AUSTRALIAN COMPETITION TRIBUNAL

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

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 – allocation of costs – application of Ramsey-Boiteux pricing – network externality surcharge – international benchmarking – whether terms of the undertaking are retrospective.

Trade Practices Act 1974 (Cth): ss 4E, 152AA, 152AB, 152AH, 152AL, 152AQA, 152AR, 152BS, 152BU, 152BV(2), 152BX, 152CE(1), 152CF, 152CGB, 152CN, 152CQ(5), 152DN, 152DNA(1), 152DO, Pt XIC
Telecommunications Act 1997 (Cth): s 7
Telecommunications Legislation Amendment Act 1999 (Cth): Schedule 1, Item 74
Acts Interpretation Act 1991 (Cth): ss 8, 8A
Trade Practices Amendment (Telecommunications) Bill 1996

Telstra Corporation Limited [2001] ACompT 4, applied
Telstra Corporation Limited [2006] ACompT 4, applied
Power New Zealand Ltd v Mercury Energy Limited and Commerce Commission [1996] 1 NZLR 686, cited
Re Seven Network Limited (No 4) [2004] 187 FLR 373, considered

W Baumol and J Sidak, *Towards Competition in Local Telephony*, MIT Press, Cambridge, MA, 1994.
J Sandbach, "Ramsey Pricing –vs.- EPMU for Regulation of Firms Operating in Competitive and Non-Competitive Markets", paper presented at Conference on The Economics of Electronic Communication Markets, Toulouse, 15-16 October 2004.

File No 3 of 2006

RE: FINAL DECISION BY THE AUSTRALIAN COMPETITION AND CONSUMER COMMISSION DATED 3 FEBRUARY 2006 PURSUANT TO SECTION 152BU(2) OF THE TRADE PRACTICES ACT IN RESPECT OF AN ORDINARY ACCESS UNDERTAKING SUBMITTED BY OPTUS NETWORKS PTY LIMITED AND OPTUS MOBILE PTY LIMITED FOR THE DOMESTIC GSM TERMINATING ACCESS SERVICE

BY: OPTUS MOBILE PTY LIMITED and OPTUS NETWORKS PTY LIMITED
Applicants

GOLDBERG J, MR R DAVEY and MR R SHOGREN
22 NOVEMBER 2006
MELBOURNE

IN THE AUSTRALIAN COMPETITION TRIBUNAL

File No 3 of 2006

RE: FINAL DECISION BY THE AUSTRALIAN COMPETITION AND CONSUMER COMMISSION DATED 3 FEBRUARY 2006 PURSUANT TO SECTION 152BU(2) OF THE TRADE PRACTICES ACT IN RESPECT OF AN ORDINARY ACCESS UNDERTAKING SUBMITTED BY OPTUS NETWORKS PTY LIMITED AND OPTUS MOBILE PTY LIMITED FOR THE DOMESTIC GSM TERMINATING ACCESS SERVICE

BY: OPTUS MOBILE PTY LIMITED and OPTUS NETWORKS PTY LIMITED
Applicants

THE TRIBUNAL: **GOLDBERG J, MR R DAVEY and MR R SHOGREN**

DATE OF DECISION: **22 NOVEMBER 2006**

WHERE MADE: **MELBOURNE**

THE TRIBUNAL DECIDES THAT:

1. The decision of the Australian Competition and Consumer Commission on the 3rd day of February 2006 rejecting the ordinary access undertaking given to it on the 23rd day of December 2004 by Optus Networks Pty Limited and Optus Mobile Pty Limited is affirmed.

GENERAL DISTRIBUTION

IN THE AUSTRALIAN COMPETITION TRIBUNAL

File No 3 of 2006

RE: FINAL DECISION BY THE AUSTRALIAN COMPETITION AND CONSUMER COMMISSION DATED 3 FEBRUARY 2006 PURSUANT TO SECTION 152BU(2) OF THE TRADE PRACTICES ACT IN RESPECT OF AN ORDINARY ACCESS UNDERTAKING SUBMITTED BY OPTUS NETWORKS PTY LIMITED AND OPTUS MOBILE PTY LIMITED FOR THE DOMESTIC GSM TERMINATING ACCESS SERVICE

BY: OPTUS MOBILE PTY LIMITED and OPTUS NETWORKS PTY LIMITED
Applicants

JUDGE: **GOLDBERG J, MR R DAVEY and MR R SHOGREN**

DATE: **22 NOVEMBER 2006**

PLACE: **MELBOURNE**

CONTENTS

1	**INTRODUCTION**	[1]
2	**PARTIES TO THE APPLICATION**	[4]
3	**THE LEGISLATIVE REGIME**	[5]
4	**THE DOMESTIC GSM TERMINATING ACCESS SERVICE**	[21]
5	**THE COMMISSION'S MTAS PRICING PRINCIPLES DETERMINATION**	[26]
6	**OPTUS' UNDERTAKING**	[30]
7	**THE COMMISSION'S REASONS FOR REJECTING THE UNDERTAKING** ……	[37]
8	**IS THE OPTUS UNDERTAKING AN ORDINARY ACCESS UNDERTAKING?**	[42]
9	**MARKET DEFINITION**	[70]
10	**OPTUS' COSTS**	[91]
11	**THE FL-LRIC COMPONENT OF OPTUS' COSTS**	[104]
11.1	**The CRA/Rohlfs FL-LRIC model**	[104]
11.2	**Are Optus' costs efficient costs?**	[110]
11.3	**Should the FL-LRIC be determined as if Optus were a standalone mobile network operator?**	[119]
11.4	**Is it reasonable for Optus to rely on anchored costs and volumes?**	[125]
11.5	**Are Optus' routing factors reasonable?**	[127]
11.6	**Is the non-allocation of network costs to SMS and data services reasonable?**	[131]
12	**THE R-B COMPONENT OF OPTUS' PRICE**	[137]
12.1	**The nature of fixed and common costs (FCCs) and the case for a mark-up**	[137]
12.2	**Allocating FCCs**	[147]
12.3	**Efficiency costs of mark-ups**	[157]
12.4	**R-B pricing in a competitive market**	[162]
12.5	**Is R-B pricing broadly accepted?**	[166]

12.6	**CRA/Rohlfs modelling of R-B prices**	[180]
12.7	**Estimates of elasticities**	[183]
12.8	**Uncertainties regarding the implementation of the modelling**	[204]
12.9	**Commercially negotiated prices as a benchmark**	[226]
12.10	**R-B pricing v EPMU**	[236]
12.11	**Conclusions regarding R-B pricing**	[242]
13	**THE NETWORK EXTERNALITY SURCHARGE (NES) COMPONENT OF OPTUS' PRICE**	[245]
13.1	**The nature of externalities**	[255]
13.2	**CRA/Rohlfs modelling of the NES**	[263]
13.3	**Modelling assumptions**	[266]
13.4	**Ignoring other possible externalities**	[281]
13.5	**Conclusions regarding the NES component**	[291]
14	**INTERNATIONAL BENCHMARKING**	[292]
15	**NON-PRICE TERMS AND CONDITIONS**	[298]
16	**CONCLUSION**	[299]

ANNEXURE A **GLOSSARY AND ABBREVIATIONS**

REASONS FOR DECISION

THE TRIBUNAL: GOLDBERG J, MR R DAVEY and MR R SHOGREN

1. INTRODUCTION

1 Optus Mobile Pty Limited and Optus Networks Pty Limited (together "Optus") 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 Optus to the Commission under s 152BU(2) of the Act.

2 The access undertaking sets out the price and non-price terms and conditions upon which Optus undertakes to provide its domestic GSM ("global system for mobiles") terminating access service ("DGTAS"). The DGTAS is Optus' 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 Optus on 23 December 2004. The Commission rejected the undertaking in its Final Decision made on 3 February 2006 on the basis that it was not satisfied that the prices and certain non-price terms and conditions specified in the undertaking were reasonable.

3 The application for review was filed by Optus on 23 February 2006. The issues before us are whether the prices and certain non-price terms and conditions in the undertaking are reasonable having regard to certain statutory matters to which we shall refer. Annexure A contains a glossary of terms and abbreviations used in these reasons.

2. PARTIES TO THE APPLICATION

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

- the Commission;
- Telstra Corporation Limited ("Telstra");
- Vodafone Network Pty Ltd and Vodafone Australia Limited (together "Vodafone")
- 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, Vodafone, AAPT, Hutchison, Macquarie, PowerTel and Primus all currently acquire the DGTAS from Optus. Vodafone also has an application for review pending in this Tribunal with respect to the Commission's rejection of its access undertaking in relation to its supply of an MTAS on its 2G network.

3. THE LEGISLATIVE REGIME

5 Although the telecommunications access regime under Pt XIC of the Act was explained recently by the Tribunal in *Telstra Corporation Limited* [2006] ACompT 4, it is helpful to refer to the salient parts of the legislation to provide a context for the submissions of the parties and our reasoning and conclusions.

6 Part XIC sets out a telecommunications access regime, described in simplified form in s 152AA, in which the Commission may declare carriage services and related services. The object of Pt XIC is expressed in s 152AB(1) of the Act as being "to promote the long-term interests of end-users of carriage services or of services provided by means of carriage services". A carriage service is defined in s 7 of the *Telecommunications Act* 1997 (Cth) as "a service for carrying communications by means of guided and/or unguided electromagnetic energy". A service can be declared by the Commission under s 152AL of the Act if, after following a specified procedure, the Commission is satisfied that the making of the declaration will promote the long-term interests of end-users of carriage services or of services provided by means of carriage services. Once a service is declared, an access provider (which is a carrier or carriage service provider) must, if requested, supply the service to an access seeker in accordance with the standard access obligations set out in s 152AR of the Act which include, in particular, supplying an active declared service to the access seeker so that it can provide carriage services and/or content services to end-users.

7 The carrier or carriage service provider may submit an ordinary access undertaking to the Commission under which the carrier or provider undertakes to comply with the terms and conditions specified in the access undertaking in relation to the applicable standard access

obligations: s 152BS(1). If the terms and conditions are specified in writing in the undertaking, the undertaking must specify the expiry time of the undertaking: s 152BS(7).

8 The acceptance and coming into operation of an access undertaking is significant because it has an impact upon the extent to which the Commission may determine an access dispute between an access seeker and a carrier or provider in accordance with the procedure set out in Div 8 of Pt XIC of the Act. Section 152CGB provides that a determination made by the Commission in respect of an access dispute under Div 8 has no effect to the extent to which it is inconsistent with an access undertaking that is in operation.

9 The Commission must accept or reject the undertaking: s 152BU(2), but it must not accept the undertaking unless it (and the Tribunal when reviewing a decision of the Commission) is affirmatively satisfied that, *inter alia*, the undertaking is consistent with the applicable standard access obligations and that the terms and conditions specified in the undertaking are reasonable: s 152BV(2)(b) and (d). When we say that the Commission and the Tribunal must be "affirmatively satisfied" we are not seeking to impose any particular onus of proof upon the party submitting the undertaking. Rather, we are identifying the fact that the Commission and the Tribunal must be satisfied, based on all the material placed before it, that the terms and conditions specified in the undertaking are reasonable. This is no more than a recognition of the opening words of subs (2)(d) of s 152BV that the Commission "must" not accept an undertaking unless it is "satisfied" that the terms and conditions specified in the undertaking are reasonable.

10 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 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 subs (1) does not, by implication, limit the matters to which regard may be had.

11 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 subs (2) is intended to limit the matters to which regard may be had.

12 In determining whether the terms and conditions of an undertaking are likely to result in the achievement of the objective of promoting competition in markets for listed services, regard must be had by the Commission (and by the Tribunal on review) to the extent to which the terms and conditions will remove obstacles to end-users of listed services gaining access to listed services: s 152AB(4). Section 152AB(4) does not, by implication, limit the matters to which regard may be had: s 152AB(5).

13 In determining whether the terms and conditions of an undertaking are likely to result in the achievement of the objective in s 152AB(2)(e), namely encouraging the economically

efficient use of and investment in infrastructure, pursuant to s 152AB(6) regard must be had by the Commission (and by the Tribunal on review) to:

> *"(a) whether it is, or is likely to become, technically feasible for the services to be supplied and charged for, having regard to:*
>
> *(i) the technology that is in use, available or likely to become available; and*
> *(ii) whether the costs that would be involved in supplying, and charging for, the services are reasonable or likely to become reasonable; and*
> *(iii) the effects, or likely effects, that supplying, and charging for, the services would have on the operation or performance of telecommunications networks;*
>
> *(b) the legitimate commercial interests of the supplier or suppliers of the services, including the ability of the supplier or suppliers to exploit economies of scale and scope;*
>
> *(c) the incentives for investment in:*
>
> *(i) the infrastructure by which the services are supplied; and*
> *(ii) any other infrastructure by which the services are, or are likely to become, capable of being supplied."*

Section 152AB(7) provides that subs (6) does not, by implication, limit the matters to which regard may be had. Section 152AB(7A) provides that for the purposes of determining incentives for investment, regard must be had to the risks involved in making the investment.

14 Section 152AB(8) provides, in relation to any-to-any connectivity, that:

> *"… the objective of any-to-any connectivity is achieved if, and only if, each end-user who is supplied with a carriage service that involves communication between end-users is able to communicate, by means of that service, with each other end-user who is supplied with the same service or a similar service, whether or not the end-users are connected to the same telecommunications network."*

15 It is important to note 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. In *Telstra Corporation Limited* [2006] ACompT 4, the Tribunal had to consider whether the price for monthly access in Telstra's access undertaking was reasonable. The Tribunal said 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. 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:* Application by GasNet Australia (Operations) Pty Ltd *(2004) ATPR 41-978 at [29]."*

Later at par [67] the Tribunal said:

> *"In a number of respects we are operating in areas where there is no one specific regulatory, economic, accounting or financial answer, and where there may be a number of approaches to the determination of relevant costs or their allocation which may be regarded as reasonable. Our inquiry is directed to whether Telstra's $9.00 monthly charge in its access undertaking is reasonable having regard to the statutory matters set out in of ss 152AH and 152AB of the Act."*

16 This application for review is made pursuant to s 152CE(1) which provides that a person whose interests are affected by a decision of the Commission under, *inter alia*, s 152BU(2) may apply in writing to the Tribunal for a review of the decision. The functions and powers of the Tribunal are set out in s 152CF which provides relevantly:

> *"(1) On a review of a decision of the Commission under subsection 152BU(2), … the Tribunal may make a decision:*
>
> *(a) in any case – affirming the Commission's decision; or*
> *…*
> *(c) in the case of a review of a decision of the Commission under subsection 152BU(2) or 152CBC(2) to reject an undertaking – both:*
>
> *(i) setting aside the Commission's decision; and*
> *(ii) in substitution for the decision so set aside, to accept the undertaking; or*
>
> *…*
> *and, for the purposes of the review, the Tribunal may perform all the functions and exercise all the powers of the Commission."*

17 A decision by the Tribunal is taken, for the purposes of the Act, to be a decision of the Commission: s 152CF(2). Significantly, the Tribunal may only have regard to:

> *"(a) any information given, documents produced or evidence given to the Commission in connection with the making of the decision to which the review relates; and*

> *(b) any other information that was referred to in the Commission's reasons for making the decision to which the review relates."*

(section 152CF(4)). The parties are not limited to the submissions made and contentions advanced before the Commission: *Telstra Corporation Limited* [2006] ACompT 4 at [21].

18 Accordingly, the function of the Tribunal is to review the matter on the merits, standing in the shoes of the Commission, but only on the basis of the information, documents and evidence before the Commission. The Tribunal's role is not to identify any error in the Commission's decision, but rather to consider the matter afresh.

19 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 of the Act. That is to say, we are considering whether a particular price, cost or method of calculating and determining a cost is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. We are not considering the reasonableness of such price, cost or method in the abstract, unrelated to the matters set out in s 152AH and the objectives in s 152AB.

20 The principal issue for determination is whether Optus' price term of 17 cents per minute ("cpm") for 2007 is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act. Optus has contended that that price is reasonable because it does no more than recover the forward-looking long-run incremental costs of its supply of the DGTAS, a mark-up to reflect the recovery of its fixed and common costs and a mark-up to include a network externality surcharge. That has therefore led to an inquiry whether Optus' costs and its method or approach in estimating those costs are reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB.

4. THE DOMESTIC GSM TERMINATING ACCESS SERVICE

21 It is of assistance to explain, in simplified form, the basic workings of the MTAS and DGTAS.

22 A telephone call made between users of telephone networks involves two general elements, origination and termination. Origination is the carriage of a call from the end-user who makes, or originates, the call over the network to which that end-user is connected. Termination refers to the carriage of the call to the person receiving the call over the network to which the person receiving the call is connected. Where the originator of the call and the receiver of the call are connected to different networks, the point at which origination ends and termination begins is called the point of interconnection ("POI"). The MTAS is the service provided by the receiving mobile network for the carriage of the call from the POI to the person receiving the call.

23 The MTAS was declared under s 152AL of the Act with effect from 1 July 2004. It was described by the Commission in its Final Decision to declare the MTAS as:

> *"… a wholesale input, used by providers of calls from fixed-line and mobile networks, in order to complete calls to mobile subscribers connected to other networks."*

The MTAS covers voice termination on all digital mobile networks in Australia.

24 In Australia the fixed and mobile networks have adopted a 'calling party pays' model. The network operator (whether fixed or mobile) that originates a call to a mobile network pays the mobile network to which the person receiving the call is connected for the use of its MTAS, that is, it pays for the termination of the call. For example, Telstra may purchase access to Optus' DGTAS in order to enable a call from a Telstra fixed-line end-user to be connected to an Optus mobile end-user. Telstra would then bill its directly-connected customer, the calling party, for the call and recover its costs of originating the call together with the amount it pays Optus for terminating the call. A similar arrangement occurs when, for example, a customer of Vodafone makes a call from his or her mobile handset to an Optus mobile network customer. In that case Vodafone purchases the DGTAS from Optus and bills its own customer, the calling party. In each case the calling party's network operator does not disaggregate its call charges to show the cost of the MTAS, and the calling party is generally unaware of the amount of that charge.

25 The actual way in which network operators charge customers is complex and is discussed later in the context of market definition (pars [74]-[75]).

5. THE COMMISSION'S MTAS PRICING PRINCIPLES DETERMINATION

26 Where, as here, the Commission declares a service, it must (s 152AQA of the Act) determine principles relating to the price of access to the declared service and on 30 June 2004 the Commission made a pricing principles determination for the MTAS ("Pricing Principles Determination"). In its Pricing Principles Determination the Commission indicated that the price of the MTAS should "follow an adjustment path such that there is a closer association of the price and underlying cost of the service". The Commission's preferred pricing principle was the total service long-run incremental cost ("TSLRIC") of supplying the service, with a mark-up to enable the recovery of organisation-level common costs, based on an equi-proportionate mark-up ("EPMU") approach. This was described as a TSLRIC+ approach.

27 The Commission determined that the TSLRIC+ of supplying the MTAS in Australia was likely to fall within the range of 5 to 12 cpm and it selected the upper bound of this range, 12 cpm for its MTAS Pricing Principles Determination.

28 The Commission determined a three-year adjustment path to this price of 12 cpm over the period 1 July 2004 to 30 June 2007, as follows:

Time period	**Price related terms and conditions (cpm)**
1 July 2004 – 31 December 2004	21
1 January 2005 – 31 December 2005	18
1 January 2006 – 31 December 2006	15
1 January 2007 – 30 June 2007	12

29 While the Commission must have regard to the Pricing Principles Determination if it is required to arbitrate an access dispute, the Determination is not binding on the Commission if it is asked to accept an access undertaking or to arbitrate an access dispute: s 152AQA(6) and (7A).

