reconcile with actual asset category investments over time. In our experience, contingencies can also be under-estimated as well as over-estimated. Therefore, we believe that top-down reconciliation of a bottom-up derived unit cost should be applied to verify the levels of contingency required. This top-down comparison is discussed in Section 3.5.*

Vodafone’s [X]% contingency effectively increases the network GRC, and therefore the annualised cost of network assets by the same percentage. Network assets contribute [X]% of the eventual marked-up cost of termination (since the GSM licence fee is not marked up for contingency) therefore the effect of including the [X]% contingency is approximately a 5% increase in the cost of termination.

The calculation of LRIC costs in other jurisdictions have, in our understanding, intended to include those contingency costs which have actually been incurred (e.g. by reconciliation against actual expenditures which would include such costs). However there are no explicit comparisons for this percentage. In another study carried out by Analysys, we applied a [X]% contingency, but later during detailed reconciliation it became apparent that this contingency was too generous (and unit costs were scaled back so that cumulative GBV [gross book value] reconciled to actual expenditures exactly).”

224 Section 3.5 of the Second Analysys Report, which contained the results of a high level top-down comparison of account codes supplied by Vodafone with corresponding costs in the Second PwC Model, stated:

“In this comparison:

- *the network GRC to network asset GBV relationship reflects the historic steeper declines in GSM equipment prices, and appears reasonable. However, the GBV has not been reconciled against bottom-up unit prices, price trends and the assumed [X]% contingency – therefore, it cannot be confirmed whether the bottom-up revaluation is fully consistent with historic prices and price trends, or whether the additional [X]% contingency cost level is applicable to Vodafone’s actual operation.”*

225 Summarising its concerns with quantitative aspects of the Second PwC Model, the Second Analysys Report stated:

“Inclusion of a [X]% contingency to network unit costs is reasonable in principle, but cannot be exactly verified against detailed historic expenditures of Vodafone.”

Analysys examined the effect of including the [X]% contingency on network asset replacement costs and concluded that if this contingency were removed the cost would decline by 4%. However, Analysys did not consider removal appropriate without detailed top-down justification for such an exclusion.

226 Commenting on the Second Analysys Report, NERA noted that Analysys stopped short of recommending the [X]% adjustment should be made and concluded that in its view such a contingency “is reasonable and that it would not be appropriate to remove it”.

227 Vodafone submitted that its engineering department’s experience also drew on the broader Vodafone Group experience as the world’s largest mobile telecommunications company and that PwC added the [X]% contingency to the estimated replacement cost of Vodafone’s network assets that were re-valued, which asset prices were sourced from the Vodafone Global Price Book.

228 Vodafone also submitted that Analysys had stated that an uplift for network assets was appropriate. Analysys made no such statement. It did state that a [X]% uplift was not outside the bounds of its expectation but it then explained how the contingency needed to be verified. Vodafone contended that the [X]% allowance was reasonable and that NERA supported this view.

- 229 The question we have to answer in relation to this issue is whether it is reasonable, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, for Vodafone to include in the calculation of its costs of providing the VMTAS, by reference to which its target price of 16.15 cpm is to be assessed, a [X]% contingency allowance.
- 230 Vodafone, PwC and NERA assert that it is reasonable to include that contingency but no material, hard information or verification of the type adverted to by Analysys is provided to support or justify these assertions. In this context, we also note that although PwC said that a contingency “is always factored into the budgeting process” it does not appear that there was such a contingency in the First PwC Model.
- 231 As the Analysys reports demonstrate, there is no material before us which enables us to form a view that the [X]% contingency is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. Although Analysys expresses the view that it did not consider removal of the allowance appropriate without a detailed top-down justification for such exclusion, that is not the correct way to approach the issue. The issue is not whether the allowance should be removed from the cost model; rather the issue is whether it is reasonable, in the sense to which we have referred, for it to be included in the cost model.
- 232 Although Analysys said that inclusion of a [X]% contingency is reasonable in principle, it said, more significantly, that the contingency cannot be exactly verified against Vodafone’s detailed historical expenditures and that it cannot be confirmed whether the [X]% contingency cost level is applicable to Vodafone’s actual operation. Indeed PwC acknowledged that the [X]% contingency could not easily be verified and there was no Vodafone engineering department experience before us on this issue.
- 233 The inclusion of the contingency occurs only in the Second PwC Model and it involved a significant variation from the First PwC Model. It results in a material (4% or [X] cpm) increase in the total cost derived from the Second PwC Model.
- 234 Mr Hutley QC submitted that “the proper approach of the Commission should have been, and the proper approach of this Tribunal will be, to assess principally the second report of PwC”. The absence of material to allow us to verify the reasonableness (in the sense to which we

have referred) and magnitude of the contingency and to confirm that the contingency is applicable to Vodafone's actual operations means that we are unable to be satisfied that the product of the Second PwC Model is reasonable in the sense to which we have referred.

235 As our task is to either accept or reject the undertaking there is no relevance in Vodafone's submission to the effect that a lower contingency (of, say, 7.5% or 5%), would have an immaterial (in the order of 3% and 2%, respectively) impact on the cost of providing its VMTAS.

15.13 Issue M: Inclusion of a return on assets in the course of construction

236 The Second PwC Report noted that:

- the First PwC Model did not make any allowance for network capitalised overheads or assets in the course of construction ("AICC");
- during the course of the fixed asset work performed in populating the Second PwC Model, it became evident that AICC were excluded from the First PwC Model; and
- an allowance for AICC was included in the Second PwC Model by marking up the annualised cost of assets in service to allow for a return on AICC as at 31 March 2004.

237 The Commission submitted that this allowance was incorrectly included in the Second PwC Model and that its removal would result in a reduction of 2% on the VMTAS cost estimate. Telstra submitted that this allowance appeared inconsistent with the tilted annuity approach adopted by PwC with respect to the [X] years time-to-service period.

