Australian
Competition &
Consumer
Commission

Optus's undertaking with respect to the supply of its Domestic GSM Terminating Access Service (DGTAS)

Final Decision

Public version

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Contents

Abbreviations

AAPT	AAPT Limited
ACIF	Australian Communications Industry Forum
ACMA	Australian Communications and Media Authority
Act	*Trade Practices Act 1974*
Analysys	Analysys Consulting Ltd
A-Party	The user from whom a call is initiated
B-Party	The end-user to whom a telephone call is made
CCC	The Competitive Carriers Coalition
CDMA	Code Division Multiple Access
Commission	Australian Competition and Consumer Commission
cpm	Cents per minute
CRA	Charles River Associates Pty Ltd
CSP	Carriage Service Provider
DCITA	Department of Communication, Information Technology and the Arts
DGTAS	Digital GSM Terminating Access Service
EBIT	Earnings before interest and taxation
EBITDA	Earnings before interest, taxation, depreciation and amortisation
EPMU	Equi-Proportionate Mark-Up
FL-LRIC	Forward-looking long-run incremental cost
FL-LRIC++	Forward-looking long run incremental cost plus two mark-ups; one to account for the recovery of common costs based on Ramsey-Boiteux principles, and the other to reflect a 'network externality surcharge'
FTF	Fixed-to-fixed
FTM	Fixed-to-mobile
GQ-AAS	Gibson-Quai AAS Consulting Pty Ltd
GBV	Gross Book Value
GSM	Global System for Mobiles
GRC	Gross Replacement Cost
LRIC	Long run incremental cost

LRMC	Long run marginal cost
LTIE	Long term interests of end users
MJA	Marsden Jacob Associates Pty Ltd
MPV	Marginal private valuation
MSV	Marginal social valuation
MTAS	Mobile Terminating Access Service
MTF	Mobile-to-fixed
MTM	Mobile-to-mobile
NERA	NERA Economic Consulting (formerly National Economic Research Associates)
NES	Network externality surcharge
OFCOM	(formerly OFTEL) UK Office of Communications
Optus	Optus Mobile Pty Limited and Optus Networks Pty Limited
POI	Point of interconnection
PSTN	Public Switched Telephone Network
RAF	Regulatory Accounting Framework
RGF	Rohlfs-Griffin factor
R-B	Ramsey-Boiteux
ROCE	Return on Capital Employed
SAOs	Standard Access Obligations
SIO	Services in operation
Telstra	Telstra Corporation Limited
TSLRIC	Total service long-run incremental cost
TSLRIC+	Total service long-run incremental cost plus a mark-up to account for a proportion of organisational-level common costs based on an EPMU approach
UKCC	United Kingdom Competition Commission
Undertaking	Optus's undertaking with respect to its DGTAS lodged with the Commission on 23 December 2004.
Vodafone	Vodafone Australia Pty Ltd
WACC	Weighted average cost of capital
WIK	WIK Consult

EXECUTIVE SUMMARY

Relevant background

On 30 June 2004, the Australian Competition and Consumer Commission (the Commission) declared the mobile terminating access service (MTAS) under section 152AL of the *Trade Practices Act 1974* (the Act). The MTAS declaration covers the termination of voice calls on all types of mobile networks (including third generation – or 3G – mobile networks).

On the same date, as required under section 152AQA of the Act, the Commission made a pricing principles determination for the service (the MTAS Pricing Principles Determination). This 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. In this regard, the Commission indicated that cost should be estimated in accordance with the 'total service long-run incremental cost' (TSLRIC) cost concept, augmented by a mark-up (or '+') to enable a contribution towards the recovery of organisational-level common costs (estimated according to the so-called 'equi-proportionate mark-up' or EPMU' rule).[1] This was termed a 'TSLRIC+' approach.

In addition, the Commission specified price-related terms and conditions (shown in Table 1 below) which suggest that the price of the MTAS should trend towards a 'target' price of 12 cents per minute (cpm) over the period 1 July 2004 to 1 January 2007.

Table 1: Price related terms and conditions in the MTAS Pricing Principles Determination

Time period	Price related terms and conditions (cpm)
I 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

The 12 cpm 'target price' was set having regard to the best information available to the Commission at the time with respect to the TSLRIC+ of this service. This included cost information sourced from regulatory accounting data supplied by Optus and Telstra under the Regulatory Accounting Framework (RAF) and international cost benchmarking information. On the basis of this information, the Commission determined that the TSLRIC+ of supplying the MTAS in Australia was likely to fall in the range of 5 − 12 cpm. As a conservative approach, the Commission selected the upper bound of this range (i.e. 12 cpm) for its MTAS Pricing Principles Determination.