6. OPTUS' UNDERTAKING

30 Optus' undertaking was, relevantly, in the following terms:

> *"2. **COMMENCEMENT AND DURATION***
>
> *2.1 This Undertaking takes legal effect, subject to clauses 2.3 and 2.4, immediately after this Undertaking is accepted by the ACCC under Division 5 of Part XIC of the TPA and continues until the earlier to occur of:*
>
> *(a) 31 December 2007; or*
>
> *(b) termination, withdrawal or replacement of this Undertaking in accordance with the TPA.*
>
> *2.2 For the avoidance of doubt, this Undertaking (including, without limitation, any prices in this Undertaking) has no effect in respect of the supply of the Optus DGTA Service by Optus to an Access Seeker under an existing agreement on the date on which the Undertaking is accepted by the ACCC, for as long as that agreement remains on foot.*
>
> *2.3 If an agreement under which the Optus DGTA Service is being supplied by Optus expires on or before 31 December 2004 and Optus continues to supply the Optus DGTA Service, the prices set out in Schedule 2 will apply in respect of the continued supply of the Optus DGTA Service supplied on and from 1 January 2005.*
>
> *2.4 If an agreement under which the Optus DGTA Service is being supplied by Optus expires after 31 December 2004, the prices set out in Schedule 2 will apply in respect of the supply of the Optus DGTA Service from the date of expiry of that agreement.*
>
> *3. **UNDERTAKING TERMS AND CONDITIONS***
>
> *3.1 Optus undertakes to the ACCC that during the period this Undertaking is in effect pursuant to clause 2.1, it will, in relation to the Applicable Standard Access obligations, supply the Optus DGTA Service:*
>
> *(a) specified in Schedule 1;*
>
> *(b) at the prices specified in Schedule 2; and*
>
> *(c) on the terms set out in Schedule 3."*

31 The DGTAS specified in Schedule 1 was described as:

> *"… an access service for the carriage of voice calls from a Point of Interconnection, or potential Point of Interconnection, to a B-Party [the end-user to whom a telephone call is made] directly connected to the Optus GSM [Global System for Mobiles as defined by ETSI and the GSM Memorandum of Understanding (or any successors) and as applied in Australia] Network."*

A "Point of Interconnection" was described in Schedule 1 as a location which:

> *"(a) is a physical point of demarcation between the Access Seeker's Network and the Optus GSM Network; and*
>
> *(b) is associated with (but not necessarily co-located with) one or more gateway exchanges of the Access Seeker's Network and Optus GSM Network."*

The prices specified in Schedule 2 were, relevantly:

Year	Option 1	Option 2
2005	19.25 cpm	$x per number of audited services in operation as at the relevant date + 14.25 cpm
2006	18 cpm	$x per number of audited services in operation as at the relevant date + 13 cpm
2007	17 cpm	$x per number of audited services in operation as at the relevant date + 12 cpm

The calculation of $x required consideration of a number of provisions in Schedule 2. There were a number of terms and conditions in Schedule 2 and Schedule 3 which are not relevant for present purposes.

32 Optus' price options were calculated by reference to a forward-looking long-run incremental costs ("FL-LRIC") model plus a mark-up for fixed and common costs ("FCCs") allocated according to Ramsey-Boiteux ("R-B") principles and a mark-up for a contribution to a mobile subscription network externality called a Network Externality Surcharge ("NES"). This costs model is referred to as FL-LRIC++.

33 The prices in Optus' undertaking were based, primarily, on a costs model prepared on its behalf by Charles River Associates (Asia Pacific) Pty Ltd (the "CRA model"). Optus engaged CRA to estimate the economically efficient level of costs that should be recovered from mobile termination services in Australia. The CRA model estimated the FL-LRIC++ in 2004-2005 as 17.03 cpm. This was made up of three distinct elements:

(a) the FL-LRIC of Optus supplying its DGTAS – [X cpm];

(b) a mark-up over FL-LRIC to reflect the recovery of Optus' FCCs – [Y cpm] allocated according to R-B principles; and

(c) a mark-up over FL-LRIC to include an NES – 2.12 cpm.

The CRA model was a top-down model, that is it was based on Optus' actual network design but asset values were adjusted to reflect modern equipment prices.

34 Optus also relied upon an international benchmarking analysis prepared on its behalf by CRA. CRA considered cost estimates for the MTAS by regulators in Sweden, Malaysia and the United Kingdom and determined that once appropriate adjustments were made, a reasonable range for the cost of supplying the MTAS in Australia was 9.99 cpm to 20.07 cpm. This was said to support Optus' welfare-maximising estimate for its price for access to the DGTAS.

35 The R-B principles approach was described by the Commission in its Final Decision in the following terms:

> *"The Ramsey-Boiteux approach determines an efficient pricing structure across a carrier's services where prices are marked up above attributable cost in order to raise funds to cover a given amount of unattributable or common costs. For efficiency, these mark-ups should be set in inverse proportion to the price elasticities of demand for the various services, with more price-insensitive services bearing greater proportionate mark-ups."*

We accept this description as an appropriate description of the aim of R-B principles contended for by Optus.

36 The concept of an NES was described by the Commission in its Final Decision in the following terms:

> *"A 'NES' is an addition to the access price to raise funds to allow the mobile network operator to subsidise subscription to its network (handset subsidies and/or below-cost subscription charges). This is based on the argument that additional subscribers to a mobile network generate benefits to existing subscribers to fixed and mobile networks, as they now have an additional mobile subscriber whom they can make calls to (and receive calls from). It is argued that given individuals do not take account of the benefits they generate for others when they subscribe to a mobile network, they may chose* [sic] *not to subscribe when the combination of the benefits they would enjoy themselves and the benefits they would generate for others would make such subscription desirable from a social welfare perspective. In this context, it is argued a subsidy to mobile subscription – funded out of above-cost prices for other services (including the MTAS) – can be used to push mobile subscription to socially optimal levels. Because it is a surcharge on an access price to subsidise the price of subscription services below cost, the NES is closely analogous to the access deficit contribution (ADC) that has been added to the price of PSTN Origination and Termination services to contribute to losses*

> *from providing fixed-line subscription below cost as a consequence of retail price controls."*

We accept this description as an appropriate description of an NES contended for by Optus.

7. THE COMMISSION'S REASONS FOR REJECTING THE UNDERTAKING

37 The Commission said in its Final Decision that the key differences between the TSLRIC+ concept it proposed and the FL-LRIC++ concept Optus proposed were the mark-ups. The Commission considered that TSLRIC and FL-LRIC were 'broadly comparable "attributable" cost concepts' but said that Optus had proposed different forms of mark-up above incremental costs.

38 In relation to the FL-LRIC concept, the Commission was of the view that the conceptual approach would, at the very best, tend towards generating an upper bound on the forward-looking efficient costs of supplying the MTAS in Australia. The Commission said further that even if CRA's conceptual modelling approach was accepted, the assumptions and inputs used by CRA would tend to suggest that it overstated the efficient costs. The Commission also had concerns about the magnitude of the FCCs.

39 When considering the mark-up to reflect recovery of FCCs, the Commission noted that:

> *"… in principle the efficiency properties of R-B pricing for the recovery of common costs have been well recognised in the economics literature and regulators of the MTAS in overseas jurisdictions.*
>
> *Despite this, the Commission is not aware of any other regulator using R-B principles to allocate relevant common costs when determining an appropriate price for the MTAS. Largely, this is because the significant information demands (especially in relation to estimating relevant elasticities of demand for services) and strict conditions needed to properly apply this principle, and the potentially significant detrimental effects of misapplying R-B principles.*
>
> *In the Commission's view, Optus's proposed R-B framework does not satisfy* any *of the necessary conditions which are required in order for R-B pricing to necessarily generate a socially-optimal configuration of prices…Overall, therefore, the Commission believes that the R-B framework proposed by Optus will tend to overstate what would be an appropriate mark-up above FL-LRIC to recover Optus's FCCs."*

The Commission believed that allocating Optus' FCCs on an EPMU basis was a more reliable estimate of the welfare maximising price for the DGTAS.

40 The Commission considered that the relative importance of "network externalities" was likely to be low in a highly mature mobile market such as Australia. The Commission said:

> *"At an empirical level, the Commission considers that, even if the framework developed by CRA to determine a price for a 'NES' on Optus's DGTAS was deemed appropriate, the Commission has concerns with the actual inputs and assumption used by CRA to calculate the magnitude of the NES. In the first instance, the Commission notes that the NES calculated by CRA is not based on any empirical Australian data. Moreover, in calculating the NES, CRA assumes that 'calling externalities' are fully internalised, that the subsidy cannot to any extent be targeted to marginal subscribers (which necessitates a greater subsidy). These concerns lead the Commission to the view that there is no certainty that the NES calculated by CRA is socially-optimal, and in fact, is likely to be overstated and contrary to the efficient use of infrastructure by which telecommunications services are provided."*

41 The Commission's conclusion was that the price terms and conditions in the undertaking were not reasonable and that it had significant doubt about the reasonableness of some of the non-price terms and conditions in the undertaking. It was therefore not satisfied that the terms and conditions specified in the undertaking were reasonable.

8. IS THE OPTUS UNDERTAKING AN ORDINARY ACCESS UNDERTAKING?

42 Telstra submitted that an undertaking which contained a provision which had retrospective effect was not a valid ordinary access undertaking capable in law of being accepted. Telstra contended that the Optus undertaking did not conform with the requirements of s 152BS(10) of the Act and was therefore not an "ordinary access undertaking" capable of acceptance by either the Commission or the Tribunal. Section 152BS(10) provides:

> *"The terms and conditions specified in an undertaking may be expressed to come into effect:*
>
> *(a) immediately after the undertaking is accepted by the Commission; or*
>
> *(b) at a later time ascertained in accordance with the undertaking."*

Telstra contended that s 152BS(10) did not permit an ordinary access undertaking to be expressed to take effect prior to the date of its acceptance by the Commission or the Tribunal. It contended that the operation of clause 2.1 in conjunction with clauses 2.3 and 2.4 of the undertaking (par [30] above) had the effect that the undertaking came into effect prior to the date of its acceptance by the Commission or the Tribunal. Telstra argued that in order for the

Tribunal to accept an undertaking pursuant to s 152CF(1)(c)(ii) of the Act in the review of the decision under s 152BU(2) of the Act it was a precondition that the undertaking be given to the Commission in accordance with s 152BS and s 152BU(1) of the Act.

43 It followed from Telstra's submission that the undertaking given to the Commission was not an "ordinary access undertaking" within the meaning of that expression in s 152BU(1) and that it was not then open to the Commission or the Tribunal to accept it.

44 Telstra submitted that s 152BS(10) admitted of only two alternatives in respect of the point of time at which the terms and conditions specified in an undertaking could be expressed to come into effect and that there was no recognition of the possibility of any other option including retrospectivity being adopted. Telstra found support for its construction in s 152DNA(1) which relates to the final determination by the Commission of an access dispute. Section 152DNA(1) provides:

> *"Any or all of the provisions of a final determination may be expressed to have taken effect on a specified date that is earlier than the date on which the determination took effect."*

Telstra relied upon this section to demonstrate that where the Parliament intended there to be a backdating or retrospectivity in relation to the effect of a provision then it expressly provided for it. Telstra noted that there was no equivalent provision dealing with ordinary access undertakings.

45 We do not regard the existence of s 152DNA(1) as being of much assistance in respect of the matter under consideration. Section 152BS was introduced into the Act in 1997 and s 152DNA was introduced into the Act in 1999. As we note later in these reasons, we consider a distinction needs to be drawn between the expression in an undertaking as to when terms and conditions come into effect and the operation of any particular term or condition prior to the expression of such a point of time.

46 Section 152BS(10) provides two alternatives for the commencement of the operation of the undertaking which are mirrored in s 152BX(2)(a) of the Act in relation to the time at which an undertaking can come into operation. Section 152BX(2)(a) provides:

> *"If the Commission accepts the undertaking:*
>
> *(a) the undertaking comes into operation:*
>
> *(i) if the terms and conditions specified in the undertaking are expressed to come into effect immediately after the undertaking is accepted by the Commission – at the time of acceptance; or*
>
> *(ii) if the terms and conditions specified in the undertaking are expressed to come into effect at a later time ascertained in accordance with the undertaking – at that later time;"*

47 The relevant provisions of the Act do not contemplate that an undertaking may commence to operate retrospectively.

48 Telstra therefore argued that any undertaking which involved retrospective operation could not be an "ordinary access undertaking" within the meaning of the Act and was incapable in law of acceptance irrespective of whether the balance of its terms and conditions were otherwise reasonable.

49 Telstra's submission depends upon acceptance of the proposition that the terms of s 152BS(10) are definitional of an "ordinary access undertaking". We do not consider that the provisions in s 152BS(10) are definitional of an "ordinary access undertaking" in the sense that if that subsection is not complied with in the terms of an undertaking then the undertaking does not answer the description of an "ordinary access undertaking".

50 We consider that the definition of an "ordinary access undertaking" is found in subs (1) of s 152BS which provides:

> *"For the purposes of this Part, an 'ordinary access undertaking' is a written undertaking given by a carrier or a carriage service provider to the Commission under which the carrier or provider undertakes to comply with the terms and conditions specified in the undertaking in relation to the applicable standard access obligations."*

Subsequent subsections of s 152BS contain provisions which deal with the content and form of the ordinary access undertaking, but failure to comply with any of those provisions does not negate the proposition that the undertaking is an "ordinary access undertaking" for the purposes of Pt XIC of the Act.

51 The jurisdiction of the Commission and the Tribunal to consider an undertaking for the purposes of ss 152BS and 152BV is dependent upon an undertaking being given which

conforms with the description in subs (1) of s 152BS. If the undertaking does not comply with other provisions in s 152BS, or other provisions in the Act, that does not negate the jurisdiction of the Commission or the Tribunal to deal with the undertaking; rather such failure will result in the Commission and the Tribunal dealing with the undertaking in accordance with the relevant provisions of the Act.

52 An undertaking by a carrier or carriage service provider will be entitled to be described as an "ordinary access undertaking" for the purposes of ss 152BS(1), 152BV, 152BU and 152CF and fall within the definition of that expression in subs (1) of s 152BS if it is a document in which the carrier or provider undertakes to comply with the terms and conditions specified in the document in relation to the standard access obligations, which are applicable to it and which are found in s 152AR of the Act. It remains an ordinary access undertaking notwithstanding that it also contains terms and conditions which do not relate to the applicable standard access obligations.

53 As we have jurisdiction to consider the undertaking, we must decide whether the undertaking should be rejected on the grounds that it fails to accord with the requirements of s 152BS(10). We do not consider that the undertaking offends s 152BS(10). A distinction is to be drawn between the point of time at which an undertaking comes into effect, that is to say the point of time at which it becomes operative and legally binding, and the operation of particular terms and conditions after that point of time is reached. The fact that a term or condition may operate in respect of a period of time prior to the undertaking becoming operative does not mean that the term or condition has been expressed to come into effect prior to the undertaking being accepted by the Commission. Put shortly, once an undertaking has been given legal effect and has become operative, it can contain provisions which apply to a point of time earlier than the point of time at which it comes into effect without offending s 152BS(10). Of course, the Commission (and on review the Tribunal) still has to be satisfied that such terms and conditions are reasonable for the purposes of s 152BV(2)(d).

54 Clause 2.1 of the undertaking (par [30] above) conforms with s 152BS(10)(a) notwithstanding that it takes effect "subject to clauses 2.3 and 2.4". Those clauses do not provide that the undertaking "takes legal effect" at a point of time prior to the acceptance of the undertaking by the Commission. Rather, they provide that upon the undertaking coming into legal effect, the prices set out in Schedule 2, in the circumstances specified, will apply in

respect of an earlier point of time. That does not alter the point of time at which the terms and conditions of the undertaking come into effect.

55 Optus relied on the Tribunal's reasoning in *Telstra Corporation Limited* [2001] ACompT 4 in support of its interpretation of s 152BS(10). That decision must be approached with care as the Tribunal was concerned with the interpretation of provisions in Div 8 of Pt XIC relating to the resolution of access disputes rather than Div 5 which relates to access undertakings. Further, notwithstanding that by the time the Tribunal came to consider the matter the *Telecommunications Legislation Amendment Act* 1999 (Cth) ("the 1999 Legislation") had come into force on 5 July 1999, the Tribunal determined that as a result of the operation of ss 8 and 8A of the *Acts Interpretation Act* 1901 (Cth) provisions of Pt XIC which had been repealed by the 1999 Legislation were still operative for the purpose of the Tribunal's determination. The 1999 Legislation introduced s 152DNA(1) into the Act which provides:

> *"Any or all of the provisions of a final determination may be expressed to have taken effect on a specified date that is earlier than the date on which the determination took effect."*

However the 1999 Legislation included Item 74 in Schedule 1 in the following terms:

> *"**Transitional – backdating of final determinations***
>
> *A final determination made by the Commission under Division 8 of Part XIC of the Trade Practices Act 1974 has no effect to the extent (if any) to which any provision of the determination is expressed to have taken effect on a date earlier than the date of commencement of this item."*

Item 74 therefore denied the Commission the power to make a determination containing any provision expressed to have effect on a date earlier than the commencement date of Item 74.

56 The Tribunal decided that the operation of the former, now repealed, provisions of Pt XIC of the Act were preserved by ss 8 and 8A of the *Acts Interpretation Act* 1901 (Cth). The Tribunal decided that the earlier provisions of Pt XIC enabled the Commission and the Tribunal to determine a dispute which had arisen before the 1999 Legislation by making a determination that had retrospective effect so as to cover the whole period of the dispute. In its form which existed before the 1999 Legislation repealed it, s 152DN provided:

> *"(1) If none of the parties to the arbitration applies to the Tribunal under section 152DO for a review of the Commission's determination, the determination has effect 21 days after the determination was made.*

> *(2) If a party to an arbitration applies to the Tribunal under section 152DO for a review of the Commission's determination, the determination is of no effect until the Tribunal makes its determination on the review."*

The Tribunal rejected Telstra's submission that this section should be construed to mean that a determination operated only prospectively. The Tribunal said at par [27]:

> *"Generally speaking, an arbitration to determine a pre-existing dispute will be an exercise intended to fix terms and conditions to operate over the period in dispute. In the absence of any express provision in the former Part XIC to indicate that the power of the Commission or Tribunal to backdate the operation of a determination to the commencement of an access dispute notified under s 152CM, we consider that the former s 152DN should be understood as referring to the time when a determination comes into force and becomes legally binding on the parties, and not as a restriction on power to determine terms and conditions to operate retrospectively over the period of the dispute once the determination is in force."*

57 We consider that the distinction drawn by the Tribunal, in its interpretation of the former s 152DN, between the point of time when a determination comes into effect and becomes legally binding on the parties and the operation of particular terms and conditions retrospectively once the determination has come into force and effect, is a distinction which applies in the interpretation of s 152BS(10) in the manner to which we have referred.