238 Analysys exposed the issue in relation to the inclusion of a return on AICC, in its second report as follows:

"The value of AICC varies in each period, according to the amount of equipment being prepared. Therefore, we would have expected that the 2003/04 year average or year start book value of AICC would be applied in the model – since AICC at the beginning of the year are likely to be used to support demand in the year. Instead, Vodafone has used the year-end AICC value – which ultimately will support services in 2004/05 and beyond. Furthermore, we would expect that in 2003/04 Vodafone was embarking on a major 3G deployment schedule, therefore we believe the year-end AICC GBV [gross book value] may contain significant 3G assets. A detailed audit would

be required to determine whether this was the case. Alternatively, Vodafone should be in a position to supply the 2003/04 year start AICC GBV which can then be applied to the model (as either year start or year average).

*However, Vodafone already allows itself a return on assets for the period that they are under construction – in the [X] years time-to-service period, which is analogous to the AICC duration, but captured in a bottom-up fashion. Therefore, **there is a double counting** [emphasis added] of this allowance in the model. We do not believe it is appropriate to include both the bottom-up [X] years cost of time to service, and a top-down return on assets in the course of construction. The AICC uplift to network and non-network assets contributes [X]% of Vodafone's proposed termination cost (prior to the working capital mark-up). In previous bottom-up LRIC studies conducted by Analysys, we have excluded AICC from the reconciliation against active asset expenditures, included the equivalent of a 'time-to-service' cost, and not allowed a further return on top-down accountable assets under construction."*

Analysys considered that the impact of the removal of the allowance for a return on AICC was a 2% reduction in the unit cost.

239 The Commission put to Vodafone a number of questions relevant to the issue of the AICC allowance. The questions and Vodafone's answers were as follows:

"2. Does 'Units in operation'... refer to year start, year end or year average number of units in the network for what year? Does this include assets under construction – if so how many for each asset type?

ANSWER

Assets include all assets that were used to convey the volumes carried in the year – and therefore represent a year average number of units in the network for that year. The 'units in operation' do not include assets under construction.

3. What is the 'Time to service' [X] years meant to represent with respect to the network GRC and units in operation calculated above? Why does this apply to licence fee, and why does it not vary by asset type (some shorter, some longer to service)? Is capital really expended prior to the asset being bought into service (Analysys indicates it would expect some vendor contracts and network elements would be paid for on activation)? Does the useful economic life include or exclude the [X] years time to service?

ANSWER

Vodafone has estimated that the average time between cash outlay on a capital investment and the investment coming into productive service is [X] years.

The time between paying for the asset and bringing it into productive service would vary according to the type of asset and the payment terms associated

with the asset and equipment provider. The assumption of [X] years is an estimate of the average term (in the absence of a detailed assumption for each asset class) for the generality of assets and has therefore been applied to all asset classes.

As Analysys suggests, there can be instances where the term is zero – i.e. where the vendor accepts payment on activation but in such circumstances the vendor will charge a higher price compared to a comparable investment where payment is made earlier. There are also be [sic] instances where the term is greater than six months; this is particularly the case where coverage is being installed and or extended. Access roads and power facilities may have to be constructed and paid for well in advance of service activation. Site location, lease negotiation, etc. typically involve cash outlays long before the site is brought into service.

The more significant the capital programme the more likely it is that cash outflows predate service activation by longer periods. For the forward looking cost estimates considered by the model it is major capital programmes which are relevant since it contemplates the rebuilding of the network at current prices. Further, Vodafone's recent experience with its 3G network rollout, a major capital build project, indicates that an average period between cash outlay and service activation of around six months is most likely to be optimistic – that is, the average time is probably longer than [X] years.

The useful economic life excludes the time between paying for the investment and bringing it into productive service.

4. Why has the tilted annuity formula not been used to extract a 2008 unit cost? What would be the cost if the 5th year of the tilt formula were used?

ANSWER

The model is prepared for a specific year and takes the quantity of equipment, operating costs and working capital as exogenous inputs. The extrapolation of the tilted annuity into future years would therefore not produce a meaningful estimate of unit costs for future years without the inclusion of future operating costs, service volumes and future capital expenditure requirements. The simple extrapolation of the tilted annuity is inappropriate.”

240 NERA considered Analysys' view and opined that the issue was not a simple matter of double counting but a potential time inconsistency problem. NERA reached this conclusion having observed that:

- the First PwC Model included an allowance for interest cost incurred on AICC. The interest cost on AICC was taken into account by capitalising the interest cost and

increasing the gross replacement cost (GRC) of assets in the tilted annuity formula by an appropriate amount.

- the Second PwC Model also included direct recovery of the interest cost on AICC in 2003/2004 which Analysys believed amounted to double counting and should be removed, reducing the MTAS cost by 2%.

NERA then made the further observation that, in practice, the situation is different because the interest cost in PwC's model is applied to this year's assets in construction, whereas the adjusted tilted annuity formula takes account of interest on assets in construction in earlier years by capitalising it and recovering it over the lives of the assets concerned. This observation led to NERA's view that it was not a simple matter of double counting but a potential time inconsistency problem which it explained by stating that:

- if interest on this year's AICC is expensed this year, it cannot also be capitalised and recovered via the adjusted tilted annuity in future years;
- if PwC were to repeat the modelling exercise for 2004/2005, it would have to subtract the interest expense on AICC in 2003/2004; else it would then be double counting; and
- what PwC has effectively done is to accelerate the recovery of interest on this year's AICC – rather than it being amortised over the lives of the assets concerned, it is all being recovered in 2004/2005.

NERA concluded its consideration of the issue by stating that:

- in its view the recovery of interest on AICC should be treated consistently over time;
- given that interest on AICC in earlier years is being capitalised and recovered over the lives of the assets concerned, it would be appropriate for the same treatment to apply to interest on this year's AICC;
- this would mean not including interest on 2003/2004 AICC in 2003/2004 costs; and
- it ended up in the same position as Analysys, but for different reasons.