Since the release of the MTAS Pricing Principles Determination, both Optus and Vodafone have lodged ordinary access undertakings with the Commission proposing

[1] The EPMU rule is a means of recovering fixed and common costs through the addition of a mark-up on top of incremental costs. The costs to be recovered are allocated across a range of services so that each service is allocated the same mark up as a percentage of its incremental cost.

supply of a subset of the declared MTAS. In addition, 16 MTAS arbitration disputes have been notified involving both Optus and Vodafone (although two have subsequently been withdrawn).

The Optus Undertaking

On 23 December 2004, Optus Mobile Pty Limited and Optus Networks Pty Limited (together 'Optus') lodged an ordinary access undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service (the Undertaking). The Undertaking only covers voice termination services on Optus's GSM network.[2]

The Undertaking contains the price terms and conditions, and some non-price terms and conditions, on which Optus proposes to supply its DGTAS for the period 1 January 2005 to 31 December 2007. The *non-price* terms and conditions set out the procedures and other obligations that will govern the relationship between an access seeker and Optus in relation to its supply of the DGTAS. The *price* terms and conditions contain two proposed pricing offers for the DGTAS, as shown below in Table 2.

Table 2: Optus's proposed price terms for its DGTAS

Year	Option 1 Pricing	Option 2 Pricing
2005	19.25 cpm	Monthly fixed charge per SIO + 14.25 cpm
2006	18.00 cpm	Monthly fixed charge per SIO + 13.00 cpm
2007	17.00 cpm	Monthly fixed charge per SIO + 12.00 cpm

Optus's 'target' prices are based on a different cost concept to the one advocated by the Commission in its MTAS Pricing Principles Determination (i.e. TSLRIC+). Specifically, the price terms are based on the 'forward-looking long-run incremental cost' (FL-LRIC) of Optus supplying its DGTAS, plus two mark-ups, one to reflect the recovery of 'fixed and common costs' (FCCs) based on Ramsey-Boiteux (R-B) principles;[3] and one for the inclusion of a network externality surcharge (NES).[4] This is referred to as a FL-LRIC++ approach.

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[2] It does not cover voice termination on Optus's emerging 3G Wideband Code Division Multiple Access (W-CDMA) network.

[3] 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. While this is usually called 'Ramsey pricing' it should more properly be called the 'Ramsey-Boiteux rule' when used with reference to utility pricing, given that Ramsey (in 1927) devised the rule for purposes of commodity taxation, while Boiteux set out a more generalised rule for utility pricing in 1956.

[4] 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 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

They key differences between this pricing principle and the TSLRIC+ concept contained in the Commission's MTAS Pricing Principle Determination relate to the '+' factors. That is, whilst the Commission believes that TSLRIC and FL-LRIC are broadly comparable 'attributable' cost concepts, Optus has proposed different forms of mark-up above incremental costs.

Basis for Optus's target prices

In support of its Undertaking, Optus provided two primary submissions, six reports prepared on its behalf by expert economic consultants and a further submission in response to the Commission's draft decision. Notwithstanding the breadth and analytical content of these submissions, the Undertaking 'target' prices appear to be based on the model prepared on its behalf by Charles River Associates Pty Ltd (the CRA model).

The CRA model

The CRA model estimates the FL-LRIC++ of Optus providing the DGTAS is 17.0 cpm in 2004-05.[5] As noted above, this estimate contains three distinct elements:

- the underlying FL-LRIC of Optus supplying its DGTAS (**c-i-c** cpm);
- a mark-up ('+') over FL-LRIC to reflect the recovery of Optus's 'fixed and common costs'(FCCs) based on R-B principles (**c-i-c** cpm); and
- a mark-up ('+') over FL-LRIC to include a NES. This was quantified at 2.12 cpm.

The CRA benchmarking analysis

In further promoting the reasonableness of this 'welfare-maximising' price, Optus presents the results of an 'international benchmarking analysis' also prepared on its behalf by CRA. Based on three cost estimates for the MTAS by regulators in Sweden, Malaysia and the UK, CRA determines that once appropriate adjustments are made for factors that are likely to generate cost differences between each country and Australia, a reasonable range for the cost of supplying the MTAS in Australia is 9.99 cpm to 20.07 cpm. Optus notes that its proposed 'welfare-maximising' estimate for the DGTAS (i.e. 17.0 cpm) falls within this range.[6]

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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.

5 The CRA model also estimates the welfare-maximising price for this service in 2005-06 (17.0 cpm), 2006-07 (16.9 cpm) and 2007-08 (**c-i-c** cpm). These prices are in nominal terms.