58 In *Telstra Corporation Limited* [2001] ACompT 4 the Tribunal explained the manner in which it took the 1999 Legislative amendments into account in the following terms:

> *"The 1999 amendments introduced new and different powers exercisable in the course of the arbitration process initiated by the notification of an access dispute under s 152CM. When the amended provisions are understood as introducing new powers and procedures, in our opinion, they do not indicate anything about the scope of the old powers and procedures, other than that they were different. They do not compel the construction of the former provisions for which Telstra contends. Even if the new provisions provide an indication in support of such a view, the countervailing consideration that such a construction would leave a gaping hole in the telecommunications access regime described in s 152AA dispels the suggestion."*

59 It is then necessary to consider whether clauses 2.3 and 2.4 of the undertaking are reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act. Telstra made a number of submissions in relation to the validity of the undertaking, which we have not accepted, which also bear on the issue whether clauses 2.3 and 2.4 of the

undertaking are reasonable. Telstra submitted that clauses 2.3 and 2.4 are expressed in terms which seek to force the applicable prices on an access seeker automatically by virtue of the undertaking being accepted. It was contended that this goes beyond the scope of an undertaking which, in its nature, is a formal promise by one party to do, or not to do, something. It was said that the act of one party giving an undertaking cannot, on its own, create and impose obligations on a third party.

60 That is correct, in the sense that the terms of an undertaking by one party cannot impose an obligation on another party unless the other party accepts the undertaking on the basis that it is incorporated into a contract into which they enter inter partes.

61 The relevant question, in the context whether clauses 2.3 and 2.4 are reasonable, is not whether clauses which may have a retrospective operation or which may apply to a period anterior to the date upon which the undertaking comes into effect are reasonable, but rather whether it is reasonable for Optus to specify that the prices set out in schedule 2 of the undertaking will apply in respect of the continued supply of its DGTAS after an agreement entered into by Optus and an access seeker prior to 31 December 2004 expires.

62 Clauses 2.3 and 2.4 must be read in the light of clause 2.2. Clause 2.2 provides that the prices in the undertaking have no effect in respect of the supply by Optus of its DGTAS "under an existing agreement on the date on which the undertaking is accepted by the ACCC for as long as that agreement remains on foot". By virtue of clause 2.3, if an agreement under which Optus supplies its DGTAS expires on or before 31 December 2004 and Optus continues to supply this service thereafter, the prices set out in Schedule 2 of the undertaking will apply in respect of the continued supply of the service on and from 1 January 2005. But, if Optus continues to supply the service on and after 1 January 2005 it must be doing so pursuant to some agreement with the access seeker. An agreement may have expired on or before 31 December 2004, but if there is supply by Optus thereafter it must be on the basis of either some over-holding or continuous supply provision in the expired agreement or on the basis of some agreement actually reached between, or to be constructed from the conduct of, Optus and the access seeker after 31 December 2004. In such circumstances, for the purposes of clause 2.2 of the undertaking, there will be supply under "an existing agreement" on the date the undertaking is accepted by the Commission or the Tribunal. The result is that clause 2.2 applies so as to deny the application of any prices in the undertaking in respect of any supply

of Optus' DGTAS under an agreement which is operative on the date the undertaking is accepted by the Commission or the Tribunal. No issue of retrospective operation of those prices therefore arises.

63 The same analysis applies to the relationship between clause 2.2 and clause 2.4 which applies to an agreement which expires after 31 December 2004. Consequently taking clauses 2.2, 2.3 and 2.4 together, we consider they are reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act.

64 Our conclusion on the proper construction of clauses 2.2, 2.3 and 2.4 results in the rejection of Telstra's submission that the operation of clause 2.1 in conjunction with clauses 2.3 and 2.4 has the effect that the undertaking came into effect prior to the date of its acceptance by the Commission or the Tribunal and therefore had retrospective operation or effect. Accordingly, the issue of the reasonableness of clauses 2.3 and 2.4 because of their retrospective operation having regard to the matters set out in s 152AH and the objectives in s 152AB, does not arise for determination.

65 It is also apparent that our conclusion does not result in the construction of clauses 2.3 and 2.4 for which Optus contended. Optus submitted that were the Tribunal to accept the undertaking as reasonable, Optus would be substantially prejudiced if the prices in its accepted undertaking could not apply to the period prior to its acceptance by the Tribunal. Optus intended its undertaking to have retrospective effect in the terms of clauses 2.3 and 2.4, but that intention is not implemented in the terms of clauses 2.2, 2.3 and 2.4 for the reasons to which we have referred.

66 If that intention had been implemented so that clauses 2.3 and 2.4 gave retrospective operation to the prices set out in schedule 2 of the undertaking, we would have considered those clauses to be unreasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. The fact that the undertaking was lodged on 23 December 2004, prior to the dates specified in clauses 2.3 and 2.4 does not alter our conclusion in this respect.

67 If clauses 2.3 and 2.4 are given effect on the construction for which Optus contended, then an access seeker who has entered into an agreement falling within those clauses is denied the opportunity to negotiate the price of access to Optus' DGTAS in respect of its supply during

the period from the expiry of the agreement up to the time it enters into an agreement for the prospective supply of the service. Notwithstanding the acceptance of the access undertaking by either the Commission or the Tribunal, it is open to the access seeker to attempt to negotiate terms of access which include terms covered by the access undertaking. However, if it seeks to negotiate terms which are inconsistent with the terms of the access undertaking, such as, for example, the price of access, it runs the risk of Optus notifying the Commission that an access dispute exists, in which case the outcome of any arbitration by the Commission cannot be inconsistent with the price of access contained in the undertaking.

68 We do not consider that this outcome would be reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. It is integral to the telecommunications access regime laid out by Pt XIC of the Act that the terms of access be the subject of agreement or arbitration. Section 152AA of the Act, which sets out a simplified outline of Pt XIC provides, in part:

> *"• The terms and conditions on which carriers and carriage service providers are required to comply with the* standard access obligations *are subject to agreement.*
>
> • *If agreement cannot be reached, but the carrier or carriage service provider has given an* access undertaking, *the terms and conditions are as set out in the access undertaking.*
>
> • *If agreement cannot be reached, but no access undertaking is in operation, the terms and conditions are to be determined by the Commission acting as an arbitrator."*

69 It is not in the long-term interests of end-users that their access provider not have the opportunity to negotiate the terms of access for any period during which end-users are given access to the Optus DGTAS. Nor is it in the interests of the access seekers. Further, we do not consider that it is in the legitimate business interests of Optus that it be in a position to impose charges on an access seeker in respect of a period of supply of the DGTAS prior to the approval of an access undertaking in circumstances where the access seeker is precluded from negotiating the price of such access. That consequence appears to flow from the operation of clauses 2.3 and 2.4 if construed in accordance with Optus' submissions.

9. MARKET DEFINITION

70 Optus and the Commission accepted that it was not necessary for the Tribunal to take a definitive stance on market definition in relation to the markets for listed services. However, a number of submissions were made in relation to the definition of the market in which Optus supplied its DGTAS and it is necessary to give some consideration to those submissions.

71 Optus submitted that there were two key markets which were relevant to an assessment whether its DGTAS promoted competition in markets for listed services. These were:

- the mobile services market; and
- the market in which fixed-to-mobile services were provided.

Optus also submitted that there was a national mobile services market in which competing mobile service providers offered a bundle of services comprising origination services, termination services and subscription services.

72 The Commission submitted that there were three relevant markets:

- the wholesale market for the supply of Optus' MTAS (that is, its DGTAS). It was said that only Optus could supply MTAS in relation to calls terminating on its mobile network and that no other service was "substitutable for, or otherwise competitive with" (s 4E of the Act) the MTAS supplied by Optus;
- a national market for retail mobile services including mobile call origination and mobile subscription services. It was said that this 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;
- a national retail market for the pre-selected bundle of fixed-to-mobile national long-distance and national calling services.

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

74 There are presently in Australia four mobile network operators or carriers, namely, Telstra, Optus, Vodafone and Hutchison. There are also thirteen mobile service providers including AAPT, Macquarie, PowerTel and Primus. These carriers and providers compete for end-user customers by offering networks or platforms that provide subscribers with both the facility to place calls and the facility to receive calls. They thus provide a bundle of services including access to a network, the making of calls and the receipt of calls. None of the services is supplied separately to a customer, nor are they separately produced by a carrier or provider. They charge for this bundle of services through a wide variety of often complex plans that combine, in various ways, charges for connecting to the network, charges for access to the network and charges for making calls. Setting aside any one-off connection charge, the charges for access and for making calls may be described as subscription charges and origination charges, respectively. But that runs the risk of being misleading. The charge for making a call is not related to the service of origination as described above, which is merely the carriage of a call from the calling party to a point of interconnection. Rather, as noted in par [24] above, the origination and termination components of a call are billed as a single charge for the whole end-to-end call.

75 Moreover, charges that are not levied in terms of individual calls, for example, monthly charges that may be described as "subscription" charges, often include a number of "free" calls (and possibly other services such as the sending of text messages). There is no end to the number of combinations of access and call charges into multi-part tariffs involving fixed (for example, monthly) and variable (for example, per call) components. In these circumstances it is often difficult or meaningless to say what is "the price of a call". At best one may be able to specify the price of an additional call over and beyond some number of calls that is chosen in advance by the customer in accepting a particular plan. In addition, there are different approaches for pre-paid, as opposed to subscription, customers. A further complication is that subscription (monthly) charges typically include the recovery over a period (for example, a contract period of two years) of the cost of a handset. Thus the charges may combine not only charges for services but a charge for a physical device.

76 As will be seen later, Optus bases the prices in its undertaking on modelling involving the costs of four services: subscription and three calling services (mobile outbound, mobile off-net and fixed-to-mobile, see [105] below). This requires the unbundling of charges so as to ascribe charges to subscription and to calls (also described as usage).

77 Where does termination, Optus' DGTAS, fit into this picture? When an Optus mobile network customer makes a call to a customer of another network operator, Optus is not supplying any sort of termination service to its customer. Rather, termination is a service provided in conjunction with the subscription service Optus provides to its customers that enables its customers to receive calls. Accordingly, Optus does not charge its customer for receiving calls. It charges the calling party's carrier or provider for providing the DGTAS to the carrier or provider. The calling party's carrier or provider recovers the DGTAS charge from the calling party without disclosing its amount (see par [24] above).

78 Thus mobile termination (MTAS and in Optus' case DGTAS) is a service provided to other (fixed and mobile) network operators. Optus similarly pays other network operators when one of Optus' customers makes a call to a customer of another operator.

79 It is in the nature of telephone calls (and for that matter text messages) that both the calling party and the receiving party receive and consume services provided by two different network operators (except where both are customers of the same operator). When Optus enables its customers to receive calls, that is, when it terminates calls on its mobile network, it receives revenue from other network operators. When it enables its customers to make calls, it receives revenue from the customers. Clearly, it takes account of all sources of revenue in setting both its retail charges to end-user customers and its wholesale charges to other network operators. That this is so says little, if anything, about whether the various services are all supplied in a single market. Similarly, the fact that calling parties ultimately pay for the termination charges associated with calls they make (the termination charges being passed on to them by their network operator) says nothing about the termination service being provided in the market for the provision of calls. After all, the calling party's network operator presumably also passes on its cost of equipment and power, but that does not make the markets for the purchase of equipment and power part of the market for the provision of calls.

80 Accordingly, we lean towards the Commission's view of the appropriate market definitions. It is correct to identify a wholesale market for the supply of Optus' MTAS. There are no substitutable products and the relevant market transaction is a wholesale transaction provided by one network operator to another. To the extent to which there is substitutability of products or services it is the bundle of services which is substitutable; one of the services is

not substitutable for another of the services. However, it would be somewhat artificial to use this wholesale market for the purpose of identifying and analysing Optus' conduct and that of its competitors, and the effect of Optus' pricing of its DGTAS on its customers and its competitors, both mobile network and fixed-line operators, independently of the national market for retail mobile services. Nor, indeed, did the Commission suggest such an approach. Such conduct and effect is only meaningfully analysed and understood in the context of the wider markets identified by Optus and the Commission: see *Power New Zealand Ltd v Mercury Energy Limited and Commerce Commission* [1996] 1 NZLR 686 at 705.

81 The important thing is to note and seek to understand the interactions between the relevant markets, however they are defined.

82 When competing with each other, mobile service providers take into account all their sources of revenue. It is a feature of the Australian market that providers offer retail customers a bundle of services in which usage charges subsidise charges for handsets and for access to the network (where access means connection and thus the ability to make and receive calls, while usage is the actual making and receipt of calls). Thus some components of the mobile service provided to the customer may be supplied below cost and some components above cost. If Optus' DGTAS is supplied at a price which exceeds the efficient costs of supply of that service, it does not necessarily follow that such price is unreasonable. The interactions between the provision of the DGTAS and of the retail services need to be examined. Such a price may not be unreasonable where the overall charge for all the relevant services does not exceed the efficient costs of supply of those services.

83 Market definition is potentially relevant to several matters:

- the so-called "waterbed effect". The waterbed effect is the extent to which subscription and origination prices to mobile customers might rise in response to a reduction in termination charges;
- possible windfall gains to Telstra as a fixed-to-mobile provider from lower mobile termination charges; and
- the derivation of termination charges from estimated charges for fixed-to-mobile calls.

However, it is more correct to say that understanding what happens in the various related markets is relevant to those matters. In no case does market definition, as such, play a decisive role. The existence of markets for retail mobile services and a market for fixed-to-mobile services is not in contention. We consider each of the three matters and refer to them again later where needed.

84 Optus' argument that its DGTAS was supplied in the retail mobile services market was made in support of its claim that any profits flowing to Optus from its DGTAS being priced above TSLRIC or FL-LRIC would be competed away in the retail mobile services market because that market is effectively competitive. This was described as the waterbed effect. The Commission challenged this line of reasoning. First, the Commission submitted that Optus' analysis did not address the fixed-to-mobile services market which was not effectively competitive. Secondly, the Commission contended that the DGTAS was not supplied in the retail mobile services market. Thirdly, the Commission argued that there was no effective competition in the retail mobile services market. The Commission's concern about DGTAS being priced above TSLRIC was more its effect on the fixed-to-mobile market than on the retail mobile services market.

85 We do not consider that the DGTAS is provided in the retail mobile services market. Nevertheless, in determining the price it will charge its customers for making calls, Optus 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 the calls terminated and the revenue it will receive from supplying its DGTAS to other network operators. Even if the retail mobile services market were effectively competitive we do not consider that Optus would be strongly constrained in setting its DGTAS price by competition in the retail market. The mobile operators could set their termination charges on a reciprocal basis at above cost while still competing vigorously in the retail market. Indeed, it was accepted that that is what they do.

86 Among other things, this would bring into question why the MTAS service has been declared. It is no part of our task to consider the merits of the declaration. However, we can observe that if, as the material before us indicated, Optus is able to use its market power in the provision of the DGTAS to charge sufficiently far above cost to allow it to cross subsidise

its retail mobile services, that market power could simultaneously allow it to make above normal profits from the termination of fixed-to-mobile calls.

87 Accordingly, so far as this part of Optus' argument is concerned, we need not come to a definitive conclusion about market definition nor about whether the retail mobile services market is effectively competitive. On the latter issue, we note that the mobile services operators do appear to compete vigorously through the provision of differentiated packages. This characteristic of the bundled services provided, and the methods of charging for them, suggests that each bundle is different from those provided by other operators. Of course the various bundles are highly substitutable.

88 We have already adverted to the impact of termination charges on the fixed-to-mobile market. We do not consider that market to be effectively competitive. According to Professor Hausman, whose evidence was provided by Optus, Telstra accounts for approximately 89% of fixed telephone services in Australia and also accounts for 65% of all fixed minutes terminated. In order to compete in the fixed-line market, in particular in the fixed-to-mobile market, any competitor has to face Telstra's dominance resulting from its ownership of the only ubiquitous local loop. Further, there are significant barriers to entry to the fixed-line market which include high sunk costs and the existence of Telstra's legacy position as the incumbent.

89 The consequence of this is that operators in the fixed-to-mobile market – and in particular Telstra – may obtain some degree of windfall gains from lower mobile termination charges. (It might be expected that Optus' DGTAS charges would ultimately be lower as a result of Optus' undertaking not being accepted.) This is not sufficient in itself to justify DGTAS charges higher than those based on efficient costs. Even if Telstra were in a pure monopoly position in the fixed-to-mobile market, it would pass on to its customers some (it was argued at least half) of any lowering in its costs, for example, from lower payments to Optus for purchases of its DGTAS. This would result merely from profit-maximising behaviour: it can easily be shown that failure to pass on part of a cost reduction would result in lower sales and hence revenues more than offsetting the reduction in costs.

90 The parties also made a number of submissions on the issue that Optus supplied its DGTAS in a two sided market. Telstra described the operation of a two sided market in the following terms:

> *"In these [two-sided] markets, users on each side derive some benefit from being able to interact with, or be on the same platform as, users from the other side of the market – the more users of the opposite type, the greater the benefit to being on the same platform. For example, buyers value a Yellow Pages directory that will be used by lots of advertisers and businesses value a Yellow Pages directory that will be used by lots of buyers. Similarly, mobile telecommunications platforms are used by two kinds of users (calling parties and called parties), each of whom obtains value from interacting with users of the opposite type over a common platform."*

We do not consider it necessary to address the submissions on two-sided markets in any detail having regard to the conclusion we have reached in relation to Optus' costs model. It is sufficient for present purposes to note that any consideration of the reasonableness of the pricing of a mobile network operator's terminating access service must take into account the pricing of the bundled retail services and the market within which the bundled service is supplied.

10. OPTUS' COSTS

91 As noted earlier (par [32]), Optus' proposed prices have been calculated on the basis of allowing Optus to recover:

- FL-LRIC of Optus supplying the DGTAS;
- a mark-up for FCCs allocated according to R-B principles; and
- a mark-up for a mobile subscription network externality called an NES.

FL-LRIC are the long-run costs incurred by an operator or a producer in supplying an increment of output of a service adopting a forward-looking approach to estimate the costs that would be incurred by a new entrant in supplying the service. Optus submitted that the recovery of the FL-LRIC of supplying the DGTAS was reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act.

92 The prices in the undertaking in Option 1 were set out on a price path reducing from 19.25 cpm in 2005 to 18 cpm in 2006 and finally to 17 cpm in 2007. We have focused our consideration, as the parties did in the course of argument, on the final and lowest price on

the basis that our conclusions in relation to the 2007 price of 17 cpm will apply, *mutatis mutandis*, to the higher prices in 2005 and 2006 and to the Option 2 pricing.

93 Optus submitted that a consideration of the prices which it would obtain in the absence of acceptance of the undertaking was fundamental to determining whether its proposed pricing was reasonable. We do not accept that this is the correct approach for us to take. It is no part of our task to determine whether there is an alternative price other than that propounded by Optus which, in all the circumstances, is more reasonable or less reasonable than Optus' price. Rather the inquiry is focused upon Optus' price alone and whether it is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB.

94 We are not, as Optus submitted, considering the relative merits of R-B pricing and EPMU pricing. What we are considering is whether the application and use of R-B principles to determine an appropriate mark-up on Optus' incremental costs to account for, and cover, its FCCs is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. We are not considering, as Optus contended, whether EPMU is correct or preferable to R-B pricing.