241 PwC responded to Analysys' assertion that the inclusion of AICC and a time-to-service allowance was double counting by saying that it appeared to reflect a misunderstanding of the Second PwC Model. PwC said that the time-to-service allowance was only applied to assets

which were commissioned and in service to reflect the capital cost incurred in the past when they were being constructed. The time-to-service allowance was not applied to AICC. PwC concluded therefore, that there was no double counting.

242 Expanding on these observations, PwC's response made the following points:

- the bottom-up data provided by Vodafone's engineers was consistent with building a network to meet the demand carried on its network for the year ended 31 March 2004;
- the modelled network was the same size as Vodafone's actual network and did not include any assets that were not yet deployed and functional (that is, AICC);
- the time-to-service allowance reflected the fact that the assets deployed at 31 March 2004 were not deployed instantaneously;
- because the assets were not deployed instantaneously, two things needed to happen:
 - first, the price paid for them needed to be adjusted by the price change that would have been experienced in the time taken to bring them into service;
 - secondly, the capital costs relating to the investment in the assets prior to their deployment needed to be recovered.

243 PwC concluded its response to Analysys in the following terms:

“The time-to-service allowance is an adjustment to ensure that the total costs relating to the fully deployed assets at a point in time are recovered. However, at a given point in time, Vodafone will also have assets which are not yet fully deployed in the network. There will also be a cost associated with these assets which is not included in the time-to-service allowance. The costs relating to [AICC] are entirely separate from those relating to assets fully deployed in the network. The costs associated with [AICC] (return on capital only as there is no depreciation of [AICC]) must be added to the cost base to ensure all the costs associated with a mobile network are included in the model.”

244 Mr Beach QC for the Commission submitted that the NERA analysis was to be preferred to that of Analysys and that one did not avoid duplication or double counting because it is a one-year model. He submitted that because the tilted annuity is looking, as he put it, “right out”, it was not in a sense a one-year model. He went on to submit in this regard that while the model used figures for March 2004, the figures were derived from the use of the tilted annuity so it was not valid to say it is a one-year model. Putting to one side the question of

double counting or duplication, the Commission focused on NERA's view that there should be consistency which avoided duplication or double counting. It contended that if a consistent approach was taken to the capitalisation of AICC interest costs, there was no need to do something idiosyncratic in the year ending March 2004 and that Vodafone should have provided a tilted depreciated profile for 2006/2007 that would capitalise all interest, including the interest incurred in the year ending March 2004 for the AICC.

245 Vodafone relied on PwC's response to Analysys' consideration of this issue and responded to NERA's views as follows:

“Vodafone agrees that if a multi-year approach to modelling is undertaken, then the cost recovery in relation to [AICC] would need to be removed from the cost recovery relating to those assets in later years. However, as the PwC Cost Model is a single-year model, Vodafone is entitled to seek an appropriate return on all its assets that are in place at that time. Therefore, Vodafone contends that its inclusion of the allowance for [AICC] is reasonable.”

246 Mr Hutley QC expanded this submission by submitting that Vodafone only applied the allowance to assets in respect of which it had not applied the allowance for delay between assets being in place and in production. Vodafone accepted that if there were a multi-year model, an allowance for AICC would have to be brought into account in subsequent years in respect of assets for which an allowance was sought where there was a delay between being in place and in operation. Vodafone contended that in a one-year model no such problem arose because one was only dealing with one year, and the assets covered by AICC is a class which is wholly different to the class covered by the allowance for delay between being in place and in operation. Mr Hutley also relied on Vodafone's answer to question 2 set out in par [239] above in submitting that Vodafone was dealing with separate assets.

247 We accept that Vodafone is entitled to recover the holding costs for assets in pre-deployment. However, we are not satisfied that the Second PwC Model is a truly static model. The inclusion of the tilted annuity formula to produce prices out to 2007 results in its metamorphosis from a static 2004 model to a hybrid static/dynamic 2004/2007 model in which, for reasons stated by NERA and elaborated on by Mr Beach QC (par [244] above), there is inconsistency in the treatment of interest on AICC.

248 We also accept Analysys' and NERA's views to the effect that PwC's treatment of interest on AICC results in a 2% or [X] cpm overstatement in the [X] cpm product of the Second PwC Model. Mr Hutley QC's submission to the effect that even if the Second PwC Model were adjusted to reflect Analysys' and NERA's views the adjustment leaves a figure above Vodafone's MTAS of 16.15 cpm which we might, notwithstanding the errors in the First PwC Model, be satisfied is reasonable, again ignores the possibility that the product of the Second PwC Model is also being reduced by other flaws which the Commission submitted existed in the Second PwC Model.

15.14 Issue N: Exclusion of acquisition and retention costs from non-network indirect cost mark-up

249 The First PwC Model allocated non-network indirect general overhead costs in an equi-proportionate manner across all services, both network and non-network. The costs were allocated in proportion to the total costs of each service as the allocation of non-network indirect costs is the final layer of cost allocation.

250 As a result of what PwC described as a more detailed interrogation of the underlying financial data, the Second PwC Model allocated non-network indirect general overhead costs in proportion to total costs minus the cost of sales (costs of acquiring and retaining customers). This, PwC stated:

"...is to ensure that cost of sales, e.g. interconnect payments and dealer commissions which do not generate any meaningful support activity in the business do not inappropriately absorb general overheads."

251 The Commission submitted that the acquisition and retention (sales) costs were incorrectly excluded from the non-network indirect costs mark-ups and that the effect of this exclusion was a 5.6% increase in the cost of the VMTAS.

252 Analysys observed in its second report that, based on the preferences of other regulators, the exclusion of subscriber acquisition and retention costs was questionable. Analysys noted Vodafone's submission that these costs did not generate any meaningful support activities and responded as follows:

“This may at first sight appear to be the case, however, it cannot be disputed that the large acquisition and retention costs contribute a significant structural cost of the business that is driven by the number of retail subscribers and in the absence of network services, a retail provider would still incur non-network indirect (i.e. overhead) expenditures.”