6 Notably, however, the cost concept modelled by CRA in its benchmarking analysis is broadly comparable with a TSLRIC+ concept (and not the FL-LRIC++ concept that underpins the 17.03 cpm price in the Undertaking).

Public inquiry process

Discussion paper

In February 2005, the Commission released a Discussion Paper in relation to the Undertaking. In response to the Discussion Paper, the Commission received 12 submissions from, or on behalf of, seven interested parties. A full list of submissions received in response to the Discussion Paper is outlined in Appendix 1 to this report.

Engagement of consultants

In order to assist it in its consideration of the Undertaking, the Commission engaged two consultants to prepare reports on various aspects of the Undertaking:

- Analysys Consulting Limited (Analysys) to consider the cost estimates included in the CRA model; and
- WIK-Consult (WIK) to consider conceptual and empirical issues associated with the R-B and NES mark-ups proposed in Optus's Undertaking price terms and conditions.

Public versions of both these reports are available on the Commission's website.

Draft decision on the Undertaking

On 8 November 2005, the Commission released its draft decision to **reject** the Optus Undertaking on the basis that the price terms and conditions were not 'reasonable' when assessed against the relevant statutory criteria in section 152AH of the Act. In response to the draft decision, the Commission received submissions from AAPT, Telstra, Virgin Mobile, Vodafone, the Competitive Carriers Coalition (CCC) and Optus.

Assessment of Optus's 17.0 cpm target price

After consideration of the Optus material, submissions from interested parties and the report prepared by Analysys, the Commission has reached a view that it has significant concerns with Optus's proposed Option 1 'target' price of 17.0 cpm for the DGTAS. Moreover, and as outlined in Chapter 9 of this report, given the Commission's view that Optus's proposed Option 2 'target price' will closely replicate the Option 1 price in practice, these concerns would also appear to apply to both pricing options.

Specifically, with respect to the three component parts of Optus's proposed price, the Commission has reached the following views.

*FL-LRIC of the DGTAS (***c-i-c** *cpm)*

Even before considering the model inputs used by CRA to generate this estimate, the Commission is of the view that the conceptual approach adopted by CRA to model this cost would, at the very best, tend towards generating an upper bound on the forward-looking efficient costs of supplying the MTAS in Australia.

Further, the Commission considers that even if CRA's conceptual modelling approach was accepted, on balance, the assumptions and inputs used by CRA to generate this estimate would tend to suggest that it overstates the efficient costs of Optus supplying the DGTAS.

In addition, the Commission has concerns about the magnitude of the FCCs identified in the CRA model, which are subsequently allocated according to R-B principles.

R-B mark-up (c-i-c cpm)

The Commission notes 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 of 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. Further, the Commission considers that Optus's proposed set of R-B prices fail a basic 'reality test'.[7] Overall, therefore, the Commission believes 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.

In addition, the Commission considers that there is no certainty that the use of an R-B approach for the recovery of common costs will generate a superior outcome to the use of an EPMU approach. On this point, the Commission notes that Analysys has advised the Commission that altering the CRA model to allocate Optus's FCC's on an EPMU basis and removing the NES, but leaving all other inputs as presented by Optus, generates an **c-i-c** cpm estimate for the DGTAS. The Commission believes that this approach, rather than the R-B approach advocated by Optus is the more reliable estimate (albeit an imperfect estimate, given the Commission's concerns with CRA's FL-LRIC estimate as noted above) of the 'welfare-maximising' price for the DGTAS.

NES mark-up (2.12 cpm)

Although the Commission is of the view that the concept of 'network externality effects' in relation to telecommunications markets has intuitive validity, the Commission has conceptual and empirical concerns with the framework proposed by Optus to measure the NES.

At a conceptual level, the Commission considers that the relative importance of 'network externalities' is likely to be low in a highly mature mobile market such as Australia. Further, the Commission believes that where these benefits do exist, individuals (and to some extent mobile network operators) have a number of methods other than subscription subsidies funded out of above-cost charges for the MTAS to ensure these external benefits are considered (or 'internalised') by individuals in their consumption decisions.[8]

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[7] The outputs of the CRA model suggest the price of mobile subscription should rise by approximately **c-i-c** per cent in 2004-05. This implies that overall mobile subscription penetration levels in Australia would fall from **c-i-c** per cent of the population to **c-i-c** per cent. This is based on an assumed population of **c-i-c** million.