95 The undertaking itself does not refer to the three components of Optus' price. They have no separate identity in the terms and conditions of the undertaking. We must decide whether the price in total, that is, as provided for in the undertaking, is reasonable. Nevertheless, much of the argument before us was in terms whether the individual components of Optus' price, or methodologies and underlying assumptions for estimating those components, were reasonable. Indeed, it is convenient to examine the components of the price in terms of how they match up to the requirements under the Act for prices to be reasonable. Care must be taken when applying this approach. Often arguments were put in a way that implied that, if we were not satisfied that some element of Optus' costs was "reasonable", then the prices in the undertaking must not be reasonable and the undertaking must not be accepted. These arguments must, however, be viewed with caution. It may be that having regard to the matters set out in s 152AH and the objectives in s 152AB, we might view:

- one component in Optus' costs building exercise as resulting in a cost that is not reasonable;

- another component as resulting in a cost that would offset the unreasonableness in the first component; and
- the ultimate price arrived at as reasonable.

96 Ultimately it is the reasonableness of the price terms in the undertaking, having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act, which has to be determined although in reaching that conclusion, it is necessary to examine some cost methodologies adopted by Optus by reference to the same criteria.

97 Optus urged on us that what it claimed to be the conservative nature of some of the assumptions and elements of its methodology in estimating the three components of its total costs, should result in a finding that its DGTAS price is reasonable. However, as will become clear, we have reached the conclusion that we are not satisfied that the method and manner by which Optus determined the mark-up for the recovery of its FCCs and the NES mark-up are reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. Thus to the extent to which Optus' price has been calculated so as to recover those FCCs and NES mark-ups, we are not satisfied that its price is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB.

98 Optus submitted that the recovery of each of the three components of the DGTAS prices set out in the undertaking is reasonable. As the prices are cost-based we are therefore put on an inquiry whether the method used by Optus in determining the three components of the costs of the supply of the DGTAS is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB.

99 Consistently with previous authority, we consider generally that the undertaking prices should reflect and not exceed forward-looking efficient economic costs: *Telstra Corporation Limited* [2006] ACompT 4.

100 As to the costs that should be embraced by our inquiry in the circumstances of this matter where only one of three inextricably intertwined services has been declared, it may be, having regard to the matters set out in s 152AH and the objectives in s 152AB, permissible to look beyond the costs of the declared service, the DGTAS. This may justify a DGTAS price that

reflects some degree of "cost-shifting" between the declared DGTAS and the two services with which it is inextricably intertwined.

101 This is analogous to a multi-product firm, in an unregulated, effectively competitive market, pricing its individual products however it chooses (subject to prohibitions on anti-competitive conduct), even to the point of selling a product at below cost if it believes this is conducive to maximising its overall profit. Similarly, it may be appropriate for the regulated price of an individual declared service that is inextricably intertwined with other non-regulated services to depart from being based strictly on the costs unambiguously attributable to the declared service. Where Pt XIC applies, this will only be the case when it is demonstrated to the satisfaction of the Commission (or on review, the Tribunal) that the "cost-shifting" results in a price to end-users that is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB.

102 Thus, to anticipate a later discussion, we would not rule out, purely on the grounds that it is not part of the costs of providing the DGTAS, the possibility that, in an appropriate case, an NES might be recovered.

103 It needs to be repeated that considering any of the components of the prices in terms of their consistency with being reasonable is only a step towards the ultimate task of deciding whether the price itself, as a term of the undertaking, is reasonable.

11. THE FL-LRIC COMPONENT OF OPTUS' COSTS

11.1 The CRA FL-LRIC model

104 Optus justified the FL-LRIC component of its DGTAS on the basis that the costs conformed with, and were verified by, the CRA model. CRA's approach was to model costs using an economic model of the mobile market that calculated prices given appropriate cost inputs and demand parameters. The model was developed by Dr J H Rohlfs on behalf of the United Kingdom telecommunications regulator, Oftel now Ofcom.

105 The CRA model was constructed on the basis of the following factors:

- it estimated the costs that would be incurred by a stand-alone mobile operator operating a 2G GSM network with the minimum share and scale necessary to be competitively viable in the long-run;
- it was a top down model based on Optus' actual network design and costs identified by Optus relating to its GSM business for 2003/2004, with certain adjustments to which we shall refer;
- it modelled increments of network traffic costs, subscriber acquisition costs and subscriber servicing costs to derive incremental costs separated from FCCs;
- it estimated a set of welfare maximising prices for four services, namely, mobile subscription, mobile outbound calls (including on-net mobile-to-mobile, mobile-to-fixed), off-net calls and fixed-to-mobile calls;
- adjustments were made to the cost base so that asset values reflected current equipment prices rather than historical costs;
- it used a vanilla weighted average cost of capital ("WACC") of [A%], equivalent to a post-tax nominal WACC of [B%];
- it used a tilted annuity formula to determine a stream of cashflow required to recover the cost of Optus' network assets in each year to 2007 taking into account changes in replacement costs over time;
- it adjusted Optus' 2003/2004 costs by identifying those costs categories that were shared between Optus' fixed line and mobile business and by adjusting the proportion of those costs allocated to Optus' mobile business in order to derive an estimate of Optus' costs in providing the DGTAS on a stand-alone basis;
- it used call routing factors estimated by Optus' engineers which identified the extent to which each service used particular network elements based on Optus' network configuration. Non-network costs were similarly allocated to services to the extent to which the services (mainly subscription) gave rise to those costs. This enabled estimation of the long-run incremental costs of the major types of services. CRA scaled up Optus' actual FCCs to market scale using Optus' market share of subscribers;

- it allocated incremental costs of mobile data services which were then removed from the model to estimate the costs of voice related services;
- it identified FCCs comprising network costs, information technology ("IT") and non-network costs and incorporated estimates of those costs;
- it used volumes of traffic and subscribers and estimates of growth based on factors including Optus' own volumes for 2003/2004; and
- it assumed a complete or near complete waterbed effect.

106 Optus contended that the CRA model understated the estimate of the FL-LRIC of Optus' supply of the DGTAS because:

- it did not include an inflationary adjustment of Optus' operating costs incurred after 31 March 2004 for the supply of the DGTAS;
- it did not use an economic depreciation approach to determine the stream of cashflow required to cover Optus' network assets for the supply of the DGTAS which would have taken into account changes in their usage over time;
- it was not adjusted to reflect the costs that would be incurred by a mobile operator operating a 2G GSM network with the minimum share and scale necessary to be viable competitively in the long-run;
- it estimated network related FCCs necessary to provide coverage at a level which was less than that necessary to be competitively viable in the long-run.

107 As we noted earlier, the CRA model was based on an FL-LRIC++ approach. In earlier decisions the Tribunal had expressed its approval for TSLRIC pricing. In *Re Seven Network Limited (No 4)* [2004] 187 FLR 373, the Tribunal said at 410:

> *"In our view, in the general case where access prices need to be regulated, unless pricing is on a TSLRIC basis, efficient investment is unlikely to be encouraged. …*
>
> *This discussion should not be taken to suggest that TSLRIC pricing should be imposed at every opportunity. It will often be the case that regulation, including regulated pricing, is not appropriate in given circumstances. It does mean, however, that, in our view, it would generally not be in the LTIE to depart from TSLRIC pricing where access is regulated."*

108 As the Tribunal observed in *Telstra Corporation Limited* [2006] ACompT 4 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."*

Thus, a price for access to a telecommunications service based on an FL-LRIC approach depending upon the construct of that approach may be reasonable having regard to the matters set out to in s 152AH and the objectives in s 152AB of the Act.

109 Having regard to the conclusions we reach in relation to the R-B and NES mark-ups, the outcome of the application does not turn on whether the FL-LRIC determined by the CRA model are reasonable. It is nevertheless apposite to assist the consideration of like matters to:

- summarise the Commission's and other parties' submissions on five issues arising in relation to the model and Optus' responses to them; and
- set out some conclusions we reach on those issues, stressing that the conclusions are tentative only and if the issues were to come before us again the conclusions must be re-visited having regard to:
  - the material then available to us; and
  - the submissions founded on that material that may be put to us.

The five issues are whether:

(a) Optus' costs are efficient costs;

(b) the FL-LRIC should be determined as if Optus were a stand alone mobile network operator;

(c) it is reasonable for Optus to rely on 'anchored' costs and volumes;

(d) the routing factors used to allocate Optus' capital costs and its network OPEX costs are reasonable;

(e) the non-allocation of network costs to SMS and data services is reasonable.

11.2 Are Optus' costs efficient costs?

110 The Commission accepted that a model based on a FL-LRIC approach could produce a reasonable price for the supply of Optus' DGTAS provided it was reasonably designed and accurately populated with reasonable inputs and assumptions. However, the Commission submitted that the specific implementation of the FL-LRIC approach applied in the CRA model, and relied on by Optus, was not reasonable and did not produce a reasonable price, that is, a price demonstrably reflective of the forward-looking efficient economic costs of supplying the DGTAS.

111 The matters and objectives to which we must have regard in determining whether Optus' price terms are reasonable and whether they promote the long-term interests of end-users, as set out in ss 152AH and 152AB of the Act, lead to a consideration whether Optus' costs of supplying its DGTAS are efficient costs. In this respect we draw particular attention to s 152AH(1)(f) which requires us to have regard to "the economically efficient operation of" the DGTAS and s 152AB(2)(e) which 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 DGTAS is supplied.

112 In *Telstra Corporation Limited* [2006] ACompT 4 the Tribunal said at par [46]:

> *"Having regard to the conclusions which we have reached it is not necessary to determine whether Telstra's costs were established as efficient costs. However, 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. An access provider should also recognise that if the Commission decides against accepting the access undertaking and rejects it and the provider wishes to seek review of the Commission's decision before the Tribunal, it would be necessary to establish before the Tribunal that its costs are efficient. It is apparent from the statutory framework that the Tribunal is limited in respect of the material to which it may give consideration as it is limited to the material which was before the Commission and any material referred to in the Commission's decision. Put shortly, if an access provider wishes to establish before the Commission, or needs to establish before the Tribunal, that its costs are efficient, it will need to have put material to that effect before the Commission."*

It was particularly important in that case that Telstra establish that its costs were efficient costs as Telstra was supplying the line sharing service in issue in a substantially monopolistic environment. There was, in substance, no effective competitive constraint on Telstra.

113 The Commission and Telstra submitted that Optus had not placed sufficient material before the Commission to establish that its historical costs, upon which the CRA model was based, were efficient. Optus submitted that it was reasonable for the Tribunal to assume that the costs it incurred, when making its investment decisions, were incurred on an efficient basis. As its investment decisions had been made reasonably recently and in a highly competitive market, it was reasonable for the Tribunal to assume that its costs were incurred on an efficient basis.

114 In its report on Optus' DGTAS costs, CRA noted that it had been engaged by Optus in June 2004:

> *"… to estimate the economically efficient level of costs that should be recovered from mobile termination services in Australia."*

CRA stated that its basic approach had been to model efficient prices:

> *"… using an economic model of the mobile market that calculates efficient prices given appropriate costs inputs and demand parameters."*

However, there was no evidence before the Commission, or before us, that the cost inputs provided by Optus to CRA were efficient costs. Optus had identified costs relating to its GSM mobile business for 2003/2004 but there was no evidence before us that the costs so identified were "efficient". The Commission was also critical of the cost inputs used as they did not take into account economies of scale and the growth in economies of scale over time.

115 CRA recognised that consideration had to be given to whether the costs developed as a result of its modelling approach were efficient costs. CRA's view can be seen from the following passage in its report:

> *"In developing an approach to regulate fixed incumbent operators, regulators were concerned that the costs of the incumbents may include significant inefficiencies given the age of the network and the fact that much of the design and investment in their networks were undertaken at a time when they were operating free from competitive constraints. To exclude the potential for the actual costs of the incumbents to harbour significant inefficiencies, regulators have often developed 'bottom-up' models of an efficient hypothetical*

> *operator. These, however, can be protracted exercises and prone to inaccuracy given the scope for the theoretical exercises to miss actual constraints on network design.*
>
> *In contrast to the networks of fixed incumbents, a substantial proportion of investment in the Australian mobile networks has been undertaken relatively recently and in a competitive environment. Thus it is unlikely that the actual networks deployed by Australian mobile operators would exhibit any significant inefficiencies. This suggests that the efficient costs of supplying mobile termination in Australia can be reasonably estimated by the use of a top-down model based on actual operators' network design."*

CRA noted that its model was not entirely based on actual network costs as asset values had been adjusted to reflect modern equipment prices. For this purpose Optus provided CRA with information on changes in its mobile network equipment prices over time. CRA's modelling approach was said to be forward-looking in the sense that it measured the costs that would be incurred by a new entrant supplying the GSM services rather than the historical costs of Optus' past equipment purchases.

116 This modelling approach relieved Optus, to a certain extent, from establishing the efficiency of the costs of the assets used in its network design but it still left open the need to establish the efficiency of the network design and configuration itself.

117 The approach taken by Optus to present, through CRA, a top-down model was not controversial. The Commission was content to accept Optus' top-down exercise. It appeared to be accepted, and we accept, that a bottom-up model based upon a hypothetical efficient operator may not, having regard to the time and costs involved, be feasible. The Commission's complaint was that Optus had not adjusted its costs sufficiently, or put forward material, to satisfy the Commission that Optus' costs were costs that an efficient operator would incur, based on TSLRIC or FL-LRIC formulations.

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. In general terms, an operator in a competitive market should have more of an opportunity to establish the efficiency of its recently incurred costs by reference to its actual costs than a monopolist or dominant operator, such as Telstra in *Telstra Corporation Limited* [2006] ACompT 4.

11.3 Should the FL-LRIC be determined as if Optus were a standalone mobile network operator?

119 The next issue which arose in relation to Optus' costs model was the nature of the mobile operator whose costs were to be determined. Optus submitted that it was reasonable to estimate the FL-LRIC of supplying the DGTAS based on the efficient costs that would be incurred by a stand-alone mobile operator. Optus had estimated its FL-LRIC on this basis. The Commission challenged this proposition and submitted that in determining its costs Optus should take into account the efficiencies and economies of scope achieved by Optus as an integrated fixed-line mobile network operator. In providing the cost inputs to the CRA model, Optus adjusted the inputs to remove the impact of the efficiencies and economies of scope that resulted from Optus owning and operating both a fixed-line and a mobile network. Optus removed the impact of its economies of scope by allocating a greater portion of its "transmission", "switching" and "IT" operating costs to its mobile service business than it does in the normal course of its financial reporting allocations. Specifically, Optus adjusted its operating expenses allocated to the mobiles business service upwards by [C%] and revised upwards the gross book value of its mobiles business unit by [D%].

120 The Commission submitted that it was not reasonable for Optus, in estimating the FL-LRIC of its supply of DGTAS, to adjust its own costs upwards so as to remove any efficiencies it might achieve by owning and operating both a fixed-line and mobile network. The Commission contended that these adjustments would allow Optus to make a windfall gain by charging access-seekers more than was necessary to recover the costs it actually incurred in supplying the DGTAS. Put shortly, the Commission submitted that Optus' modelling of a stand-alone operator was not reasonable.

121 Optus submitted that there was support for its view that it was reasonable to estimate the FL-LRIC of supplying its DGTAS based on the efficient costs that would be incurred by a stand-alone mobile operator in a report which the Commission had obtained from an independent consultant Analysys Consulting Limited ("Analysys"). Analysys said:

> *"Presenting a standalone operator cost can be considered consistent with the prices that would occur if the market were competitive, since competing operators would be required to incur those standalone costs. The benefits that Optus gains from operating as an integrated fixed and mobile provider would be realised at its retail level rather than the wholesale termination*

> *level. Therefore it would not seem appropriate to reflect Optus's fixed and mobile economies of scope in its directly regulated mobile termination rate…*
>
> *The focus on the standalone costs of a mobile operator coincides with the approach taken by the regulator, PTS, in Sweden when modelling the costs of terminating calls for the major fixed and mobile operator TeliaSonera."*

122 We consider that determining the costs of a stand-alone mobile operator, for the purpose of determining whether the price terms of the undertaking in relation to Optus' DGTAS are reasonable, is more consistent with the matters set out in s 152AH and the objectives in s 152AB than requiring Optus to take into account the cost consequences of it being an operator of a fixed-line network and a mobile network. If the objective of regulating a particular industry is to replicate, as far as possible, the environment of a competitive market, then it is desirable to use as a benchmark criteria or principles which would exist in a competitive market, such as determining the costs of an operator operating in that market.

123 Determining Optus' DGTAS costs as a stand-alone mobile operator would, all things being equal, be likely to result in the achievement of the objective of promoting competition in markets for listed services: s 152AB(2)(c). That is, in competing with mobile operators who do not operate a fixed line network, Optus may gain a competitive advantage by having access to economies of scale and scope. And Optus will not be at a disadvantage when it is competing against an integrated operator such as Telstra.

124 Further, s 152AB(2)(e) requires us to have regard to the extent to which Optus' price 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 listed services are supplied. In turn, in determining the achievement of this objective, s 152AB(6)(b) requires us to have regard to the legitimate commercial interests of Optus, including its ability to exploit economies of scale and scope. Determining Optus' DGTAS costs on a stand-alone mobile operator basis promotes these objectives.

11.4 Is it reasonable for Optus to rely on anchored costs and volumes?

125 The Commission accepted that the CRA model's use of Optus' 2003/2004 costs data was a reasonable starting point as this was the most recent data available to Optus prior to its submission of the undertaking to the Commission. However, the Commission submitted that it was not reasonable for the CRA model not to have made any adjustment to this data (for

example, by defining and applying cost-volume ratios) to reflect the fact that, during the period from 31 March 2004 to 31 December 2007 (the date on which the undertaking would expire), Optus' traffic volumes were likely to increase and therefore, because of economies of scale, Optus' costs (per unit of traffic) were likely to fall. In this respect, it is relevant to note that in its report CRA observed:

> *"The supply of mobile termination services involves significant fixed costs, and as a result implies the presence of significant economies of scale."*

In support of its submission the Commission contended that:

- notwithstanding this observation, the CRA model assumed away the impact of economies of scale on the costs of supplying the DGTAS during the period of the undertaking; and
- the CRA model was not configured to take account of increasing traffic volumes over the period of the undertaking which were likely to reduce the unit costs of supplying the DGTAS.

We consider there is merit in the Commission's submission.

126 Optus contended that the CRA model had taken into account increases in traffic data with a linear relationship with increases in subscriber numbers in relation to its estimate of the FL-LRIC. Optus submitted that the CRA model captured the impact of scale economies by assuming no increase in FCCs and assuming increasing call volumes over time and that the recovery of the FCCs over larger call volumes gives rise to scale economies. Optus put to the Tribunal that it was not required to take into account economies of scale when calculating its FL-LRIC as s 152AB(6)(b) allows it to exploit both economies of scale and scope. We were not persuaded that the impact of increasing traffic volumes was adequately taken into account.

11.5 Are Optus' routing factors reasonable?

127 The CRA model allocated Optus' capital costs and its network operating expenses ("OPEX") between "inbound" (which includes the DGTAS), "on-net" and "outbound" call services based on a set of routing factors. These factors are used to reflect the likelihood of different mobile services using Optus' network elements with different intensities. The Commission

submitted that certain routing factors applied in the CRA model overstated the costs of Optus supplying the DGTAS in two respects. First, the routing factors did not take into account the fact that a proportion of incoming calls are not answered and therefore do not use network elements associated with the "base station system". The report of the consultant Gibson Quai-AAS estimated this proportion at 30%. Secondly, the routing factors for "transmission" did not allow for any portion of those costs to be allocated to the "outbound" service. The Commission submitted that given the likelihood that outbound mobile calls would use these network elements, the application of an "outbound" routing factor of zero overstated the amount of transmission-related costs attributed to the DGTAS. In fact Optus provided a revised set of routing factors to the Commission addressing these issues but some of the routing factors were reformulated as "ranges of factors" rather than by reference to "point estimates" as had been done in the original formulation. The Commission submitted that the precise impact of the revised set of routing factors on the cost calculations in the CRA model was impossible to derive.