253 Analysys also noted that:

- regulators in the United Kingdom and Sweden had specifically included acquisition and retention costs in the equivalent of non-network indirect cost mark-ups on the grounds that non-network indirect costs support all the services of the network, including the provision of retail services with its associated gross expenditures for subscriber acquisition and retention;
- the Second PwC Model represented a departure from these regulatory benchmarks; and
- excluding acquisition and retention costs from the mark-up contributed [X] cpm (or 5.6%) to the [X] cpm product of the Second PwC Model.

254 PwC did not agree with Analysys’ view that subscriber acquisition and retention costs did generate meaningful activity and should be included in the cost base for the purposes of the non-network indirect mark-up. Responding to Analysys’ view, PwC stated:

“These activities are largely pass-through in nature (as is the case with outpayments to other operators which are also excluded) and a dollar of cost in these type of activities does not generate any meaningful activity within the support departments. Therefore, in the context of a FAC [Fully Allocated Cost] model that uses total cost to allocate the non-network indirect costs, it is appropriate to exclude costs which do not generate meaningful support activities.”

255 NERA’s response to Analysys’ view was to the effect that:

- allocation of non-network indirect costs proportionately across all services, including subscriber acquisition and retention, would have the result of reducing the product of the Second PwC Model by [X]%, not the 5% claimed by Analysys;
- noting PwC’s views that the cost of subscriber acquisition and retention included items such as dealer commissions where the related overheads would not be significant, it would more appropriate to count only half the cost of subscriber

acquisition and retention in the cost base to which non-network indirect costs were allocated; and

- if its conclusion were adopted, it would result in a [X]% (or [X] cpm) reduction in the [X] cpm product of the Second PwC Model.

256 Having regard to the view expressed by Analysys and, in particular, the view expressed by Vodafone's own expert NERA, that it would be appropriate to count half the cost, (which we prefer to Analysys' view to the effect that all the cost should be counted), we do not accept Vodafone's submission that it is reasonable, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, to exclude subscriber acquisition and retention costs from non-network indirect costs.

257 Accordingly, we are of the opinion that the [X] cpm product of the Second PwC Model is not reasonable, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, because it overstates Vodafone's costs of providing its VMTAS by [X]% (or [X] cpm). *A fortiori*, when this overstatement is aggregated with other overstatements resulting from flaws in the Second PwC Model identified by the Commission as outlined above.

15.15 Issue P: WACC – the choice of asset beta

258 Hutchison submitted that Vodafone's estimated post-tax nominal WACC of [X]% was inappropriate and resulted in an overstated estimate of the VMTAS costs. It submitted that Vodafone's WACC estimate did not take into account the lower level of risk posed by providing mobile termination services as opposed to mobile services at large. Hutchison relied upon the analysis of its consultant Marsden Jacob which Hutchison contended yielded a vanilla WACC of 9.24% and a post-tax nominal WACC of 7.91%.

259 Vodafone used an asset beta of [X] as an input into its WACC calculation. Marsden Jacob's conclusion on the appropriate asset beta for a mobile operator to use in Australia was as follows:

“Based on the available evidence we estimate that a reasonable range for the asset beta for a mobile operator in Australia is 0.7-1.1. We note that the asset beta for the MTAS will be lower than the mobile business as a whole. In the

absence of sufficient data to make an explicit adjustment to the asset beta, we propose to use a beta value for the MTAS of 0.7 [i.e. the minimum].”

260 Marsden Jacob may have used a different asset beta from that used by Vodafone, but the asset beta used by Vodafone was within the “reasonable range” referred to by Marsden Jacob.

261 In such circumstances, we reject Hutchison’s submission in relation to Vodafone’s WACC as on the evidence before us we can only conclude that it is a reasonable figure.

15.16 Conclusion on specific issues in relation to the PwC models

262 The end result of our analysis of what have been described as the empirical flaws in the two PwC models is that we are not satisfied that the costs produced by either model generate a total cost of providing the VMTAS of 16.15 cpm. Indeed, for the reasons we have outlined we are not satisfied, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, that the target price of 16.15 cpm is reasonable. Our analysis shows that the total cost of providing the VMTAS is at least 4 cpm less than 16.15 cpm. If Vodafone were to be allowed to charge its target price of 16.15 cpm to access seekers it would recover significantly more than its costs of providing the VMTAS, which is not reasonable in the sense to which we have referred.

16. PASS THROUGH SAFEGUARD

263 As may be seen by reference to par [17] above, the Pass Through Safeguard would impose, on a fixed-to-mobile operator seeking access to the VMTAS, an obligation to reduce its retail price for a fixed-to-mobile call which terminates on Vodafone’s mobile network so that the price is equal to or less than an average retail price specified in Table 2 of Part C of the undertaking’s Service Schedule extracted at par [17]. Table 2 takes a fixed-to-mobile price for 2004 of 38.5 cpm as the starting point of a price path along which a fixed-to-mobile operator seeking access to the VMTAS must reduce its retail price to arrive at a 21.15 cpm price for 2007 and any subsequent validity period of the undertaking (that is, a 5 cpm mark-up on the undertaking’s 16.5 cpm target price). The 5 cpm mark-up is based on an estimate of the cost of originating, transmitting and retailing a fixed-to-mobile call made by the Commission in its June 2004 report *Mobile Services Review: Mobile Terminating Access Service*.