[8] For instance, parents or employers may pay for their children or employees to have a mobile subscription. Further, mobile operators may be able to target late subscribers through specially designed (or 'targeted') retail packages. Such forms of internalisation would reduce the extent to

Further, the Commission considers that the Optus framework is 'partial' because it only considers one type of effect to justify a surcharge on the DGTAS, when there are potentially a myriad of complex and offsetting effects that might be present across the fixed-line and mobile platforms. For example, the potential for 'calling externalities' – which accrue when mobile subscribers receive (and benefit) from calls made to them, but do not have these benefits considered by others who would make and pay for the call – presents a *prima facie* case for subsidising (and certainly not imposing a surcharge on) the MTAS, in order to encourage higher, more socially-optimal, levels of calls to mobile subscribers.

Given this, the Commission believes it would not be appropriate to adjust the price of the DGTAS to correct for only one of these effects, as Optus proposes, as it could potentially lead to an inefficient and distorting pricing structure across all relevant services.

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.

CRA's International Benchmarking study

In support of its 'target' price of 17.0 cpm, and also its view that the Commission's indicative target price of 12.0 cpm is incorrect, Optus also engaged CRA to undertake a 'revised' benchmarking analysis of cost estimates of supplying the MTAS derived from international jurisdictions.

CRA's analysis involved identifying cost estimates from three 'comparator' countries (Sweden, Malaysia and the UK) and making adjustments for three factors which it considers drive material cost differences between these countries and Australia.[9] Based on its analysis, CRA estimates that the 'LRIC+EPMU' cost of providing the MTAS in Australia would fall in the range of 9.99 – 20.07 cpm.

As detailed in Chapter 8 of this report, the Commission has concerns with the 'partial' nature of CRA's analysis. Moreover, the Commission notes that Analysys has estimated that CRA's Australia-specified cost model can be used to generate a 'LRIC+EPMU' (closely analogous to TSLRIC+) cost which falls outside this range. Specifically, and as outlined above, the relevant TSLRIC+ estimate that can be implied from the CRA model inputs is **c-i-c** cpm, which is **c-i-c** lower than the lower bound (9.99 cpm) of the international benchmarking range proposed by Optus. In the

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which all mobile subscriptions need subsidisation, and therefore the necessity for substantial 'taxes' on MTAS prices.

[9] These are the 'exchange rate/purchasing power parity (PPP)', 'cost of capital' and 'geographic terrain/network coverage'.

Commission's view, this raises serious doubts about the credibility and relevance of the results of CRA's revised international benchmarking analysis.

Legislative test for an undertaking

Section 152BV(2) of the Act provides that the Commission must not accept the Undertaking unless it is satisfied of a number of matters. This includes that the Commission be satisfied that the Undertaking:

- is consistent with the standard access obligations (SAOs) set out in section 152AR of the Act;
- expires within three-years after the date on which it comes into operation; and
- contains terms and conditions which are 'reasonable'.

Each of these elements is considered briefly in turn below.

Is the Undertaking consistent with the SAOs?

The Commission believes that the Undertaking is consistent with the applicable SAOs under section 152AR of the Act.

In making this assessment, the Commission notes that the Undertaking contains a non-discrimination clause which essentially provides that Optus will treat the access seeker on a non-discriminatory basis. This will include, but not be limited to, taking all reasonable steps to ensure the technical and operational quality of the Optus DGTAS is supplied to the access seeker equivalent to that which Optus provides itself. Further, Optus will take all reasonable steps to ensure the access seeker receives, in relation to Optus, fault detection handling and rectification of a technical and operational quality and timing equivalent to that which Optus provides to itself.

These are the matters pertaining to service delivery obligations that are generally covered by the SAOs.

Does the Undertaking expire within three years after it comes into operation?

The Commission notes that the Undertaking takes legal effect immediately after the Undertaking is accepted by the Commission and continues until the earlier of 31 December 2007 (approximately two years duration) or termination, withdrawal or replacement of the Undertaking in accordance with the Act.

Are the terms and conditions in the Undertaking reasonable?

In determining whether particular terms and conditions are reasonable, under section 152AH of the Act, the Commission must have regard to:

- whether the terms and conditions promote the long-term interests of end-users (LTIE);
- Optus's legitimate business interests;
- the interests of persons who have rights to use the declared service;
- the direct costs of providing access to the declared service;
- the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or a facility; and

- the economically efficient operation of a carriage service, a telecommunications network or a facility**.**

The 'with and without test'

To assist in this assessment, the Commission will use, where appropriate, the 'with and without' test in relation to particular criteria.

In applying the 'with and without' test, the Commission will compare the following two situations:

1. the pricing options available under the Undertaking; and
2. the pricing outcomes the Commission believes are likely to otherwise occur – having regard to the procedures and protections for access seekers that arise under Part XIC of the Act.