128 Optus rejected the Commission's criticisms regarding the routing factors used in the CRA model. In response to the Commission's criticism that the routing factors did not take into account the fact that a proportion of incoming calls are not answered, Optus relied on Analysys which stated:

> *"Resolving detailed and accurate BSS routeing factors is a significant task. In reality BSS elements support signalling and traffic services – signalling for control event and SMS communication, traffic channels for communication. A large number of complicating factors add to the problem:*
>
> - *effect of ringing time for answered and unanswered calls of different types*
> - *the radio network load for immediately diverted calls of different types*
> - *the method by which SMS messages are delivered*
> - *channel reservations for CCH vs TCH*
> - *channel reservations (dynamic or fixed) for GPRS*
>
> *For this reason, simple 1:2:1 routeing factors are often adopted for the allocation of radio resources to voice services, particularly when the charging structure to be regulated does not include per-call attempt or per-successful-call tariffs. In our opinion,* ***this 1:2:1 approach is entirely reasonable in the context of regulatory price settings****, and only the most detailed service costing model would attempt to break down into specific radio channel effects to determine various event and conveyance based service costs."*

129 However Analysys goes on to note that:

> *"… the incremental cost of termination (in the Optus model) reduces by more than 7% from AUD[E] to AUD[F] as a result of reducing inbound and on-net routeing factors. We would expect additional costs of bounced-back calls to be significantly less than a 7% increase in costs, therefore an overall reduction in DGTAS incremental cost is expected."*

It is likely that the routing factors used by Optus have overstated the cost of supplying the DGTAS in this respect.

130 In relation to the Commission's criticism that the routing factors for "transmission" did not allow for any portion of those costs to be allocated to the "outbound" service, Optus contended that for all Telstra bound calls no transmission is involved. For mobile-to-mobile calls, Optus hands over the call to the other mobile service provider at the nearest point and hence there is little transmission involved. For mobile-to-fixed calls to non-Telstra fixed lines, Optus accepted that there may be some transmission involved, however this is unlikely to be significant given the relatively few non-Telstra fixed subscriber terminations. Analysys concluded that the routing factors were "broadly consistent with factors used in other regulators' mobile LRIC models", and were not outside expected bounds. It is not necessary to reach a concluded view on this issue, having regard to our conclusions on the reasonableness of the FCC and NES mark-ups.

11.6 Is the non-allocation of network costs to SMS and data services reasonable?

131 Telstra submitted that the exclusion of data services from the calculation of the FL-LRIC overstated the cost of the DGTAS by excluding mobile data services from the pool of services to which FCCs are allocated. The amount the CRA model allocated in incremental costs to mobile data services represented [G%] of the total incremental costs allocated in the CRA model. By way of contrast Optus' revenue for mobile data services in 2003/2004 represented 14% of Optus' total mobile services revenue in that financial year. The Commission submitted that the incremental costs allocated to mobile data services were likely to be understated. It noted that no costs associated with the signal transfer point switches, transmission or radio network resources had been allocated to mobile data services, notwithstanding that SMS services use these network components. This, it submitted, had the

effect of overstating the incremental costs allocated to mobile voice services (including the DGTAS).

132 Optus submitted that the modelling of costs associated with mobile data services did not have any material impact on the reasonableness of the price of the DGTAS specified in the undertaking. Optus relied on Analysys' observation that:

> *"Given SMS is often carried in the control channel reservation it may be true that the incremental cost of the total SMS service (SMS TSLRIC) is small or zero in the presence of a voice-supporting radio network."*

However, Analysys also noted that:

> *"However such a costing approach neglects the fact that control channels account for a measurable proportion of radio channel capacity, and other regulators' models (e.g. PTS, Ofcom) have recognised this through a material allocation of radio network costs to SMS services."*

133 Optus produced material which it submitted demonstrated that although SMS and data services were excluded from bearing an allocation of FCCs, the marginal or incremental costs for those SMS and data services (Optus did not use FL-LRIC in respect of these services) was relatively very small $[H million] and that the elasticity of demand in relation to SMS and data services was "something like zero".

134 There are some difficulties with the manner in which Optus relied on this conclusion to justify the exclusion of SMS and data services from the costs model. It scaled up the SMS and data services costs to the industry level and then divided the resulting industry costs by the per minute incremental cost of outbound voice calling to derive the appropriate equivalent minutes which it added to the total outbound voice minutes so that each additional minute had the same per minute incremental cost as outbound voice minutes. Optus then derived an allocation of FCCs by allocating these costs using the increased incremental costs associated with outbound voice calls via the Rohlfs model.

135 Telstra relied upon a report from Analysys to demonstrate that Optus' allocation of costs to mobile data services did not include all relevant network elements and also submitted that the share of traffic attributed to mobile data services was conservative having regard to the forecasted growth in SMS volumes over the undertaking period. What is more significant is that Optus' approach in this context modelled the impact of increasing the output of voice

minutes on the allocation of costs. But there was no evidence that SMS and mobile data services had the same demand characteristics as voice minutes or that the own-price elasticity of SMS and mobile data services bore any relationship to the own-price elasticity for voice minutes. Indeed there was some evidence to the contrary, namely that the demand for data services was significantly inelastic.

136 Further, Optus had not run its costs model on the basis of including the SMS and data services' costs for the purpose of determining an allocation of FCCs to be attributed to them. As the relative allocation of FCCs by reference to R-B principles depends upon elasticities of demand rather than absolute marginal or incremental costs, we are unable to be satisfied that the exclusion of SMS and data services from the costs model does not have a significant effect on the allocation of FCCs.

12. THE R-B COMPONENT IN OPTUS' PRICES

12.1 The nature of fixed and common costs (FCCs) and the case for a mark-up

137 It was not in issue that Optus was entitled to recover in its pricing not only the incremental costs of supplying the DGTAS but also a contribution towards its FCCs. The critical issue, however, was whether it was appropriate to recover these FCCs on the basis of R-B principles. In determining whether Optus' terms as to price are reasonable and, in turn, whether the methodology by which it determines its costs is reasonable, s 152AH(1)(d) requires us to have regard to "the direct costs of providing access" to the DGTAS. We consider that the "direct costs" referred to in s 152AH(1)(d) include not only the incremental costs of supplying the DGTAS but also a mark-up on those costs for a contribution to the FCCs of Optus to be apportioned to the supply of the DGTAS. Optus submitted, without elaboration, that the "direct costs" in s 152AH(1)(d) did not include "indirect costs" such as FCCs. We disagree. We consider that the "direct costs" referred to in s 152AH(1)(d) do not exclude a mark-up on incremental costs to cover the FCCs of supplying the DGTAS. Those direct costs are a reference to the total costs of providing access to the relevant declared service which ordinarily include an appropriate allocation of FCCs because without the existence of the assets in respect of which the FCCs are incurred, the relevant access could not be provided.

138 The specific reference in s 152AH(1)(d) to "the direct costs of providing access to the declared service concerned" is intended to exclude the consequential costs which the access provider might incur as a result of increased competition as a result of access in any relevant market. This was stated in the Explanatory Memorandum to the Trade Practices Amendment (Telecommunications) Bill 1996 which introduced Pt XIC into the Act:

> *"Consistent with Pt IIIA of the TPA, the references here to the 'legitimate' business interests of the carrier or carriage service provider and to the 'direct' costs of providing access are intended to preclude arguments that the provider should be reimbursed by the third party seeking access for consequential costs which the provider may incur as a result of increased competition in an upstream or downstream market."*

139 Although Optus' right to recover FCCs was not in issue, it is useful to examine the basis on which it may be said that it is reasonable for Optus to do so. Optus provides a range of subscription, origination and termination services. Some of Optus' costs can be directly attributed to individual services. Some cannot, but may nevertheless be efficiently incurred in providing the full range of services. These are common costs. In the case of Optus, these include not only administrative overheads but also network costs associated with providing coverage (as opposed to being associated with providing calls).

140 It was generally agreed that common costs need to be recovered and that Optus is entitled to recover a proportion of its common costs through revenue obtained by providing its DGTAS. Thus, in constructing or justifying a DGTAS price, some mark-up on the incremental cost of providing the service is justified. The questions are:

- what mark-up is appropriate, or how should common costs be allocated across the range of services provided; and
- what proportion should be allocated to the DGTAS?

141 The CRA/Rohlfs model used by Optus allocated both fixed and common costs as mark-ups. Fixed costs are those that do not vary with the level of output of a service. They may or may not be attributable to the provision of a particular service.

142 Where there are economies of scale, for example, because a firm's fixed costs are large in relation to the level of output, operating at the point where marginal cost equals marginal

revenue will not recover fixed costs and the firm will make a loss. It is this fact that justifies a mark-up over marginal costs to recover fixed costs. Again the questions are:

- what mark-up is appropriate, or how should fixed costs be allocated across the range of services provided; and
- what proportion should be allocated to the DGTAS?

143 In their submissions the parties generally did not distinguish between:

- fixed costs which do not vary with the level of output of a service and which were not attributable to the provision of a particular service; and
- common costs that were not directly attributable to an individual service.

Indeed, the distinction between fixed costs and common costs in the CRA model is not at all clear. Accordingly, in our consideration of this matter the distinction between fixed costs and common costs is not made, both being considered together under the rubric FCCs.

144 In regulated utility pricing, recognising the existence of economies of scale and the need to recover both fixed costs and common costs, prices are generally based on the long-run incremental costs of production. This is the case with both TSLRIC and FL-LRIC formulations. It is said that in the long run no costs are fixed. (That is one definition of the long run namely, the period, which depends on the cost characteristics of the particular industry, in which all factors of production can be varied.) In this sense, all attributable costs (but not common costs) are incremental in the long run, and thus should be included in FL-LRIC.

145 However, with the exception of AAPT, the parties appeared to accept in principle the recovery through a mark-up of both fixed costs and common costs efficiently incurred in the long run and not attributed to the FL-LRIC of any particular service. Moreover, they appeared to accept CRA's proposition that:

> *"Where fixed and common costs are related to the same set of products they are typically treated together, as the economic problem of how to efficiently mark-up prices above marginal cost to recover either type of cost is identical."*

146 We accept this approach. We consider that it is in the long-term interests of end-users of the DGTAS and in the legitimate business interests of Optus that Optus recover an appropriate mark-up on its incremental costs of supplying the DGTAS to cover the contribution to its FCCs. Consistently with s 152AB(2)(e) of the Act, the recovery of such FCCs is likely to result in the encouraging of the economically efficient use of, and the economically efficient investment in, the DGTAS.

12.2 Allocating FCCs

147 How then should FCCs be allocated across the various services? It is useful to step back briefly to reflect on the purpose of allocating FCCs (as opposed to the necessity for recovering them).

148 In an unregulated industry a multi-product firm may allocate FCCs to individual products so that, for example, work in progress and cost of goods sold can be determined. The allocation may also be for other reasons including, possibly, external financial reporting requirements.

149 However, it is generally accepted by accountants and economists that any allocation is arbitrary in the sense that it provides no useful information for decision-making within the firm. Decisions about levels of production and the pricing of individual products are determined by incremental costs and revenues and by the production process (for example, the fact that mobile origination and termination largely use the same network elements). The allocation of FCCs is irrelevant.

150 In a regulated industry, the allocation of FCCs proceeds on the basis that in setting a regulated price some degree of mark-up on incremental costs is necessary, as discussed above, otherwise the firm would operate at a loss.

151 This is the context in which Optus appeals to R-B principles. The basic premise is that prices should be cost-based, as the Tribunal has said in previous cases. The price can then be built up from the incremental cost – in this case FL-LRIC – plus a share of FCCs (and possibly a network externality surcharge, discussed below).

152 Optus stated that it allocated its FCCs across the following services:

- subscription;
- on-net mobile calls;
- off-net mobile-to-mobile calls;
- mobile-to-fixed calls;
- the termination leg of an off-net mobile-to-mobile or a fixed-to-mobile call; and
- SMS and data services.

However, costs and revenues attributable to SMS and data services were not included by CRA in the modelling process.

153 Optus adopted the Commission's summary of the effect of R-B pricing in the following terms:

> *"Under a Ramsey configuration, the structure of prices across a collection of services sharing common costs would ensure higher proportionate mark-ups above attributable costs for those services with relatively inelastic demands."*

154 Optus contended that it was reasonable for the price of the DGTAS to make allowance for Optus to recover FCCs based on R-B principles because:

- it needed to recover its FCCs to remain financially viable;
- welfare would be maximised by recovering FCCs in the manner that minimised distortions to demand;
- pricing based on R-B principles provided for the recovery of FCCs;
- the allocation of FCCs in the CRA model was based on the Rohlfs model developed on behalf of the United Kingdom telecommunications regulator but calibrated with Australian market parameters;
- the use of R-B principles to allocate FCCs was reasonable because Optus was earning normal economic profits in a competitive mobile services market;
- the Rohlfs model reasonably allocated FCCs to the DGTAS because it estimated a set of welfare maximising prices for mobile subscription, mobile-to-mobile on-net, mobile-to-mobile off-net, mobile-to-fixed and termination of calls from other mobile and fixed operators services;

- the Rohlfs model did not include an allocation of FCCs to mobile data services as data services were not included in the Rohlfs model developed for Ofcom and any such allocation to mobile data services would have a negligible effect on the price for DGTAS; and

- the Rohlfs model used own and cross-price elasticities of demand for each of the services in respect of which estimates were prepared based on the average of a range of estimates from publicly available elasticity studies and, for some cross-price elasticities, assumptions made in the Rohlfs model for Ofcom. The adoption of these elasticities was controversial and the subject of significant criticism. According to CRA they were the best estimates available for the Australian market.

155 Optus contended that recovery of its FCCs according to R-B principles was reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB because:

- it was in the long-term interests of end-users because it allocated costs in a way which least distorted demand across the particular services in respect of which the FCCs were incurred in a similar way to that which would occur in a competitive market;

- it promoted competition in markets for listed services by maximising consumption of the jointly produced services;

- it was an efficient use of, and investment in, infrastructure because it maximised use of the infrastructure and return on that investment and promoted investment in related infrastructure by minimising distortions in demand;

- it was consistent with the legitimate business interests of providers of the DGTAS by permitting the recovery of FCCs legitimately incurred in the conduct of Optus' business and allowed Optus to earn normal economic profits in a competitive mobile services market;

- it had appropriate regard to the interests of access seekers because the price of the DGTAS allowed access seekers to acquire the DGTAS and compete in the provision of listed services in the least distortionary manner; and

- it was consistent with the direct costs of providing access to the DGTAS by permitting the recovery of costs incurred by Optus in conducting its business in connection with the supply of the DGTAS.

156 The Commission and the other parties levelled a number of criticisms at the use of the R-B approach and principles to determine the mark-up over FL-LRIC to recover common costs. They may be summarised as follows:

- R-B pricing should be applied to all services that contribute to common costs. CRA excluded SMS and certain other mobile data services from its model for the purpose of allocating FCCs in accordance with R-B principles;

- CRA's framework was based upon an erroneous assumption that Optus would only earn normal economic profits across the relevant markets. The probability was that Optus would most likely earn some level of above-normal profits in the relevant markets over the undertaking period so that the R-B mark-up was likely to be too high;

- R-B pricing requires detailed current information about own-price and cross-price elasticities of demand across all relevant services. Such information was unavailable and CRA's elasticity estimates covered too wide a range. It was not reasonable to use in Australia the elasticities derived from other jurisdictions and markets and in respect of considerably earlier periods of time because the inputs and assumptions which one has to make do not necessarily reflect Australian conditions;

- no regulator had set access prices in accordance with R-B principles;

- the CRA model assumed that Optus would impose single-part linear prices for the relevant mobile services when, in fact Optus, like other mobile network operators, determined sophisticated non-linear multi-part pricing strategies in the retail market;

- traditional R-B pricing analysis assumed one monopoly producer. In competitive markets where company specific elasticities of demand differed from total market elasticities of demand R-B pricing was not likely to be sustainable;

- R-B pricing in the context of the DGTAS should only be applied where every component price was regulated. In the situation before us, only the MTAS is regulated;

- the computation of R-B prices required a great deal of information about both demand and costs including elasticities of demand and cross-elasticities of demand for all the services in question; and
- the derivation of the application of R-B principles related to a monopolist supplying the entire bank of services or goods to the whole market so that the demand elasticities facing the firm were the same as the demand elasticities for the whole market. However, where, as in the present case, there are a number of individual firms, the elasticity of the demand curve for each individual firm is different from the overall elasticity of the demand curve for the market as a whole.

Rather than dealing with all these contentions individually, we discuss the most significant of them under a number of headings.

12.3 Efficiency costs of mark-ups

157 Any mark-up on the incremental costs of a product distorts the market for a product and causes a less than optimal amount of the product to be produced and consumed resulting in deadweight loss. At the marked-up price, additional units of the service could be produced at a cost less than the benefit that would be obtained by consumers from consuming additional units of the product. This comes about because some consumers still value the product at (that is, would be prepared to pay) more than its marginal cost of production, while only the marginal cost is incurred in producing the additional units. The excess of what consumers in aggregate would be prepared to pay for a product over what they actually pay for that product is called consumer surplus. The loss of consumer surplus that occurs when less than optimal amounts of the product are produced and consumed due to the mark-up is the deadweight loss.

158 R-B pricing seeks to minimise this deadweight loss by allocating mark-ups across products such that the overall reduction in the consumer surplus is minimised. This is done by applying higher mark-ups on the prices for products where demand is least responsive to a price increase, that is to those with the lowest (absolute value of) price elasticity of demand. (The elasticity is negative, reflecting the fact that a price increase causes a reduction in demand, and vice versa.) In fact, the minimisation occurs when the lost consumer surplus is equalised across products (intuitively, when the product of a small price increase and a large

demand response equals the product of a large price increase and a small demand response). In this framework minimising deadweight loss is the same as optimising social welfare. Using R-B pricing thus seeks to optimise social welfare.

159 The intuition appealed to thus far only applies where demand for the various products is independent, not where some products are either complements or substitutes. This topic is returned to below.

160 CRA on behalf of Optus applied R-B pricing using the Rohlfs model. As noted in par [104] above, this was a model developed by Dr Rohlfs on behalf of the United Kingdom telecommunications regulator This model seeks to determine the mark-ups over the FL-LRIC estimates of the costs that maximise overall social welfare in the mobile market. In doing so it not only applies R-B pricing but also imposes a network externality surcharge at the same time.

161 Thus, the way in which R-B pricing was applied is far from a simple matter of allocating an identified pool of FCCs in inverse proportion to the elasticities of demand. Such a calculation could be easily set out and understood. It would result in mark-ups on the FL-LRIC of each of the six services listed in par [152]. However, the modelling proceeded quite differently, and dealt with somewhat different services, as will be explained. Indeed, the inner workings of the Rohlfs model were never exposed during the hearing, which essentially proceeded on an acceptance that the model had the effect of implementing R-B pricing, although parties expressed a range of disagreements (often significant) with the details of how it does so.

12.4 R-B pricing in a competitive market

162 It may be thought somewhat incongruous that a firm should explicitly seek to set its prices in a way that maximises social welfare. It is no part of the normal conduct of a firm, seeking to pursue the interests of its private owners, as it is entitled to do, to be concerned with minimising deadweight loss (except to appropriate as much consumer surplus as it can, for example, by price discrimination).