264 The provisions relating to the Pass Through Safeguard were challenged on a number of grounds. The challenges may be summarised as follows:

- the provisions were invalid as they were not provisions “in relation to” the standard access obligations applicable to a declared service. Rather they were provisions in relation to another service (a retail service) which had its own pricing regime and pricing controls. There was in existence a Ministerial Price Control Determination in relation to that service, with which the Pass Through Safeguard conflicted;
- price regulation in respect of retail telecommunications services was not properly the function of Pt XIC of the Act – rather it was properly the function of the responsible Minister;
- the Safeguard was predicated on the existence of the fixed-to-mobile market not being competitive and there was no evidence that that was the fact. Vodafone accepted that if the fixed-to-mobile service market was competitive then the Safeguard was not reasonable;
- it was not necessary to have such a mandatory and inflexible Pass Through Safeguard, as pass through could be expected to occur in any event. Economic theory suggested that at least 50% of a price reduction would flow through to retail prices;
- the target average retail price would need to have regard to the costs of providing fixed-to-mobile calls. Vodafone had fixed on 5 cpm as the cost of fixed origination and transmission but that figure had not been verified and was challenged, in particular by Telstra and Optus;
- it was not reasonable because pass through could occur in a number of ways, such as in the quality of the service provided, but the Safeguard only operated in one way, by reducing the amount of the retail price;
- pass through of the MTAS price reduction would be more appropriately achieved by instituting price controls at the downstream level applied to a broad-based basket of services such as all the services supplied in the retail fixed line services market.
- the Safeguard operated so as to give the rebate to Vodafone and not to access seekers or end-users. It did not appear that the rebate would be passed on to end-users which would not be in the long-term interests of end-users. This consequence did not fit in

with any of the matters specified in s 152AH and the objectives set out in s 152AB. Vodafone contended that it provided an incentive to access seekers to pass through a price reduction to end users;

- the reductions in fixed-to-mobile retail prices required by the Safeguard were disproportionate to the reductions in the VMTAS price that Vodafone undertook to make. The Pass Through Safeguard required year-on-year reductions in fixed-to-mobile retail prices of 15%, 18% and 21% as compared to the year-on-year reductions Vodafone undertakes to apply to the MTAS price of 7.7%, 8.3% and 9.1%;
- the transit traffic provisions were unreasonable because:
 - they extended the Pass Through Obligation not only to the access seeker but also to any other carriage service provider who used the access seeker's carriage services and had fixed line calls terminated on Vodafone's network;
 - they required the access seeker to ensure and certify each transit provider's compliance with the Pass Through Obligation and required the disputes regarding a transit provider's compliance with the Pass Through Obligation to be resolved in the manner specified in the undertaking;
 - the access seeker would, in effect, be forced to renegotiate existing supply arrangements with transit providers (which may or may not be possible) or else to cease to terminate transit traffic on Vodafone's network;
 - if only one transit provider did not comply with the Pass Through Obligation or the access seeker could not ensure the compliance of transit providers, the access seeker must not send any transit traffic to Vodafone for termination;
- there were difficulties in implementing the Safeguard having regard to the definitions and scope of the expressions "average retail price", "validity period" and "earlier usage period";
- the implementation of the obligation was practically unworkable and unreasonable for a number of reasons;
- prima facie it contravened ss 45A and 46 of the Act; and

- price regulation in respect of retail telecommunications services is not properly the function of an undertaking which relates to the terms on which an access seeker supplies a wholesale service.

265 Vodafone submitted that the Pass Through Safeguard was reasonable as the market in which fixed-to-mobile services are provided is not effectively competitive. Vodafone's argument was that if suppliers of fixed-to-mobile services were charged prices for the VMTAS that were less than the prices set out in the undertaking, then it was unlikely that the savings from these reduced charges would be passed on in full, or at all, to customers acquiring fixed-to-mobile services as a result of the absence of competition in the market in which fixed-to-mobile services were provided.

266 Vodafone contended that suppliers had both the ability and the incentive not to pass through to end-users any reduction in the VMTAS. Vodafone said that if providers of fixed-to-mobile services were unlikely to pass through price reductions then a reduction in the price of the VMTAS would not increase investment in infrastructure or increase quality of services. Vodafone submitted that without the Pass Through Safeguard the evidence suggested that end-users in the fixed-to-mobile market would hardly benefit at all from regulated reductions in the VMTAS price.

267 Vodafone maintained that in the absence of the Pass Through Safeguard the reduction in the VMTAS price would simply result in a wealth transfer from Vodafone to fixed-to-mobile service providers, which was likely to have negative impacts on competition in the market for telephony services. Vodafone contended that in the absence of a pass through mechanism, a reduction in the price of the MTAS would inhibit Vodafone's ability to compete in the provision of retail services to which the MTAS was an input.

268 The Commission submitted that if the undertaking were accepted, the Pass Through Safeguard would deprive access seekers of the flexibility to determine competitively the form in which the reductions in the VMTAS would be passed through to the retail fixed services market. It submitted that this would retard allocative and dynamic efficiency, would not be in the long-term interests of end-users and was therefore not reasonable. The Commission submitted that Vodafone's contention that in the absence of the Pass Through Safeguard a reduction in the VMTAS would result in a wealth transfer from Vodafone to fixed-to-mobile

service providers, failed to take into account the fact that a reduction in the price of the VMTAS would promote competition in the retail fixed services market and reduce prices paid by end-users of fixed-to-mobile services and other fixed line services, thereby increasing demand for fixed-to-mobile services and consequently for the VMTAS. This was likely to increase the total number of termination minutes on mobile networks which might increase the total revenue Vodafone received from the supplier of the VMTAS.

269 AAPT challenged the manner in which the Pass Through Safeguard was implemented. It drew attention to the following issues:

- Vodafone's formula does not permit a supplier of fixed-to-mobile calls to make any revenue from fixed-to-mobile calls above the actual costs of supply, at least with respect to calls to Vodafone customers. If this formula was replicated in all agreements between access seekers and the four MTAS providers, this would have a significant effect on the ability of access seekers to recover common costs incurred in supplying fixed line services and achieve a return from the supply of fixed-to-mobile calls. This would not be in the long-term interests of end-users; and
- the pass through requirement allowed Vodafone to make profits above its own estimate of its costs of supplying the MTAS and penalised access seekers who chose to use reductions in the wholesale price of the MTAS to compete in other ways such as an increase in the quality of services provided or reductions in the price of other services provided in the bundle of preselected fixed line services.

270 Hutchison agreed in principle that a pass through mechanism was necessary given that the fixed-to-mobile market was not effectively competitive but submitted that the particular Pass Through Safeguard proposed by Vodafone was unreasonable. It was unclear to Hutchison what the proposed fixed-to-mobile retail rates were benchmarked against.