In addition to the rights conferred under section 152AR of the Act, access seekers will be able to seek a binding resolution by the Commission to any disputes they may have with Optus regarding access to the MTAS on Optus's mobile telephony network(s). This is available under Division 8 of Part XIC of the Act, which gives the Commission power to arbitrate access disputes. Under Division 8, the Commission must make a final determination on any matter relating to access by the access seeker to the declared service, which binds both parties to the dispute.

In this regard, the Commission notes that it is currently arbitrating access disputes between Optus and a number of access seekers (Hutchison, PowerTel, AAPT and Telstra). Alternatively, other access seekers may continue to seek to determine terms and conditions of access via commercial negotiation without recourse to arbitration of an access dispute.

Importantly, in considering the 'without' scenario, the Commission does not simply form a view as to a specific price that it considers to be the 'reasonable' cost of providing the MTAS and then compare that price with the proposed access price. The Commission does, however, have in mind what it considers to be an efficient approximate cost range of providing the MTAS, and the likely outcomes in the event the Undertaking is rejected, which is relevant when applying the 'with and without test' in respect of particular section 152AH criteria. Nevertheless, this is not determinative of the matter. The 'reasonableness' assessment encompasses a much broader range of considerations that are detailed in chapters 10 and 11 of this report.

Moreover, the Commission notes that the 'with and without' test lends itself to some, but not all, of the relevant criteria in section 152AH(1) of the Act. Accordingly, in applying the 'with and without' test, the Commission has applied the test only to those criteria which facilitate the Commission's analysis toward the Commission ultimately determining the overall reasonableness of the Undertaking terms and conditions.

Assessment of the price terms and conditions

Without pre-judging the outcomes of these arbitrations, based on the analysis contained in Chapters 5 – 9 of this report, the Commission believes it is reasonable to assume that if the Commission were to make a final determination in an arbitration in the absence of accepting the Undertaking, it would likely set lower prices than those contained in the Undertaking on the basis of the information before it at this point in time. This is for two key reasons.

First, the Commission has concerns with some of the methodological and conceptual decisions made by Optus is determining its FL-LRIC++ principle. As a result of these concerns, the Commission believes that it would be more appropriate to set a target price for the MTAS on the basis of a TSLRIC+ methodology rather than the FL-LRIC++ methodology proposed by Optus.

Second, even if the Commission were persuaded that it would be more appropriate to set a price for the MTAS on the basis of a FL-LRIC++ methodology, the Commission believes that Optus has not estimated a price according to its own principle in an appropriate fashion. In particular, the Commission believes that the CRA model developed on Optus's behalf has been configured and populated with input parameters that are likely to overstate what would be an efficient FL-LRIC for the DGTAS, and also what would be appropriate mark-ups for R-B principles and a NES.

Accordingly, irrespective of whether it would be appropriate to specify the price of the DGTAS according to a TSLRIC+ or FL-LRIC++ pricing methodology, the Commission believes it likely that a price for this service would otherwise emerge that would be substantially lower than that specified in the Undertaking, if it rejected the Undertaking and continued to be asked to determine prices for this service in an access dispute.

In light of this, the Commission thinks it is also unlikely that other access seekers that have not currently notified the Commission of an access dispute in relation to the supply of the MTAS by Optus would settle for price terms and conditions consistent with those in the Undertaking in commercial negotiations.

Based on the analysis in Chapter 10 of this report, the Commission believes that the price terms and conditions contained in the Undertaking are not reasonable when assessed against the statutory criteria in section 152AH of the Act. Specifically, the Commission considers that:

- acceptance of the Undertaking would, as compared to the situation likely to occur if it were rejected, be less likely to promote the LTIE, as it is less likely to promote competition in the market within which FTM services are provided, and the market within which retail mobile services are provided, and is likely to lead to less efficient use of, and investment in, the infrastructure used to provide fixed services, the DGTAS on Optus's GSM network (and the MTAS generally) and retail mobile services;
- the prices proposed in the Undertaking are more than what is necessary to protect the legitimate business interests of Optus and its investment in facilities used to supply the DGTAS. Moreover, the Commission believes that Optus's legitimate business interests would not be compromised (and may in fact continue to be more than protected) if the Undertaking were rejected;
- acceptance of the Undertaking would, as compared to the situation likely to occur if it were rejected, be less likely to promote the interests of persons who have a right to use the DGTAS;
- the proposed prices set out in the Undertaking are above what is necessary to recover the direct costs Optus faces in providing access to the MTAS in the relevant period; and

- acceptance of the Undertaking would, as compared to the situation likely to occur if it were rejected, be less likely to promote the economically efficient operation of a carriage service/telecommunications network/facility.