163 However, economics teaches that in a competitive environment, and subject to certain conditions, the pursuit of private interests does tend to lead to socially optimal pricing. In a

regulated environment, the objective is broadly to replicate competitive outcomes precisely because they have socially desirable properties. That is why regulation generally seeks to base prices upon forward-looking efficient costs. It can therefore be part of the logical playing out of sensible economic regulation to try to estimate what prices would be welfare-maximising.

164 Nevertheless, the apparent incongruity gives some pause for thought where, as in this matter, Optus is operating in markets that have multiple players and that it argues are highly competitive.

165 The theory of R-B pricing was developed in the context of a single service provider, that is, a monopoly. The concept of optimising social welfare by using R-B pricing only makes sense in the context of the overall market where consumers purchase services. That is the market faced by a monopolist. However, once there are multiple players and some degree of competition, the picture becomes more complicated.

12.5 Is R-B pricing broadly accepted?

166 Optus submitted that R-B pricing has been accepted in industries by regulators and it used the examples of rail and the Aviation Rescue and Firefighting Services ("ARFF services") at airports. However, it does not appear that regulators have accepted R-B pricing in competitive market situations. Optus relied upon a statement of the National Competition Council to the effect that it had made a recommendation in support of R-B pricing in relation to the regulation of rail services. However, the statement relied upon noted that:

> *"Ramsey Pricing offers an efficient approach to recover costs in instances, such as the provision of natural monopoly services, where competitive market pricing will fall short. The complex matters relating to Ramsey pricing will need to be taken into account in relevant arbitrations."*

167 Similarly, Optus' reliance upon R-B pricing of the ARFF services at airports does not take into account the fact that those services are supplied in a monopoly situation. It is interesting to note that where R-B principles have been applied it has been in the context of the costs or charges of a monopolist or regulated railways with rate ceilings. We consider later in these reasons the application of R-B principles where, as in this case, there is one regulated price,

the MTAS, and where everything else such as subscription and origination charges are set freely without regulation.

168 Optus submitted that the proposition that where the MTAS price is regulated it should be regulated in accordance with R-B principles had been accepted by a number of expert commentators and that even those who did not apply it accepted it as appropriate as a matter of principle. The weight of the evidence before us was to the contrary. The evidence before us was that R-B pricing had never been applied in the telecommunications industry by any regulator. Dr Rohlfs, in a discussion paper written in January 1979, noted that R-B pricing provided a way of recovering the deficit that would result from marginal cost pricing but nevertheless noted that the direct calculation of R-B prices was very difficult because elasticities undoubtedly changed as prices changed.

169 Optus relied upon a paper prepared by Martin Cave and Charles Chambers in June 2005 (commissioned by Competition Carriers' Coalition Inc) which was a commentary on the Optus and Vodafone undertakings in relation to the MTAS. Those commentators were somewhat guarded in their acceptance of the proposition that R-B pricing was appropriate to apply in determining the costs of an MTAS. In any event, they predicated their approval for the use of R-B pricing in this context on two conditions, namely that there are no excess profits in mobile markets and that the regulator is confident about the relevant elasticities of demand.

170 Optus contended that the Commission had accepted that the application of R-B pricing was intuitively the correct approach to apply in determining the costs by reference to which its MTAS price was to be determined. The Commission's outline of submissions, upon which Optus relied in support of this contention, did not support the contention. In the passage relied upon, the Commission was explaining the theoretical origins of the R-B pricing rule and the manner in which it could be implemented. We reject the proposition that the Commission has accepted that the application of R-B pricing is intuitively the correct approach to take in the context of determining the price of access to the MTAS.

171 A considerable body of material was placed before us which questioned the validity of R-B pricing for telecommunications services. We refer to a number of the reports and expert opinions which were provided. It will be recalled that Oftel, the United Kingdom

telecommunications regulator, had commissioned the Rohlfs model which was designed originally to calculate the R-B mark-up for FCCs. Oftel ultimately decided not to apply R-B pricing principles and instead applied an EPMU approach to allocating FCCs to telecommunications services. Oftel considered that for practical reasons R-B prices were unlikely to provide a reliable basis for setting regulated charges.

172 Oftel recognised the difficulties associated with the use of econometric estimates for the purpose of determining elasticities. Oftel was of the view that econometric estimates were likely to be unreliable. Oftel said:

> *"This is not only because past behaviour may not represent future behaviour. Robust econometric estimates are usually extremely difficult to derive, because of a variety of factors including data deficiencies, complexity of the underlying relationships etc."*

Oftel stated in its publication R-B Prices and Network Externalities: Dr Rohlfs' Analysis, 23 May 2002:

> *"In Oftel's view the informational requirements are too onerous for any particular estimate of Ramsey pricing to provide a reliable basis for regulated terminated charges. For example, to carry out a full-blown calculation of Ramsey prices would require a model that had a large number of services: fixed to mobile calls, mobile subscription, mobile to fixed calls, on-net calls, off-net calls, text messaging, international calls, international roaming, mobile internet access etc."*

More significantly, Oftel noted:

> *"There is a serious danger of over-reliance on particular elasticity estimates. This is especially the case where it is being argued that a large mark-up should be added to the cost of termination."*

173 It is interesting to note that ultimately Oftel rejected the application of R-B principles but accepted a limited externality mark-up for MTAS prices although the mark-up was not based on a R-B pricing framework.

174 The Commission obtained a report from Wik-Consult which was, in substance, critical of the use of R-B pricing in the context of telecommunications services. Wik-Consult accepted that the welfare-maximising property of R-B pricing was well established in economic theory but noted that this statement said little about the practical applicability of R-B pricing principles.

175 Wik-Consult's conclusion on the conceptual applicability of R-B pricing principles to MTAS was:

> *"Boiteux-Ramsey* [sic] *pricing principles refer to welfare-maximising prices subject to a viability constraint on the regulated firm or sector. They are in principle the correct starting point for the regulation of MTAS charges. However, they have not been explicitly applied anywhere yet. The main arguments for the rejection include the perceived uncertainty about the relevant demand elasticities, the capture of fixed costs and part of the externality effects through non-linear pricing and other forms of price discrimination and the deviation of prices for other mobile services (and FTM prices) from their respective B-R levels."*

176 In their text *Towards Competition in Local Telephony* (1994) W Baumol and J Sidak are also doubtful about the use of R-B pricing in the telecommunications area. The authors state:

> *"Where some of the firm's products are complements, substitutes, or a mixture of the two, in addition to the own-price elasticities of demand, the cross-price elasticities also become pertinent. … Therefore, to use the full Ramsey analysis to calculate second-best optimal prices, one needs information on the marginal cost of, and the own-price elasticity of demand for, each of the products in question. One probably needs to know the full set of cross-price elasticities as well.*
>
> *This data requirement is one reason why most regulators and consulting economists have rejected the use of the Ramsey formulas even to provide approximations for the prices that the regulated firms should be permitted to charge for its products. Marginal-cost figures are difficult enough to come by, although reasonably defensible approximations have been provided by firms to regulatory bodies. But up-to-date estimates of the full set of pertinent elasticities and cross-elasticities are virtually impossible to calculate, particularly in markets where demand conditions change frequently and substantially. As a result, an attempt to provide the regulator with an extensive set of Ramsey prices is likely to be beset by inaccuracies, by obsolete demand data, and by delays that will prevent the firm from responding properly and appropriately to evolving market conditions.*
>
> *Rather, regulators have accepted the usefulness of Ramsey theory as a source of general qualitative guidance rather than as a generator of precise and definitive prescriptions for pricing."*

177 In March 2003 CRA prepared a report for Bell South International entitled "Economic Analysis of Fixed-To-Mobile Call Termination Charges". In that report CRA noted that R-B prices are typically used to obtain economically efficient prices for a multi-product monopoly whose revenues must cover its costs. The report went on to state:

> *"The computation of Ramsey prices involves a significant amount of data collection, or the adoption of assumptions that seem reasonable to the modeler. The calculation of Ramsey prices is likely to be difficult and costly, and the results of the exercise will be only as reliable as the data on which they are based. To the extent that the shared nature of telephone calls (especially unwanted calls) is neglected, the resulting prices might well be less efficient than the prices produced in a competitive market for retail mobile services.*
>
> *Even if Ramsey prices can be accurately calculated, they may not be appropriate in the dynamic and competitive environment. It has long been known that Ramsey prices may not be sustainable when economies of scope and scale are present. That is, Ramsey prices may not be equilibrium prices in markets where competitors are free to compete for customers by offering different prices. … Since mobile markets are served by more than one provider, and new providers may enter as additional spectrum is made available for traditional and 3G services, prices derived by the Ramsey rule may not be appropriate for mobile markets."*

178 In June 2004 Ofcom, the successor to Oftel, published a statement on "Wholesale Mobile Voice Call Termination". In that review Ofcom considered that the most appropriate and economically efficient basis for regulatory charge controls of mobile voice call termination services was FL-LRIC. Ofcom also considered it appropriate for regulated services to contribute towards the recovery of relevant common costs through a mark-up in addition to long-run incremental costs to allow for full costs recovery. Ofcom considered that it was appropriate for these costs to be recovered by an EPMU approach rather than in accordance with R-B principles. Ofcom stated:

> *"In theory, Ramsey prices minimise the loss in economic efficiency introduced by the departure from marginal cost pricing due to the presence of common costs. However, OfCom has concluded that the derivation of Ramsey prices, or more generally of welfare-optimal prices, raises complex conceptual and practical issues which do not allow for sufficiently reliable optimal prices to be estimated. OfCom believes that EPMU achieves a more appropriate balance between practicality and efficiency than the Ramsey methodology."*

179 We consider EPMU in more detail below.

12.6 CRA/Rohlfs modelling of R-B prices

180 The R-B mark-ups derived from the CRA/Rohlfs model require the input of various own-price and cross elasticities of demand. An own-price elasticity measures the percentage by which demand for a good changes with a one per cent change in its own price. Where

demands for goods are independent, only own-price elasticities come into play. However, where goods are complements or substitutes for each other, cross elasticities of demand are also relevant.

181 As CRA explained:

> *"… as new mobile subscribers join a network they can be expected to make calls and so increase the number of mobile outgoing calls. This complementarity between subscription and mobile outgoing calls needs to be recognised …"*

The complementarity is reflected in a negative cross elasticity of demand between the two services. A mark-up increasing the price of subscription will have the effect of reducing the demand not only for subscription but also for outgoing mobile calls. This is accounted for by adding to the (negative) own-price elasticity an amount to reflect the (negative) cross elasticity, the result being called a super-elasticity that is larger in absolute terms than the own-price elasticity. Thus the mark-up applied (in proportion to the inverse of the super-elasticity) is lower than it would be in the absence of the complementarity.

182 By comparison, where services are substitutes the cross elasticity is positive. If fixed-to-mobile calls are to some degree a substitute for mobile-to-mobile calls, an increase in the price of fixed-to-mobile calls will increase demand for mobile-to-mobile calls. The super-elasticity of demand for each service will be less in absolute terms than the own-price elasticity because the demand response of fixed-to-mobile calls is partly offset by the demand response of mobile-to-mobile calls. (Arithmetically, the positive cross elasticity effect is added to the negative own-price elasticity, resulting in a smaller absolute value for the super-elasticity than for the own-price elasticity.) We return to the significance of cross elasticity effects below.

12.7 Estimates of elasticities

183 Optus argued that it was not possible to calculate elasticities of demand for Australian markets. We do not know whether there are studies available which enable this task to be carried out. But even if they are not available, it is no answer to apply by default elasticities derived from other markets and other regions without knowing whether they are applicable to current Australian conditions. Optus responded by saying that it was not necessary to be concerned about the absolute values of elasticities because what was relevant was relative

differences. It is true that relative differences are significant and important but it is still necessary, in order to apply R-B principles, to determine the magnitude of the relative differences.

184 Optus responded to the criticism of the elasticity estimates used in the CRA model and, in particular, that they were derived from foreign markets and involved averaging, by submitting that there could be no serious dispute that fixed subscriptions were more inelastic than mobile subscriptions. Leaving to one side the accuracy of that proposition, it says nothing about the extent or level of elasticity of demand for either type of subscription. Also there was controversy as to the extent of the development of fixed-to-mobile substitution in Australia and the relative elasticity of demand for both of them.

185 Optus relied upon a report prepared by Marsden Jacob Associates (commissioned on behalf of Hutchison) in relation to Optus' undertaking in support of the proposition that the elasticities used in the CRA model were either verified, confirmed or supported by Marsden Jacob Associates. In some respects Marsden Jacob Associates supported some of the elasticity estimates adopted and used in the CRA report but not in every case. For example, Marsden Jacob Associates agreed with CRA on the elasticity point for subscription own-price, but disagreed in respect of mobile outgoing own-price, fixed-to-mobile own-price and subscription fixed-to-mobile cross-price. We would also view with some caution the Marsden Jacob Associates' estimates having regard to the fact that a number of them were based on the averaging of estimates in a number of econometric studies.

186 Optus also relied upon the report prepared for Vodafone by Frontier Economics in September 2005 which opined that CRA's method of determining the elasticities:

> *"… is probably an acceptable way of making use of the best available information."*

Frontier Economics believed that the studies which CRA had included were appropriate given what was available and considered that CRA's own-price elasticities appeared to be within reasonable ranges given the secondary sources that were available.

187 The Frontier Economics report provides some support for the use of the CRA elasticities but, nevertheless, does not answer the criticism that the elasticities used, given that they came

188 The own-price elasticities and one of the cross elasticities – that between the price of subscription and demand for fixed-to-mobile calls – used in the CRA/Rohlfs model were chosen by CRA based on a range of econometric studies.

189 The own-price elasticities are for mobile subscription, mobile outbound calls, off-net calls and fixed-to-mobile calls. Mobile outbound calls comprise mobile-to-mobile calls between a caller and a called party who are both Optus customers (that is on-net calls) together with mobile-to-fixed calls. Off-net calls are calls from an Optus customer to a customer of a different mobile network operator.

190 It is noteworthy that there is no mobile termination own-price elasticity used in the modelling. This is somewhat confusing, especially as the motivation for R-B pricing, as summarised above, was put by Optus in terms of the inelasticity of demand for mobile termination services, which is, after all, the service to which the undertaking refers.

191 On the one hand, it was put to us by the Commission that it was an implicit assumption of the CRA model that the elasticity of demand for fixed-to-mobile calls may be used as a proxy for the elasticity of demand for mobile termination. This was said to be a failing in that fixed-to-mobile calls account for only a fraction of all mobile terminations.

192 Optus itself said that the elasticity of demand for fixed-to-mobile calls is the same as the elasticity of demand for termination of fixed-to-mobile calls. CRA, in response to the Commission's concerns about elasticity estimates expressed in its MTAS declaration decision, stated that:

> *"In terms of elasticity estimates, there are bounds for the estimates that are commonly accepted. To the best of our knowledge, no one has suggested that termination services are more elastic than outgoing services."*

This again places the focus on the elasticity of demand for termination, and incidentally emphasises the difference between the elasticity of demand for termination and the elasticity of demand for fixed-to-mobile calls, which are, of course, a type of outgoing call.

193 Adding to the confusion about which elasticities are in question, Optus also claimed that "there can be no serious dispute that fixed subscriptions are more inelastic than mobile subscriptions", but the elasticity of demand for fixed subscription does not appear to enter into the modelling. The relevance of comparisons between elasticities of demand for fixed and mobile subscriptions appears to lie in a consideration of substitution between fixed-to-mobile and mobile-to-mobile calls.

194 On the other hand, as discussed below, there are good reasons why the CRA/Rohlfs model deals with the elasticity of demand for fixed-to-mobile calls and not the elasticity of demand for mobile termination.

195 Returning to the own-price elasticities required as inputs to the model, the elasticity of demand for off-net calls is assumed to be the same as that for mobile outbound calls, so that there are only three own-price elasticities separately estimated. The estimate in each case is said by CRA to be the average of the identified econometric studies representing the most reliable sources:

- for mobile subscription, six estimates ranging from -0.3 to -0.54 are averaged to a figure of -0.43;
- for mobile outbound calls, estimates of -0.62 and -0.55 are averaged to -0.59;
- for fixed-to-mobile calls, estimates of -0.43 and -0.18 are averaged to -0.31.

196 Many questions were raised as to the reliability and/or robustness of the estimates, including the appropriateness of averaging and the studies included in the averaging process. The criticisms with most force were that most of the estimates related to overseas experience and that some were rather dated in a fast-moving market. We were left with doubts as to the overall reliability of the estimates of the own-price elasticities of demand used as inputs to the modelling.

197 In particular, the elasticity estimate for fixed-to-mobile calls stands out as relying on two studies that reach substantially different results, one of which, -0.43, is in fact identical to the average of the elasticity estimates for subscription. This immediately raises questions as to whether the elasticity estimate for fixed-to-mobile calls can reliably be taken to be substantially smaller than for subscription. The Commission had arrived at an estimate of

-0.6 by including in an averaging process, among others, estimates made by industry analysts. Optus was dismissive of these estimates, suggesting that they were intrinsically not reliable. Without being treated to a detailed exposition of the expertise behind any of the estimates, we are prepared to take into account figures used by industry analysts, presumably making calculations, the accuracy of which is of value to their clients.

198 For mobile outbound calls, again an average was taken of only two estimates. Moreover, the mobile outbound category comprises two types of calls, on-net and mobile-to-fixed, that may well have significantly different demand characteristics. The assumption that the elasticity of demand for off-net calls is the same as that for mobile outbound calls has the same deficiency.

199 It will be recalled that the CRA/Rohlfs model requires super-elasticities, which are own-price elasticities that are adjusted for cross-price effects. The cross elasticities used in the CRA/Rohlfs model were arrived at by different approaches.

200 First, for the elasticity of demand for fixed-to-mobile calls with respect to changes in the price of mobile subscription, estimates of -0.12 and -0.24 were averaged to arrive at -0.18. The symmetric elasticity of demand for mobile subscription with respect to changes in the price of fixed-to-mobile calls was assumed to be zero.

201 The other cross-price elasticities of demand were then calculated from existing elasticity estimates together with additional assumptions regarding usage and the internalisation of externalities (considered below in relation to the NES). This process resulted in the cross-price elasticity of demand for mobile outgoing calls and for off-net calls, with respect to changes in the price of fixed-to-mobile calls, both being zero.

202 We consider that there is substantial uncertainty surrounding the cross-price elasticity estimates used as inputs to the modelling. (This is touched on later in our consideration of the proposed NES). Where it becomes important in the present context is in the effect of the cross-price adjustments to the own-price elasticities, which are subject to considerable uncertainty. Optus argued that it is the relativities in the (super) elasticities of demand that matter, not the absolute numbers.

203 However, adjusting own-price elasticities of demand for cross-price effects could change the relativities, and perhaps even the order of the absolute magnitudes. That is, the ranking of the super-elasticities could differ from that of the own-price elasticities. At the least, the uncertainty surrounding the super-elasticity estimates appears to be somewhat higher than that attached to the own-price elasticity estimates. We consider that the failure to deal clearly with the issue of substitutability between fixed-to-mobile and mobile-to-mobile calls detracts from the confidence that can be placed in the CRA modelling.

12.8 Uncertainties regarding the implementation of the modelling

204 Our lack of confidence in the elasticity estimates used as inputs to the modelling is exacerbated by aspects of the modelling process.