271 Telstra contended that the Pass Through Safeguard was unreasonable because it provided for Vodafone to receive a revenue windfall unrelated to the direct costs of supplying the VMTAS which might result in access seekers being charged an amount for the supply of the VMTAS as high as 21 cpm for all conversations terminated on Vodafone's network during the given validity period.

272 As to the first challenge to the Pass Through Safeguard summarised in par [264] above, we do not accept that the inclusion of the Pass Through Safeguard raises any issue of the invalidity of the undertaking or deprives the undertaking of the character of an “ordinary access undertaking” as defined in s 152BS(1) of the Act. Vodafone is entitled, and indeed required, by s 152BS(1) to set out in the undertaking that it will comply with the terms and conditions “specified in the undertaking” in relation to the applicable standard access obligations. Those obligations are found in s 152AR(3) and include the obligation “to supply an active declared service ...”: s 152AR(3)(a). It follows that it is entitled to set out in the undertaking the manner in which it will supply that service, including any terms and conditions of supply. That will include, for example, the price at which it will supply the service although one does not find any reference in s 152BS(1) or s 152AR(3) to the carrier or access provider being obliged or entitled to specify in the undertaking the price at which it will supply the service. Nevertheless, the price is a term and condition “specified in the undertaking” in relation to the standard access obligation in s 152AR(3)(a). It is one of the terms in the undertaking which relates to its obligation to supply the service.

273 So are the Pass Through Safeguard provisions. Vodafone is stating in the undertaking that it will supply the service for the price specified and also on the basis that the access seeker will comply with and carry out the Pass Through Obligation. It is not a term on which Vodafone or any other carrier will supply a downstream retail service but rather a term on which it will supply the service specified in the undertaking in respect of which there will be consequences if the access seeker supplies a downstream retail service in a particular way.

274 The words “in relation to” in s 152BS(1) extend to, and cover, the terms and conditions in the undertaking, with which Vodafone states in the undertaking it will comply, which form the basis on which it will supply the specified active declared service. It is undertaking to supply that service on condition that, *inter alia*, access seekers pay the specified price and observe the provisions relating to the Pass Through Safeguard.

275 As part of its attack on the validity of the Pass Through Safeguard, Telstra submitted that it was inconsistent with a Ministerial price control determination which applied to a number of Telstra’s services. Pursuant to s 154 of the *Telecommunications (Consumer Protection and Service Standards) Act 1999* (Cth) (“the TCPSS Act”) the Minister may determine that specified “carrier charges” are subject to price control arrangements. Section 155(1) of the

TCPSS Act provides that where a carrier charge is subject to price control arrangements, the Minister may determine:

- (a) price-cap arrangements and other price control arrangements that are to be applied in relation to the charge; or
 - (b) principles in accordance with which Telstra is to make alterations to the charge;
- or both.

Telstra is obliged to comply with such a determination.

276 The relevant applicable price control determination for the purposes of this review is the Telstra Carrier Charges – Price Control Arrangements, Notification and Disallowance Determination No. 1 of 2005 as amended. Clause 11 of that Determination provides that for the purposes of s 154(1) of the TCPSS Act carrier charges for connections, line rentals, local calls, trunk calls and international calls are subject to price control arrangements. Trunk calls include fixed-to-mobile calls. This basket of services is subject to a price cap. The effect of the Determination is that the charge for services in this basket as a group must not increase in nominal terms.

277 We do not consider that the Pass Through Safeguard is inconsistent with, or contrary to, the provisions of this Determination. The provisions of the Determination may be relevant to the reasonableness of the Pass Through Safeguard but they do not result in such an inconsistency with the Determination that it has the consequence that the undertaking is invalid. The Determination puts a price cap on the increase in the price of a basket of services which includes fixed-to-mobile calls whereas the Pass Through Safeguard provides that if an MNO's fixed-to-mobile charges exceed a specified charge then Vodafone is to receive a rebate from the MNO in respect of the fixed-to-mobile calls so made. The Pass Through Safeguard does not contain any provision which conflicts with the price cap imposed by the Determination. In such circumstances, it is not inconsistent with it.

278 The Pass Through Safeguard provisions raise no issue as to the validity of the undertaking or its proper characterisation as an "ordinary access undertaking" but they do raise issues as to their reasonableness having regard to the matters specified in s 152AH and the objectives set out in s 152AB.

279 Vodafone calculated the end fixed-to-mobile target average retail price of 21.15 cpm by adding an estimate of 5 cpm for fixed-to-mobile origination, transmission and retailing costs to its VMTAS end price of 16.15 cpm. Although Vodafone adopted the 5 cpm estimate from a figure provided in the Commission's MTAS final decision, there was no material before us, it was submitted, by which we could independently be satisfied of the reasonableness of the 5 cpm estimate. It was submitted that we would need to have some evidence as to the costs of fixed-to-mobile origination, transmission and retailing, as well as termination, before we could accept an undertaking dealing with the price of fixed-to-mobile calls.

280 In its submissions to the Commission (23 March 2005) which accompanied the undertaking, Vodafone adopted 5 cpm as it was "the Commission's conservative estimate of the cost of fixed origination and transmission". Telstra's submissions to the Commission in August 2005 on the Pass Through Safeguard did not challenge directly the figure of 5 cpm, but it did raise the issue whether common costs of fixed-to-mobile services (which were supplied jointly with other PSTN services) would be efficiently recovered in the manner implied by the 5 cpm figure. Telstra also contended that the figure of 5 cpm appeared to be based on an equi-proportionate approach to the allocation of common costs which did not allow cost recovery from consumers in a way that minimised the welfare distortions of marginal cost pricing. In its submission in January 2006 in response to the Commission's draft decision, Telstra made no specific submission in relation to the figure of 5 cpm although it referred back to its August submission and maintained its submission that the Pass Through Safeguard was not reasonable.

281 Vodafone submitted before us that having regard to "Telstra's silence before the Commission on this issue" we should give little weight to the submission that there was no material before us by reference to which we could be satisfied that the estimate of 5 cpm was reasonable.