Overall, therefore, the Commission is of the view that the price terms and conditions in the Undertaking are not reasonable. Full details of the Commission's assessment against these criteria can be found in Chapter 10 of this report.

Assessment of the non-price terms and conditions

The Commission notes that the Undertaking does not attempt to deal with the full range of non-price terms and conditions of access, and that there are a number of documents which will govern the access relationship, but for which the terms are not yet developed or need to be negotiated with the access seeker. Despite this, as Optus has correctly observed, it is entitled under the statutory regime to submit an undertaking that does not stipulate all the terms and conditions of access. Further, the Commission is required to assess whether the terms and conditions specified in the Undertaking are reasonable.[10]

To that end however, the Commission has serious doubts that some of the non-price terms and conditions specified in the Undertaking are reasonable.

Generally speaking, these non-price terms relate to terms which give rise to situations that the Commission believes go beyond what is necessary to protect Optus's legitimate business interests and do not take reasonable account of the rights of access seekers to use the declared service.

One particular clause relates to the ability of Optus to suspend the service if the access seeker breaches the Services Agreement. A difficulty for the Commission is that the terms of the Services Agreement are unknown at this stage, as this will be developed by Optus after the Undertaking comes into operation. More importantly, however, the service may be suspended regardless of the materiality of the breach.

Also, the Commission is concerned by a particular term dealing with the commencement of the Undertaking which purportedly gives the Undertaking retrospective operation. The Commission believes that such a clause goes beyond the power and scope of the Act, and that, as a result, this clause is unlikely to be reasonable.

Therefore, overall, having had regard to the reasonableness criteria in section 152AH of the Act, the Commission has significant doubt about the reasonableness of some of the non-price terms and conditions in the Undertaking. Further, the Commission has noted concerns with other aspects of the non-price terms and conditions for which it believes there is some scope for improvement.

Conclusion as to reasonableness of the Undertaking

Under section 152BV(2)(d) of the Act, the Commission cannot accept an undertaking unless it is satisfied that the terms and conditions specified in the Undertaking are reasonable.

For the reasons outlined above, the Commission is not satisfied that the terms and conditions contained in the Undertaking are reasonable.

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[10] Section 152BV(2)(d) of the Act.

Conclusion

Pursuant to section 152BV(2)(d) of the Act, the Commission **is not** satisfied that the terms and conditions specified in the Undertaking are reasonable for the reasons summarised above. Accordingly, the Commission is of the view that the Undertaking fails one of the tests that the Commission must apply in order to accept an Undertaking. For this reason, the Commission's final decision is to reject the Undertaking.

1. Introduction

On 23 December 2004, Optus Mobile Pty Limited and Optus Networks Pty Limited (together 'Optus') lodged an ordinary access undertaking (the Undertaking)[11] pursuant to section 152BS of the *Trade Practices Act 1974* (the Act) with the Australian Competition and Consumer Commission (the Commission). The Undertaking specifies the *price* and *non-price* terms and conditions on which Optus proposes to supply access to its digital GSM terminating access service (the 'DGTAS') in accordance with the applicable standard access obligations (SAOs) in Part XIC of the Act.

The DGTAS is a subset of the Mobile Terminating Access Service (the MTAS), which was declared by the Commission on 30 June 2004.[12]

Optus's proposed price terms and conditions (shown in Table 1.1 below) are based on two alternative pricing options which both cover a three-year period.

Table 1.1: Optus's proposed price terms for its DGTAS

Year	Option 1 Pricing	Option 2 Pricing
2005	19.25 cpm	Monthly fixed charge per SIO + 14.25 cpm
2006	18.00 cpm	Monthly fixed charge per SIO + 13.00 cpm
2007	17.00 cpm	Monthly fixed charge per SIO + 12.00 cpm

Note: cpm refers to 'cents per minute' and SIO refer to 'service in operation'

Notably, the proposed 'target' prices in both options differ from the Commission's indicative prices for the MTAS which are based on a 'target' price of 12 cpm.

In this regard, Optus's 'target' prices are based the 'forward-looking long-run incremental cost' (FL-LRIC) of Optus supplying its DGTAS, plus two mark-ups; one to reflect the recovery of 'fixed and common costs' (FCCs) based on Ramsey-Boiteux (R-B) principles; and one for the inclusion of a network externality surcharge (NES). This is referred to as a FL-LRIC++ approach.