205 First, the CRA/Rohlfs model assumes linear demand curves, which imply elasticities that vary with the level of demand (and with the price). Different arguments can be put about the desirability of using linear demand curves or curves with constant elasticity of demand. The former is more analytically tractable and using it is thus tantamount to assuming that the real world conforms sufficiently well to what are admitted to being simplifying assumptions. On the other hand, constant elasticity of demand over the whole range of demand implies infinite consumer surplus, which is also unrealistic.

206 However, in practice, elasticities may not be expected to vary substantially across a range of demand that is consistent with changes in prices brought about by regulatory decisions – or at least not as substantially as implied by movements along a linear demand curve. On the other hand, constant elasticity of demand over such a range of demand need not imply zero increase in elasticity as demand becomes very small, and therefore need not imply infinite consumer surplus.

207 We are consequently not persuaded that the modelling approach used by CRA, which has the effect of substantially changing the elasticities from those purportedly used as inputs, leads to realistic results. Alternative calculations made by WIK-Consult (on behalf of the Commission) indicate that this aspect of the modelling approach by CRA alone increases the termination price by some [Z cpm]. It should be noted that in saying this we do not express a firm view that a constant elasticity of demand approach is correct; rather that the implementation of a linear demand assumption has not given reliable results in this case.

208 A second concern is with the relationship between the welfare-maximising prices calculated by the model and the price proposed for Optus' DGTAS.

209 Whatever the relevant markets may be, mobile termination is not a service that is purchased directly by consumers. It is an intermediate input purchased at a wholesale level by one operator from another operator. How the prices of intermediate inputs relate to the prices of final goods purchased directly by consumers is somewhat unclear.

210 As discussed above, the concept of welfare-maximising prices makes sense only in final consumer markets where consumer surplus is created by the difference between consumers' willingness to pay and the actual prices required to be paid to acquire a service, that is, by part of the area under the industry demand curve.

211 As we understand it, the Rohlfs model does indeed deal with final services purchased by consumers. One of these is fixed-to-mobile calls. The Rohlfs model calculates a welfare-maximising price for such calls, along with welfare-maximising prices for the other services. The price of mobile termination is then found by subtracting the cost of fixed origination and retail costs from the price of a fixed-to-mobile call.

212 The mobile termination service is also an input to the provision of mobile-to-mobile calls. However, the Rohlfs model does not calculate an off-net termination charge (that is the price one mobile operator pays another mobile operator for terminating a call) as Dr Rohlfs puts it because "the Ramsey optimum does not depend on how off-net revenues are divided between originating and terminating MNOs" (mobile network operators).

213 In short, whether the price of termination derived in the CRA/Rohlfs model can be considered welfare-maximising is not at all clear, even if all other aspects of the CRA/Rohlfs modelling are accepted. It may be that if all links in the provision of mobile and fixed-to-mobile services were at least effectively competitive, then one could have confidence that input prices derived from welfare-maximising output prices were themselves welfare-maximising. But that would beg the question of why mobile termination is regulated. In any case, as explained above, we are not satisfied that mobile termination, considered as a wholesale service provided by an MNO to other MNOs and fixed operators,

is effectively competitive. Nor are we satisfied that the provision of fixed-to-mobile services is effectively competitive.

214 Absent effective competition through each stage of the production chain, it is unclear whether high mark-ups on the termination price are efficient or, alternatively, would be conducive to inefficient over-investment, for example, in network coverage.

215 Consequently, we are not satisfied as to the inherent ability of the CRA/Rohlfs' approach to demonstrate the reasonableness of mobile termination charges.

216 In addition, the derivation of the termination charge by subtracting other costs from the modelled cost of a fixed-to-mobile call introduces further uncertainty as to the reasonableness of the termination charge. As AAPT pointed out, we had little or no evidence before us as to the appropriateness of those other costs.

217 A third concern is that there was some uncertainty over whether the modelling should have used industry elasticity estimates, as it did, or estimates of the elasticities actually facing Optus as a firm. Baumol and Sidak (supra) take the latter view, with which we agree. They state:

> *"One final aspect of Ramsey analysis merits attention. In a competitive market, the own-price elasticity of demand is considerably smaller for a product than for a firm. If a firm unilaterally raises its price for a product, it will lose customers to other sellers, even if those customers are not lost to the industry. Which of these two elasticity figures should be used in the Ramsey formula? The industry elasticity is often assumed to be the appropriate one, but that is not generally correct. The purpose of the Ramsey calculation is to bring to the firm the addition to total revenue that it needs to cover its costs, and to do so with minimal deviation of prices from marginal costs. The way to do so is to focus upon changes in those prices for which a given percentage increase contributes most to the firm's revenues. But the prices that will accomplish this objective are those for which* the firm's *demand elasticity is lowest, regardless of what the own-price elasticity of demand may be for those products for the entire industry. This observation is important. It means that Ramsey markups on competitive products will be lower, because they are appropriately guided by the firm's elasticity of demand; to compensate for this, Ramsey markups on monopoly products will be higher than they would be if the pertinent demand elasticity for each of the firm's products were that of the industry."*

218 In markets such as subscription where Optus unarguably faces at least some degree of competition, a rise in its prices would drive some of its potential customers to its competitors rather than out of the market. Thus the elasticity of demand for subscription facing Optus is greater than that facing the industry as a whole. If mark-ups were to be calculated directly from inverse elasticities applied to the incremental costs of the range of services supplied by Optus, it would appear correct to use Optus-specific elasticities. The Optus-specific demands for subscription and outgoing calls, where Optus competes in the retail market, are likely to be proportionately more elastic, compared to the market demand, than the demand for termination. This would bolster Optus' case that at least the relativities work in its favour, even if the specific values of the elasticities are in doubt.

219 But, as has already been remarked, the calculation of welfare-maximising prices by CRA necessarily takes place in the context of the overall industry and the total markets for services purchased by consumers. The elasticity of demand for termination does not explicitly enter into the calculation. Rather it is the elasticity of demand for fixed-to-mobile calls that is relevant.

220 This point essentially returns us to the conundrum of R-B pricing in a multi-firm industry. It makes little sense to speak of the welfare-maximising prices charged by Optus without regard to all the other prices in the market.

221 Optus relied upon a paper prepared by Mr Jonathan Sandbach, the Head of Regulatory Economics at Vodafone Group Services Ltd in the United Kingdom entitled "Ramsey Pricing –vs.– EPMU for Regulation of Firms Operating in Competitive and Non-Competitive Markets". Optus contended that this paper supported the proposition that regulation of only one of a number of telecommunications services would produce R-B results provided that the other services were provided in a workably competitive market or markets. Optus contended that what Mr Sandbach was saying was that in an effectively competitive market, firm elasticities will tend towards market elasticities. However the material before us was to the contrary, which we would expect. W Baumol and J Sidak (supra) observed that:

> *"In a competitive market, the own-price elasticity of demand is considerably smaller for a product than for a firm. If a firm unilaterally raises its price for a product, it will lose customers to other sellers, even if those customers are not lost to the industry."*

222 Fourthly, and related to the previous point, it is unclear what can be said about the social optimality of Optus' regulated termination price when the retail prices it charges in the market are unregulated.

223 The CRA/Rohlfs model produces estimates of welfare-maximising prices for subscription, mobile outbound calls, off-net calls and fixed-to-mobile calls. However, these prices bear no relation to the estimated initial prices used by CRA. The estimated welfare-maximising price of subscription is approaching three times the estimated initial prices, the modelled price of mobile outgoing calls is little more than half that of the estimated initial price used and that of off-net calls is one-third of the estimated initial price used. Among other things the modelled prices imply a huge reduction in mobile subscriptions from actual levels.

224 We are not satisfied that this means merely, as Optus claimed, that the full benefit of R-B pricing would not be obtained. Rather, we consider that it calls into question the validity of the CRA/Rohlfs modelling as a means of implementing R-B pricing. The CRA/Rohlfs model assumes that the regulator controls all the relevant prices.

225 This can be thought of more easily in the simpler framework of direct allocation of the common costs of a multi-product monopoly in inverse proportion to elasticities of demand. If a set of R-B mark-ups were calculated but only one was applied, leaving the monopolist to choose its own mark-ups on the other products, there is no guarantee that the overall result would be welfare-optimising, even if the mark-ups were constrained to ensure that the monopolist obtained no excess profits. In part this is because mark-ups will in general change elasticities by shifting demand.

12.9 Commercially negotiated prices as a benchmark

226 In support of its submission that its undertaking price was reasonable, Optus submitted that it had earlier negotiated a price for access to its DGTAS with access seekers which was, in substance, a competitive price negotiated in a competitive market. According to Optus, this negotiated competitive price reflected all of the relevant elasticities of demand and therefore reflected R-B prices and any relevant network effects. Optus noted that its undertaking access price was less than the negotiated competitive price.

227 We consider that it does not inexorably follow that, because the undertaking price is less than the negotiated price, the undertaking price is therefore reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. The fact that the undertaking price may be less than the negotiated price tells us nothing about the reasonableness of that price having regard to the matters and objectives to which we have referred. We have no material before us which bears upon the issues which arose in the negotiations nor do we know, for example, what pressures were in existence which may have compelled a particular negotiated outcome. We should point out that we had no direct evidence of what that negotiated access price was or the circumstances surrounding the negotiations which resulted in it being agreed. Also as we observed in par [85], it was accepted that mobile operators could set their termination charges on a reciprocal basis at above cost while still competing vigorously in the retail market.

228 Optus' proposition was that willingness to pay a price is reflective of elasticity of demand. Optus then contended that a negotiated price informs one as to the relevant elasticity of demand. Optus contended that as the price in the proposed undertaking was less than the price which had been earlier negotiated that meant that the elasticity of demand which Optus used, relying on foreign studies, must be reasonable. However, this does not follow and certainly does not validate *ipso facto* the elasticities used in the CRA model. This contention was inconsistent with its written submissions. In its written submissions in reply filed prior to the hearing, Optus submitted that:

> *"… its assessment of the relevant elasticity measures is reasonable, based on published elasticity measures."*

229 We should point out that none of the economic material or economic experts relied upon by Optus supported its contention.

230 It is true that an unregulated multi-product firm will mark up its incremental costs in a way that has the least impact on demand. Thus it will apply proportionately greater mark-ups on products with inelastic demand. That is to say, it will voluntarily apply something like R-B pricing. Optus argued that it operated in effectively competitive retail markets where it could not make above-normal profits, so that its observed prices essentially were R-B prices. Since its proposed DGTAS price is no more than the price it is already charging, using R-B principles, that proposed price can be taken to be reasonable. More precisely, the

R-B element of its proposed prices can be taken to be consistent with reasonableness having regard to the matters set out in s 152AH and the objectives in s 152AB.

231 There are several difficulties with this line of argument. First, as observed earlier, the ability to mark up prices above incremental cost implies some degree of market power. This is hard to reconcile with the claim that Optus is constrained not to achieve above normal profits and to suffer a 100% waterbed effect.

232 Indeed, the argument is most clearly presented in the case of an unregulated monopolist who, it is said, will have the same price relativities as in the regulated R-B case (that is, higher mark-ups on services with less elastic demand), but with prices higher than in the R-B case so as to extract some monopoly rent. This claim is made by CRA referring to Laffont and Tirole.

233 However, this result generally only holds where own-price elasticities are constant and demand is independent (cross elasticities are zero). If own-price elasticities are not constant across all levels of demand, the elasticity for a particular service in the regulated case will differ from the elasticity in the unregulated case, because the level of demand will be different (because prices will be higher in the unregulated case).

234 Moreover, with non-zero cross elasticities it also becomes possible also that the magnitude of the super-elasticities of the various products varies in order from lowest to highest between the regulated and the unregulated cases. Then the mark-ups would vary in order as well. In other words, it is possible that a profit-maximising monopolist would mark up termination proportionately more than subscription while the welfare-maximising R-B mark-up on termination would be proportionately less than on subscription. One cannot say this without knowing all the own-price and cross elasticities at all the relevant levels of demand.

235 This effect of cross elasticities on super-elasticities is similar to the problem that adds to uncertainties regarding the values of the super-elasticities discussed above.

12.10 R-B pricing v EPMU

236 Optus argued that rejecting R-B pricing necessarily meant embracing the use of equi-proportional mark-ups (EPMU). The Commission has preferred EPMU in setting pricing principles for MTAS, and so have other regulators.

237 It is true (and obvious) that if all super-elasticities were equal, R-B pricing would result in equi-proportional mark-ups. From this Optus argued that rejecting its proposed R-B pricing was equivalent to deciding consciously that all super-elasticities were equal. That conclusion does not follow.

238 A regulator who accepts and wishes to apply the principle of R-B pricing must first determine relative elasticities. If there is insufficient information to determine that elasticities differ but the regulator still wishes to apply R-B pricing, then the regulator has to assume, by default, that the elasticities are the same, resulting in the application of EPMU. Even if the regulator is confident that elasticities differ, it is necessary to know the relativities. One needs to know at least the ranking of the (absolute values of the) elasticities of demand in order to depart from EPMU.

239 Even then, if there was confidence about the rankings, some assumption would need to be made about the actual relativities. Determining that one elasticity was relatively small compared to the others would result in a large mark-up on the corresponding incremental cost, and thus a large increase in price over what would be applied using EPMU. If this relativity was wrong, and demand was rather more elastic than assumed (compared to demand for the other services), the consequential loss of consumer surplus could be large.

240 It is therefore incorrect to say that applying EPMU is an over-cautious reaction to uncertainty regarding elasticities. It may well be prudent.

241 Of course, the decision facing us is not whether to apply EPMU but whether Optus' proposed prices are reasonable. The more limited topic of this part of the analysis is whether the R-B component of costs to be recovered in Optus' proposed prices is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. It is not inaccurate to characterise our view of the material before us in this matter as leading us to reject R-B in practice while accepting its in-principle attraction in appropriate circumstances. We accept

that such a position could in practice lead to the application of EPMU. We accept that outcome while emphasising that it implies no preference for EPMU in principle.

12.11 Conclusions regarding R-B pricing

242 The body of expert economic material to which we have referred is persuasive of the proposition that, consistent with accepted economic theory and principles, it is not appropriate to use R-B pricing principles to determine the allocation of FCCs to an MTAS such as Optus' DGTAS. More relevantly, for the reasons advanced in the expert economic material, we cannot be satisfied that it is reasonable, having regard to the matters set out in s 152AH and the objectives in s 152AB, to adopt and use R-B pricing principles to determine the component of the FCCs to be allocated to Optus' FL-LRIC which are used as the reference point by which to determine Optus' prices for access to its DGTAS.

243 It is not in the long-term interests of end-users or in the interests of access seekers that a term as to price is determined by reference to Optus' costs, a substantial component of which ([Y cpm] out of a total of 17.03 cpm) is calculated by reference to a methodology which is inapplicable or inappropriate for the reasons advanced by the experts to whom we have referred. Nor is it in the legitimate business interests of Optus to obtain a price for access to its DGTAS based on such an inapplicable methodology of determining its underlying FCCs. Further, we are unable to be satisfied that the R-B methodology provides a reliable or appropriate method to determine whether Optus is recovering only a sufficient amount to cover that component of its direct costs of providing access to its DGTAS, being its FCCs.

244 Our lack of satisfaction is exacerbated by the specific criticisms of the manner in which CRA developed its R-B methodology to which we have referred. We refer, in particular, to the elasticities CRA adopted and used.

13. THE NETWORK EXTERNALITY SURCHARGE (NES) COMPONENT OF OPTUS' PRICE

245 Optus submitted that it was consistent with a reasonable termination price for that price to include a component described as an NES. Like the R-B component, the NES mark-up of 2.12 cpm to the FL-LRIC of Optus' DGTAS was estimated by the application of the CRA/Rohlfs model.

246 Optus justified the NES by reference to the following reasoning – new mobile subscribers benefit from their subscription through their ability to make and receive calls. Other subscribers to fixed and mobile networks also receive a benefit from additional mobile subscriptions due to the ability to contact the newly connected mobile subscribers. This benefit, described as a mobile subscription network externality, is to be assessed and, if appropriate, a charge for it is to be recovered from existing fixed subscribers.

247 Optus contended that it was reasonable for the price of its DGTAS to allow for the recovery of the NES because:

- the contribution reflected the benefit that other subscribers received when an additional subscriber joined the mobile network that was not reflected in that additional subscriber's decision to join the network;
- network externality contributions were taken into account in efficient pricing in competitive two-sided markets;
- a rejection of an NES mark-up in the price for its DGTAS would not be reasonable as it would result in higher than efficient charges for mobile subscription and mobile origination leading to less efficient consumption of mobile subscription services and reduced consumer welfare;
- the CRA model estimated the external benefit of the addition of a mobile subscriber, using a Rohlfs-Griffin factor of 1.5 consistent with the value accepted by Ofcom; and
- the CRA model used the conservative assumption employed in the Rohlfs model that the marginal subscriber only generates a third of the volume of calls of the average subscriber.

248 Optus submitted that a mobile subscription NES sought to provide a mechanism for others to contribute to the costs of the marginal subscriber's mobile subscription and reflected a value to those others of that mobile subscription. It noted that the inclusion of the network externality contribution would result in higher termination rates being paid by the operators of fixed networks for fixed-to-mobile calls which, in turn, were likely to be passed on to fixed subscribers in the form of higher prices for fixed-to-mobile services.

249 Optus pointed out that mobile subscribers also receive an externality benefit from the addition of a new mobile subscriber but argued that it would be a "zero-sum game" to recover the externality benefit received by mobile subscribers through higher termination charges. Higher termination charges would be passed on to mobile subscribers through higher charges for origination, but origination services are highly elastic and higher origination charges would result in less calling and less mobile subscriptions. Thus, the externality benefit associated with the addition of the mobile subscriber would be lost.

250 Optus also submitted that it was reasonable to allow for a mobile subscription network externality in the DGTAS price because:

- it promoted the long-term interests of end-users because such a contribution placed a value on the mobility of a customer that minimised distortions in demand;
- allocative efficiency was maximised by ensuring that those who benefited from additional subscriptions contributed to the cost;
- it promoted competition in markets for listed services, by attracting subscribers who would not otherwise subscribe to mobile services to subscribe up to socially optimal levels; and
- it encouraged efficient use of and investment in infrastructure by ensuring a socially optimal number of mobile subscribers.

251 The inclusion of an NES in Optus' cost structure was controversial and was rejected by the Commission and the other parties. What they emphasised was that mobile penetration rates in Australia suggested that the mobile services market was so mature that any network externality in that market was likely to be minimal. It was also argued that to the extent that Optus was seeking to raise the price of the DGTAS by reference to a non-cost based integer, its price was inherently unreasonable because it resulted in a price which was above the efficient costs of supply of the DGTAS. Put shortly, the existence of the externality was in issue, as was the method by which Optus had calculated it.

252 The limited extent of the network externality was regarded as significant by a number of the expert commentators. For example, Cave and Chambers (supra) said:

> *"Given the current high penetration levels of mobile telephony in Australia, it is unlikely that the addition of a marginal mobile subscriber would alter the calling behaviour of most subscribers to the fixed networks. In other words, the marginal network externality is probably very small in magnitude at present (if it exists at all)."*

There was also criticism of the NES on the basis that Optus had ignored other externalities which might have the effect of reducing the DGTAS price and that the value of the surcharge set by Optus by reference to the Rohlfs-Griffin factor was inappropriate.