282 There are a number of difficulties with this submission. Whatever stance Telstra may have taken earlier on the issue, Optus challenged the 5 cpm estimate before us. Optus submitted that Vodafone needed to put material before the Commission, which would be available before us, to satisfy us that the proposed target price was a reasonable price having regard to the price of the VMTAS and the costs of any relevant fixed service operators. Optus submitted that we could not be so satisfied.

283 The only material relating to the figure of 5 cpm was the observation of the Commission in its June 2004 Mobile Services Review of the MTAS. The Commission considered that evidence collected by it showed that the average price of fixed-to-mobile calls appeared to be at least double their underlying cost of production. The Commission considered that while the average price of fixed-to-mobile calls was around 38.5 cpm, the average underlying cost was likely to be in the order of 10 cpm to 17 cpm, depending on assumptions regarding the cost of the MTAS. That figure was based on a range of estimates of TSLRIC+ of providing the MTAS in the range of roughly 5 cpm to 12 cpm. The Commission then noted:

“... this range is consistent with estimates of the TSLRIC+ of providing the MTAS based on data collected by the Commission as part of its Regulatory Accounting framework (RAF). In addition to this, the Commission has conservatively estimated that the TSLRIC+ of providing the other elements of a FTM call are likely to be in the order of 5 cents per minute.”

284 The Commission did not explain how the figure of 5 cpm was derived or broken down and there is no material before us from which we can determine whether that figure of 5 cpm (for fixed origination and transmission) is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB.

285 Notwithstanding Vodafone’s submissions, we are still required to be satisfied that the Pass Through Safeguard provisions are reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. That, in turn, requires us to be satisfied that the target average retail prices specified in Table 2 of cl 3 in the Pass Through Safeguard provisions (extracted at par [17] above), particularly 21.15 cpm for the validity periods after 1 January 2007, are reasonable in the same sense. A critical component in the structure of that price is the 5 cpm figure. We have no material before us which might satisfy us that 5 cpm is a reasonable figure in the sense to which we have referred for the fixed origination and transmission costs of a fixed services operator. We have been told that it is the Commission’s “conservative estimate” but we have no basis on which to assess or determine whether it represents efficient costs. Further, that estimate was given in the Commission’s Mobile Services Review in June 2004 and we have no material before us as to the relevance or applicability of that estimate for the validity period 1 January 2007 to 30 June 2007 or any subsequent validity periods.

286 We are unable, therefore, to be satisfied that Vodafone's target average retail price of 21.5 cpm for the validity periods after 1 January 2007 is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB.

287 It may well be, as the Commission submitted, that the Pass Through Safeguard is not necessary as pass through might occur in a number of other ways. However, we do not consider that the Pass Through Safeguard is unreasonable because it has a potential consequence or effect on the level of prices in the fixed-to-mobile market. Although the Safeguard operates so as to give the rebate to Vodafone and not to its access seekers or end-users, it operates as an incentive for access seekers who supply fixed-to-mobile services not to keep or raise their level of fixed-to-mobile service charges above the level specified in the undertaking.

288 We have more concerns about the operation of the transit traffic provisions of the Pass Through Safeguard. The provision with which we have the most concern is the provision found in cl 7.4 (extracted at par [19] above) which provides that if the access seeker cannot or does not comply with cl 7 then it must not send **any** transit traffic – that is not just the traffic of the defaulting transit carriage service provider but the traffic from all transit carriage service providers – to Vodafone for termination. This may not have been Vodafone's intention but it is the manner in which the provision operates. It is not for us to re-write the provision. We cannot see how such a provision is in the long-term interests of end-users of carriage services or of services supplied by means of carriage services, some of whom would be denied access to their mobile service due to no default on the part of themselves or their access provider. It has a consequence of penalising them in circumstances where neither they, nor their access provider, is in default. We consider that this provision is not reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. We do not consider that it is in the legitimate business interests of Vodafone and it is most certainly not in the interests of access seekers to the VMTAS. Further, it certainly is not likely to result in the achievement of the objective of promoting competition in markets for listed services, as referred to in s 152AB(2)(c) and, indeed, in its terms, would defeat that objective.

289 We are also concerned that the Pass Through Safeguard is inflexible in relation to the opportunity for competition to be promoted as a result of any reduction in the price of the

VMTAS. It limits the opportunity of access seekers to determine the form in which any reductions they may receive in the supply of the VMTAS may be passed through to the retail fixed services market.

290 We consider that the pass through provisions in the undertaking deprive access seekers of the flexibility to determine competitively the individual price elements for services within the basket of services that are supplied within the fixed-to-mobile market, and the form in which pass through will take place. This approach retards allocative and dynamic efficiency, inhibits competition, is not in the long-term interests of end-users and, in our view, is not reasonable.

291 We are also concerned about the difficulties identified in implementing the Safeguard having regard to the definitions and scope of “validity periods” and “earliest prior validity period” (cl 6.2(b)). If we were to accept the undertaking now, then it would only operate prospectively from the validity period commencing 1 January 2007. That gives rise to issues as to what is the relevant “earliest prior validity period”. Overall, we are not satisfied that the Pass Through Obligation can be implemented in a manner which is clearly and precisely laid out for access seekers. In such circumstances, we do not consider that the implementation of the Pass Through Obligation is reasonable having regard to the interests of access seekers.

292 Telstra submitted that the implementation of the Pass Through Obligation was practically unworkable and unreasonable for the following reasons:

- it was not commercially acceptable from a corporate governance standpoint for a director to be required to certify all the matters required by the undertaking, including in respect of third parties;
- access seekers would be forced to spend considerable time and resources on compliance and monitoring tasks, thereby reducing their ability to focus on operational efficiencies and improving the quality of service to end-users;
- the incorporation of a subjective standard to trigger the dispute process was inappropriate; and
- the expert determination process was likely to involve the divulging of the confidential and commercially sensitive information of the access seeker to Vodafone.