Under the Act, the Commission's task is to either 'accept or reject' the Undertaking based on an assessment against the relevant statutory criteria. The Commission has a six-month statutory timeframe to make its decision.

On 25 February 2005, the Commission issued a Discussion Paper seeking the views of interested parties on the Undertaking and the supporting submissions. In response, the Commission received submissions from seven interested parties. Some of these submissions contained multiple (and detailed) attachments. A list of the submissions (and attachments) received is at Appendix 1.

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[11] Optus Mobile Pty Ltd and Optus Networks Pty Ltd, *Ordinary Access Undertaking to the Australian Competition and Consumer Commission Under Division 5 of Part XIC of the Trade Practices Act 1974 (Cth)*, 23 December 2004.

[12] The declared MTAS covers voice termination on all digital mobile networks (including third generation or '3G' networks), while Optus's proposed Undertaking only relates to voice termination on its GSM network.

On 8 November 2005, the Commission issued its draft decision to reject the Undertaking. In response, the Commission received a submission from Optus as well as five other interested parties. These are also listed at Appendix 1.

This report details the Commission's final decision to reject the Undertaking submitted by Optus and the reasons for the Commission reaching this decision.

1.1. Structure of this report

This Final Report is structured as follows:

- **Chapter 2** provides background on the declaration and the dispute resolution framework set out in the Act. It also contains a summary of the Commission's MTAS Final Report and the MTAS Pricing Principles Determination;
- **Chapter 3** sets out the relevant legislative framework that the Commission is required to work within when assessing an undertaking;
- **Chapter 4** summarises the price and non-price terms and conditions contained in the Undertaking and the supporting material provided by Optus;
- **Chapter 5** discusses the cost estimates provided by Optus in support of its Undertaking;
- **Chapter 6** discusses the R-B mark-up included in Optus's proposed price terms;
- **Chapter 7** discusses the NES included in Optus's proposed price terms;
- **Chapter 8** discusses the international benchmarking analysis provided by Optus in support of its Undertaking;
- **Chapter 9** discusses Optus's proposed 'Option 2' prices which are based on a 'two-part' pricing structure;
- **Chapter 10** assesses the reasonableness of the *price* terms and conditions contained in the Undertaking against the relevant statutory criteria;
- **Chapter 11** assesses the reasonableness of the *non-price* terms and conditions contained in the Undertaking against the relevant statutory criteria;
- **Chapter 12** includes the Commission's overall views on the reasonableness of the terms and conditions
- **Chapter 13** assesses the consistency of the terms and conditions in the Undertaking with the applicable SAOs;
- **Chapter 14** contains the Commission's decision on the Undertaking;
- **Appendix 1** lists the submissions received during this inquiry;
- **Appendix 2** lists the documents the Commission examined in the course of making the decision;
- **Appendix 3** provides background on R-B principles;
- **Appendix 4** provides background on externality concepts; and
- **Appendix 5** discusses the 'waterbed effect'.

2. Background

2.1. Declaration and the dispute resolution framework

Part XIC of the Act establishes a regime for governing access to certain declared carriage services in the telecommunications industry. Once a service is declared by the Commission, carriers and carriage service providers (CSPs) who supply the declared service to themselves, or others, are subject to the applicable standard access obligations (SAOs). These obligations, which are set out in section 152AR of the Act (and are discussed in section 3.2.2 of this report) constrain the manner in which those carriers and CSPs can conduct themselves in relation to supply of the declared service.

The terms and conditions upon which a carrier or CSP is to comply with these obligations are as agreed between the parties. In the event that they cannot agree, one of them can notify the Commission of an access dispute under section 152CM of the Act. Once notified, the Commission can arbitrate and make a determination to resolve the dispute. The Commission's determination need not, however, be limited to the matters specified in the dispute notification. It can deal with any matter relating to access by the service provider to the declared service.[13] The Act enables a carrier or CSP to meet its access obligations and resolve potentially contentious issues outside of the arbitral process. It can do this by providing the Commission with an access undertaking setting out the terms and conditions on which it proposes to comply with the applicable SAOs.

If accepted by the Commission, the undertaking becomes binding on the carrier or CSP. If a carrier or CSP breaches an undertaking, the Federal Court can make an order requiring compliance with the undertaking, the payment of compensation, or any other order that it thinks fit.[14] In accepting an undertaking, however, the Commission limits its ability to arbitrate access disputes. This is because once an undertaking is in operation, the Commission cannot make an arbitral determination that is inconsistent with the undertaking.[15]

2.2. The declared service (MTAS)

On 30 June 2004, the Commission decided to allow the existing GSM and CDMA terminating access service declaration to expire, and replaced it with a new declaration under section 152AL of the Act. The new declaration provided an amended description of the mobile terminating access service (or 'MTAS') by adopting a technology neutral approach that included voice services terminating on all digital mobile telephony networks (i.e. GSM, CDMA and third-generation or '3G' networks).