253 Telstra challenged the need for an NES on the basis that mobile network operators such as Optus were in a position to internalise the network benefits which Optus claimed justified the surcharge through the development of targeted pricing arrangements. Marsden Jacob Associates considered that the ability to target potential subscribers in Australia was the same as that ability in the United Kingdom. They relied upon the following explanation by Oftel in 2004:

> *"[Mobile Operators] are likely to be able to internalise a substantial proportion of the total externality, and in particular the positive benefit which accrues to existing mobile customers. They can internalise this benefit by capturing the additional benefit that accrues to existing mobile subscribers through price discrimination. This may have a further effect in reducing the size of the subsidy to be recovered from the surcharge on mobile termination."*

254 Wik-Consult expressed the matter this way:

> *"If externalities are internalised totally or partially by market participants there is no need for corrective pricing to generate the welfare effects associated with externalities. Internalisation reduces the remaining magnitude of the externality. Competitive pressure can spur MNOs to internalise external benefits that accrue to mobile subscribers. Also consumers can develop a behaviour and activities that result in internalisation."*

Wik-Consult observed that consumers internalise network externalities themselves when they share certain costs of subscription and that the most important instrument of MNOs to internalise network externalities is to offer a broad set of non-linear, multi-part or optional retail tariffs.

13.1 The nature of externalities

255 We accept, and adopt, the description of a network externality given in Appendix D to the Commission's Outline of Submissions as one which:

- arises when existing subscribers (fixed and mobile) attribute some value to a new subscriber joining a telecommunications network; but
- the private value placed on subscribing by a new subscriber (that is, the new subscriber's willingness to pay the price of subscription) does not take into account this external benefit to existing subscribers.

Existing subscribers are generally thought to place a value on the ability to call and receive calls from a new subscriber, whether or not that ability is exercised.

256 Expressed in terms of economic efficiency, the raison d'être of the NES mark-up on the termination charge is that the addition of that new subscriber to the mobile network would bring a benefit to society (or the community of telephone users) greater than the cost, because the benefit to existing subscribers is not factored into the decision of the new subscriber. Thus, there would be a welfare gain (benefit exceeding cost) to society if the potential new subscriber did in fact join the network. There would be a welfare benefit if the potential subscriber's unwillingness to pay more for what he or she would personally obtain could somehow be overcome.

257 Optus proposed in its undertaking that the price of the DGTAS be higher than it would otherwise be so as to provide additional revenue which it would use to lower the price of mobile subscription below what it would otherwise be. This is the NES measured per minute of the use of the termination service for a call.

258 To the extent such a mobile subscription network externality exists, we accept the logic of the argument.

259 There is also a potential fixed subscription network externality, analogous to the mobile subscription network externality, arising from the benefits to existing fixed and mobile subscribers of an additional fixed subscriber.

260 CRA also mentioned a potential calling externality, which arises when a called party experiences a benefit (or cost) from receiving a call, whereas only the calling party pays for the call. An externality exists to the extent that the calling party's willingness to pay for the call does not take account of the called party's benefit (or cost). Calling externalities could arise in respect of any type of call.

261 This is separate from the mobile subscription network externality. In fact it is not a network externality (it does not depend on the notion of marginal subscribers) and arises from the fact that any call is jointly consumed by two parties. It is necessary to consider these additional potential externalities in assessing the modelling of the NES.

262 We use the term "potential externality" to acknowledge the fact that it is an empirical question whether in each case there is in fact an external benefit (or cost). If the potentially arising external benefit is in fact taken into account in the willingness to pay of the relevant party, the externality is said to be internalised. An internalised externality is extinguished, that is, it does not exist; it no longer arises, or did not arise in the first place, except as a theoretical possibility.

13.2 CRA/Rohlfs modelling of the NES

263 As explained earlier, the CRA/Rohlfs model seeks the welfare-optimising prices of four services, (mobile subscription, mobile outbound calls, off-net calls and fixed-to-mobile calls) taking account of both R-B pricing and the existence of a mobile subscription network externality.

264 It does not take account of a potential fixed subscription network externality and assumes that any potential calling externalities are zero. The effect of assuming no fixed subscription externality and no calling externalities is to make the estimated welfare-maximising price of:

- fixed-to-mobile calls higher; and
- mobile subscription lower,

than they would otherwise be.

265 It is worth emphasising the different impacts of the R-B mark-up and the NES. The R-B mark-up increases the prices of the four services by varying amounts over and above the

13.3 Modelling assumptions

266 In the modelling by CRA, the existence of a mobile subscription network externality is mainly accounted for in the cross elasticity effects described earlier.

267 However, the modelling applies a raft of additional assumptions about:

- the ratio of the total value of mobile subscription to the private value placed on it by a mobile subscriber;
- the degree to which the externality is able to be internalised by mobile network operators; and
- the calling patterns of marginal subscribers compared to average subscribers.

We consider each of these in turn.

268 CRA stated that:

> *"… it is likely that on average both parties to a call receive the same benefit from the call so that the total social benefit generated by a call is twice that of the private benefit. Hence, when an additional subscriber joins a network and results in additional calls being made by, and to, existing subscribers the benefit to the existing subscribers in aggregate could be expected to be the same as the benefit to the new subscriber from joining."*

This reasoning would lead to the ratio of the total value of mobile subscription to the private value placed on it by a mobile subscriber being 2.

269 CRA adopted a ratio of 1.5 for the net externality factor, which Optus argued was conservative. It essentially assumed some internalisation of the externality by users, for example, parents paying for their children's subscriptions. While no empirical support is given, we do not see this estimate as being unrealistically high.

270 Internalisation of the externality by mobile network operators, the second additional assumption above, refers to their ability profitably to reduce the price of subscription because enough profitable additional customers are attracted to make up for the unprofitable customers that are attracted and/or because the unprofitable customers become profitable due to the network externality. Dr Rohlfs recognised this internalisation in his paper, *A Model of Prices and Costs of Mobile Network Operators* (May 22, 2002) in which he developed for Oftel a model of prices and costs of MNOs. Dr Rohlfs said:

> *"I believe that MNOs largely internalize externalities that accrue to mobile subscribers. They have great ability to use their multi-part pricing structures to do so. The mobile industry as a whole has an incentive to do so. And competitive pressures lead to substantial internalization of externalities."*

271 The model assumes greater internalisation of the benefits accruing to mobile subscribers (80%) than to fixed subscribers (40%). It also assumes that the internalisation is not targeted. Targeting is considered below.

272 While some parties, for example, the Commission, contended that in many cases network external effects associated with mobile subscription are likely to be internalised by both existing subscribers and MNOs, we consider that the degree of internalisation assumed in the CRA/Rohlfs model is not inappropriate.

273 The modelling was indirectly attacked, particularly by the Commission, through the argument that in a highly mature mobile market such as in Australia, the network externality was intuitively likely to be small. Although this may be true, the logic behind the externality would appear to hold regardless, since it applies to both:

- marginal subscribers who are just at the point of not valuing their subscription sufficiently to maintain it; and
- potential subscribers who value subscription not quite enough to pay for one.

274 Furthermore, the argument needs to be translated into a specific objection to some aspect of the modelling, for example, that some parameter is unrealistic in the light of market maturity. That was not done. It could simply be that in a less mature market the estimate of the network externality mark-up would be higher.

275 Similarly, the Commission argued that the marginal social benefits from the addition of each new subscriber are likely to be declining, because marginal subscribers will make and receive fewer calls on average than existing subscribers.

276 However, the modelling assumed that marginal subscribers make one-third of the calls of average subscribers – the third category of additional assumptions noted above. Optus regarded this as highly conservative. Again, we do not regard these objections as providing any additional basis for rejecting the modelling.

277 We do note, however, that our concerns regarding the reliability of the elasticity estimates, set out in the discussion of R-B pricing above, are repeated as concerns about the modelling of the NES.

278 The assumptions discussed so far relate to the cross-price elasticity of demand effects. An additional amount is factored into the estimate to account for a so-called option externality component of the mobile subscription network externality. This relates to the assumed value placed by existing mobile subscribers on the ability to call a new subscriber even if no call is actually made, for example, the ability to call in an emergency. The theoretical existence of this option externality did not appear to be disputed by any of the parties, but the modelling of it was disputed.

279 This dispute involves problems of achieving consistency between exceedingly arcane elements of the modelling. They appear to arise from differences between the elasticities used by Dr Rohlfs and those used by CRA in applying the Rohlfs model. The problems are sufficient to raise significant in-principle concerns about the reliability of the estimates. However, the amount said by the Commission to be involved – that is the amount by which it claims the mark-up is overestimated – is not of itself sufficient to cause us to put significant weight on claimed deficiencies in this aspect of the modelling.

280 As mentioned above, Dr Rohlfs assumed no targeting of subsidies to marginal mobile subscribers. It would appear that targeting could substantially reduce the amount required to be raised through a mark-up on termination. Optus submitted that it could not target marginal subscribers to a significant extent. We have difficulty in accepting that claim having regard

to the range of products, mobile services and pricing plans offered by Optus and its competitors.

13.4 Ignoring other possible externalities

281 The CRA/Rohlfs model makes no allowance for a fixed subscription network externality, analogous to the mobile subscription network externality, due to existing fixed line subscribers getting a benefit when an additional subscriber joins the fixed network that is not included in the additional subscriber's private valuation of subscription.

282 Dr Rohlfs believes that:

> *"… the primary goal in taking account of network externalities should be to ensure that potential external benefits to fixed subscribers are not lost through the absence of appropriate corrective pricing".*

283 While the CRA/Rohlfs model does provide for the existence of calling externalities, it assumes they are fully internalised, that is, extinguished. Because a call generally involves only two parties, any benefit accruing to the called party could be internalised by, for example, the parties each agreeing to call the other half the time, the use of toll-free numbers, and businesses recovering call costs from customers in prices charged for goods and services.

284 Nevertheless, the Commission argued that, to the extent that call externalities are not internalised, there is a case for subsidising termination rather than marking it up above cost. It cited WIK-Consult as claiming that call externalities are not efficiently internalised. Dr Rohlfs did examine the impact of a small calling externality (that is, allow for a small proportion of the externality not to be internalised) as a variant in his UK modelling and found that this significantly reduced the welfare optimising termination charge. He considered, however, that call externalities are largely internalised. CRA, applying the Rohlfs model with its choice of elasticities, found that the impact of allowing for a small calling externality was very small. However, this result depends on acceptance of the other modelling parameters, including the elasticities.

285 The Commission also argued that the NES would be likely to reduce the number of fixed-to-mobile calls due to their price being increased. This would reduce the demand for fixed lines. If there is a fixed subscription network externality, this would reduce welfare.

286 CRA addressed this concern by saying that:

> *"… the empirical evidence is that fixed subscription is extremely inelastic even with respect to fixed subscription charges and would be expected to be even more inelastic with respect to the price of one particular type of call",*

and also that:

> *"… the case for a subscription subsidy is stronger in light of empirical findings that mobile subscription is substantially more price elastic than fixed subscription …"*

CRA stated that externalities between the fixed and mobile networks do not balance out.

287 Other parties argued that this ignores an increasing trend to substitute mobile services for fixed line services including customers becoming more willing to give up fixed line subscriptions in favour of having only a mobile subscription.

288 Much of the argument was somewhat speculative and to the extent that hard evidence was presented, it was far from conclusive in either direction. It is hard to see how the degree of internalisation of externalities could be estimated with great empirical accuracy, so it is not surprising that reliance is placed on reasoning about likely behaviour.

289 We have come to the view that if externalities are to be considered in pricing services, they need to be surveyed with some degree of thoroughness. It is not sufficient to include some externalities in the analysis and ignore others purely on an *a priori* basis that they matter less. This is especially the case where the possibility of countervailing effects is being ignored, and where major changes in the telephony market are likely to be altering demand patterns and levels of substitution between services.

290 That said, in any consideration of the effects of price changes on markets beyond the most immediate one where the price is charged, a line must be drawn. Not everything can be taken into account. We regard the Rohlfs model as helpful in making explicit what were seen as relevant market interactions in the UK in 2002. It does so in a fair and balanced manner. However, weighty doubts have been raised as to whether the CRA implementation of the model capably deals with the Australian market in 2005. To some extent this is inevitable in changing market conditions.

13.5 Conclusions regarding the NES component

291 We are not satisfied that the NES component of Optus' costs which it is seeking to recover from the price for access to its DGTAS is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. The consequence is that we are not satisfied that Optus' overall price is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. We do not rule out the possibility that taking account of externalities may be a valid part of coming to a reasonable price. However, we do not have confidence that the particular approach adopted in the CRA/Rohlfs modelling leads to a well-based outcome, and in particular an outcome which is reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB.

14. INTERNATIONAL BENCHMARKING

292 Optus requested CRA to undertake an international benchmarking analysis for the purpose of supporting the reasonableness of its DGTAS price. CRA took into account and made adjustments for differences for cost factors between Australia and the benchmark countries, namely the United Kingdom, Sweden and Malaysia. The result was that CRA came up with a range of benchmarks for MTAS based on LRIC with an EPMU for FCCs of a range from 9.99 cpm to 20.07 cpm. These figures did not make any allowance for, or take into account, any externalities. The CRA range of prices may be contrasted with the research undertaken by the Commission which led it to conclude in its mobile services review in June 2004 that:

> *"… no country has produced a reliable cost estimate above the equivalent of 12 cpm, and that cost estimates as low as 5 cpm have been made."*

This conclusion was based, in part, upon a report received from Analysys in June 2004.

293 There were a number of criticisms made of the CRA report and its relevance for present purposes. In its report CRA had made a number of adjustments for those factors that were significantly different between Australia and the selected countries such as the exchange rate, cost of capital, geographic terrain and network coverage. However, a number of other additional factors relevant to cost differences between the countries were not taken into account by CRA. These included spectrum allocations, network purchasing power, vertical/horizontal integration, network usage and scale, population density, land and labour costs, the use of different technology, retail prices, scope of services offered and the quality of services offered. The Commission submitted that the effect of CRA making only selective

adjustments to its international cost benchmarks resulted in a distorted and unreliable analysis.

294 It was also submitted, in particular by Telstra, that CRA's analysis was only partial in its scope as it did not consider cost estimates from a number of jurisdictions where bottom up cost models had been developed. It was submitted that a consideration of those jurisdictions yielded a range of cost estimates significantly below those adopted in CRA's report.

295 CRA's international benchmarking report was considered by Marsden Jacob Associates. They concluded that there were other countries which should have been included in the analysis, such as Israel, South Korea and the United States. They undertook a simple benchmarking approach by calculating standard per minute charges in a common currency and came up with a comparison whereby only a few estimates exceeded 12 cpm. Their benchmarking approach did not take into account any of the adjustments made by CRA or the other adjustments which Telstra and the Commission said should be taken into account. Nevertheless, this demonstrates that a benchmarking analysis of other countries tells us little about the reasonableness of prices charged in the Australian regulatory environment.

296 We do not consider that the international benchmarking analysis proffered by Optus is of any assistance to us in determining the issue as to the reasonableness of Optus' price. The range of prices derived by CRA is so broad as to be of little assistance. Further, the nature of the adjustments made by CRA and the adjustments to which it gave no consideration, render the figures derived an inadequate comparator for Australian conditions.

297 In any event, the nature of the international benchmarking exercise was such that it teaches very little, or nothing at all, as to whether Optus' price terms are reasonable having regard to the matters set out in s 152AH and the objectives in s 152AB. In order to place any reliance upon the international benchmarking analysis it would be necessary to know much more about the regulatory environment within which they were determined, the state of the relevant markets and the socio-economic environment in which the mobile services were operative.

15. NON-PRICE TERMS AND CONDITIONS

298 A number of the parties, principally Telstra and the Commission, submitted that a number of the non-price terms and conditions contained in Optus' undertaking were not reasonable

16. CONCLUSION

299 As noted earlier, we have reached the conclusion that we are not satisfied, having regard to the matters set out in s 152AH and the objectives in s 152AB that it is reasonable for Optus:

- to adopt and use in the manner it has R-B pricing principles to determine the FCC component, or
- to determine in the manner it has the NES component,

to be added to its FL-LRIC to determine its DGTAS price.

300 It follows that we are not satisfied, having regard to the matters set out in s 152AH and the objectives in s 152AB of the Act that:

- the FCCs mark-up of [Y cpm];
- the NES mark-up of 2.12 cpm,

on Optus' FL-LRIC is reasonable.

301 The FCCs mark-up is a substantial component of the costs that Optus seeks to recover from the price for its DGTAS. The consequence is that we are not satisfied having regard to the matters set out in s 152AH and the objectives in s 152AB that Optus' DGTAS price of 17 cpm for 2007 is reasonable. We are similarly not satisfied that its DGTAS prices for 2005 and 2006 are reasonable.

302 As we are not satisfied that it is appropriate for a mark-up over FL-LRIC to recover Optus' FCCs by reference to R-B principles, we do not consider that it is in the legitimate business interests of Optus or in the interests of access seekers that Optus set a price term for access

without knowing the extent to which such price recovers no more than Optus' costs however incurred or whether it recovers amounts in excess of those costs. We reach a similar conclusion having regard to the economically efficient operation of the DGTAS.

303 It follows that, overall, we are not satisfied that Optus is entitled to recover a mark-up for its FCCs by reference to R-B pricing principles in the manner it has propounded or that it is appropriate for it to recover an NES by reference to the methodology which it has used.

304 This result has led us to the conclusion that we are not satisfied that Optus' price term of 17 cpm for 2007 does no more than cover its long-run incremental costs of supplying its DGTAS and an appropriate mark-up for its FCCs and an NES. That leads us to the conclusion that we are not satisfied that Optus' price term of 17 cpm for 2007 for the supply of its DGTAS is in the long-term interests of end-users having regard to the matters set out in s 152AH and the objectives specified in s 152AB of the Act.

305 In these circumstances it is unnecessary to reach a conclusion whether the FL-LRIC of the DGTAS are reasonable.

306 The result is that the decision of the Commission rejecting Optus' access undertaking will be affirmed.

I certify that the preceding three hundred and six (306) 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: 22 November 2006

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 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 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 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:	21-25, 28-31 August 2006
Date of Judgment:	22 November 2006

ANNEXURE A

GLOSSARY AND ABBREVIATIONS

ARFF	Aviation Rescue and Firefighting Services
cpm	cents per minute
CRA	Charles River Associates (Asia Pacific) Pty Ltd
DGTAS	Domestic GSM (global system for mobiles) terminating access service
EPMU	Equi-proportionate mark-up
FCCs	Fixed and common costs
FL-LRIC	Forward-looking long-run incremental costs
FL-LRIC++	Forward-looking long-run incremental costs plus a mark-up for FCCs allocated according to Ramsey-Boiteux principles and a mark-up for a contribution to a Network Externality Surcharge
GSM	Global system for mobiles
IT	Information Technology
MNO	Mobile Network Operator
MTAS	Mobile terminating access service
NES	Network Externality Surcharge
Ofcom	Office of Communications, the United Kingdom telecommunications regulator
Oftel	The United Kingdom telecommunications regulator, later known as Ofcom
POI	Point of interconnection.
Ramsey-Boiteux	See R-B
R-B	Principles described in par [35] applied by CRA to determine the FCCs and NES mark-ups on Optus' FL-LRIC
the Act	the *Trade Practices Act* 1974 (Cth)
the Commission	the Australian Competition and Consumer Commission
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.
WACC	Weighted Average Cost of Capital