We have insufficient material before us to enable us to determine whether Telstra's submission in this respect is well-founded. Having regard to our conclusions on other provisions of the Pass Through Safeguard, it is not necessary for us to reach a concluded view on this submission.

293 Telstra submitted that the inclusion of the Pass Through Obligation resulted in the undertaking being inconsistent with the applicable standard access obligations because:

- the Pass Through Obligation, which makes Vodafone's compliance with the standard access obligations contingent on the price which access seekers charge for retail services, is inconsistent with Vodafone's obligation to supply the MTAS on request under s 152AR(3)(a); and
- the prohibition on transit traffic in cl 7.4 of Pt C of the Service Schedule to the Access Agreement is inconsistent with Vodafone's obligation to supply the MTAS on request pursuant to s 152AR(3)(a).

These issues do not give rise to inconsistencies with Vodafone's obligations to comply with the standard access obligations; rather they are relevant to the issue of the reasonableness of the Pass Through Safeguard in respect of which we have made other findings and reached other conclusions.

294 We have not dealt with all the issues and submissions raised and made in relation to the Pass Through Safeguard as we are not satisfied, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, that the provisions of the Pass Through Safeguard to which we have referred, are reasonable for the particular reasons to which we have referred.

295 Our conclusion that we are unable to be satisfied, having regard to the matters specified in s 152AH and the objectives set out in s 152AB, that the provisions of the Pass Through Safeguard are reasonable has the consequence that we are unable to be so satisfied as to the undertaking as a whole. The Pass Through Safeguard provisions are an integral and material part of the undertaking. It is not open to us to excise the Pass Through Safeguard provisions from the undertaking and otherwise accept it. It is only open to us either to affirm the Commission's decision or to set that decision aside and accept the undertaking.

296 Clause 19.8 of the Agreement in Attachment A of the undertaking contains a severance provision in the following terms:

- “(a) Subject to paragraph (b), if the whole or any part of a provision of this Agreement is unenforceable, partly unenforceable, void or illegal in a jurisdiction, then it is severed to the extent necessary to make this Agreement enforceable in that jurisdiction.*
- (b) This clause 19.8 does not apply if the severance materially changes the intended effect of this Agreement, alters its basic nature, is contrary to public policy or the Telecommunications Laws.”*

That provision provides no basis for us to exclude or excise the Pass Through Safeguard from the Agreement, and thereby from the undertaking. Severing the Pass Through Obligation from the Agreement would materially change the intended effect of the Agreement and alter its basic nature.

297 In the light of our findings and conclusions in relation to the efficiency of Vodafone’s costs, what have been described as the empirical flaws in the PwC models and certain provisions in the Pass Through Safeguard, it is not necessary to reach any conclusions in relation to the reasonableness of a number of other non-price terms and conditions in the undertaking which were the subject of submissions.

17. CONCLUSION

298 For the reasons set out earlier, we are not satisfied that:

- Vodafone’s costs were efficiently incurred;
- the costs produced by either of the PwC models generate a total cost of providing the VMTAS of 16.15 cpm;
- Vodafone’s price term of 16.15 cpm for the period 1 January 2007 to 30 June 2007 and for any subsequent validity periods does no more than cover Vodafone’s long-run incremental costs of supplying its VMTAS.

299 Those consequences lead us to the conclusion that we are not satisfied that Vodafone’s price term of 16.15 cpm for the period 1 January 2007 to 30 June 2007, and for any subsequent validity period, is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. Nor are we satisfied that the particular provisions of the Pass

Through Safeguard to which we have referred are reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. The end result is that we are not satisfied that the undertaking is reasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB.

300 The result is that the decision of the Commission rejecting Vodafone's access undertaking will be affirmed.

I certify that the preceding three hundred (300) numbered paragraphs are a true copy of the Reasons for Decision herein of the Honourable Justice Goldberg, Mr R Davey and Mr R Shogren.

Associate:

Dated: 11 January 2007

Counsel for Vodafone Network Pty Limited & Vodafone Australia Limited:	N Hutley QC with R Beech-Jones
Solicitor for Vodafone Network Pty Limited & Vodafone Australia Limited:	Gilbert + Tobin
Counsel for the Australian Competition and Consumer Commission:	J Beach QC with M Borsky
Solicitor for the Australian Competition and Consumer Commission:	Corrs Chambers Westgarth
Counsel for Telstra Corporation Limited:	Dr J Griffith S.C.
Solicitor for Telstra Corporation Limited:	Mallesons Stephen Jaques
Counsel for the Optus Mobile Pty Limited and Optus Networks Pty Limited:	T Bannon S.C. with S Balafoutis
Solicitor for the Optus Mobile Pty Limited and Optus Networks Pty Limited:	Gilbert + Tobin
Counsel for Hutchison 3G Australia Pty Limited and Hutchison Telecommunications (Australia) Ltd:	N Murray
Solicitor for Hutchison 3G Australia Pty Limited and Hutchison Telecommunications (Australia) Ltd:	Allens Arthur Robinson
Counsel for AAPT Limited:	J Arnott
Solicitors for AAPT Limited:	Allens Arthur Robinson
Date of Hearing:	31 August, 1, 4, 5 and 11 September 2006
Date of Judgment:	11 January 2007

ANNEXURE A

GLOSSARY AND ABBREVIATIONS

AICC	assets in the course of construction
capex	capital expenditure
cpm	cents per minute
EPMU	equi-proportionate mark-up
F&F	furniture and fittings
GPRS	General Packet Radio Service
GRC	gross replacement cost
GSM	Global system for mobiles
MNO	mobile network operator
MTAS	mobile terminating access service
Ofcom	Office of Communications, the United Kingdom telecommunications regulator
opex	operating expenditure
PSTN	public switched telecommunications network
SMS	Short Messaging Service
TSLRIC	Total service long-run incremental cost
TSLRIC +	Total service long-run incremental cost plus a mark-up to enable a recovery of organisation-level common costs, estimated according to the EPMU rule
VMTAS	Vodafone's domestic digital mobile terminating access service on its 2G/2.5G GSM network
WACC	Weighted Average Cost of Capital