The MTAS is 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. When a mobile call is made between consumers (or end-users), it will involve two essential elements – 'origination' and 'termination'. Origination refers to the carriage of a call from the end-user who makes, or originates, the call over the

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13 Section 152CP(2) of the Act.
14 Section 152CD of the Act.
15 See section 152CQ(5) of the Act.

network to which this end-user is connected. Termination refers to the carriage of the call to the person receiving the call over the network on which the person receiving the call is connected. Where the person making the call and the person receiving the call are on different networks, a point of interconnection (POI) between these two networks will exist. The main network elements of providing the MTAS are illustrated in Figure 2.1 below.

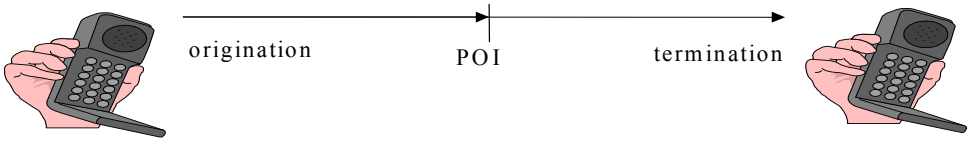

Figure 2.1 – Termination, origination and the POI

Under current commercial arrangements between network owners, the network owner that originates a call to a mobile network will, generally, purchase the MTAS from the network owner that completes the call. The originating network owner will recover these costs, and the costs it incurs from originating the call, through the retail price it charges its directly connected end-user for providing the call. This commercial arrangement is typically referred to as the 'calling party pays' (CPP) model.

An example of how the MTAS is used in the provision of a fixed-to-mobile (FTM) call is depicted in Figure 2.2 below. In this example, Telstra purchases access to Optus's MTAS in order to provide a call from a Telstra fixed-line end-user to an Optus mobile end-user. Telstra would then bill its directly-connected consumer for providing a FTM call service.

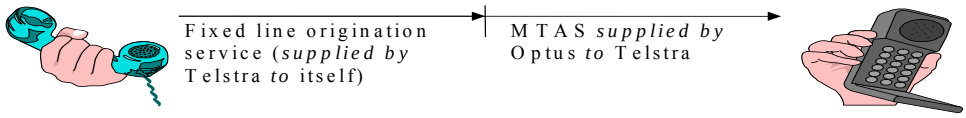

Figure 2.2 - Use of the MTAS to supply a fixed-to-mobile call

The MTAS is therefore an essential input into the provision of calls to mobile phone users where the mobile phone user is on a different network to the individual who originates the call. This is the case irrespective of whether the call terminates on a second generation (2G) GSM or CDMA network, a 2.5G or 3G mobile network.[16]

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[16] 2G protocols use digital encoding and include GSM and CDMA. 2G networks support high bit rate voice and limited data communications. They are capable of offering auxiliary services such as data, fax and the short messaging service (SMS). 2.5G protocols extend 2G systems to provide additional features, such as packet-switched connection and enhanced data rates. 3G protocols

2.3. The MTAS Pricing Principles Determination

On 30 June 2004, as required under section 152AQA of the Act, the Commission also released pricing principles for the MTAS (the MTAS Pricing Principles Determination). The MTAS Pricing Principles Determination stipulates 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. In this context, the Commission determined that its preferred pricing principle was the 'total service long-run incremental cost' (TSLRIC) of supplying this service plus a mark-up ('+') for the recovery of organisational-level costs based on the equi-proportionate mark-up (EPMU) approach. This was termed a 'TSLRIC+' approach.

Based on the available information at that time, the Commission determined that the TSLRIC+ of supplying the MTAS in Australia was likely to fall in the range of 5−12 cpm. As a conservative approach, the Commission selected the upper bound of this range (i.e. 12 cpm) for its MTAS Pricing Principles Determination. Moreover, with the legitimate business interests of access providers of the MTAS in mind, the Commission determined a three-year adjustment path to this target price of 12 cpm. The Commission's indicative price related terms and conditions for the MTAS are included in Table 2.1 below.

Table 2.1: Price related terms and conditions in the MTAS Pricing Principles Determination

Time period	Price related terms and conditions (cpm)
I 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

The Commission noted at the time of its release, that the MTAS Pricing Principles Determination (and the related price-related terms and conditions) was not binding in the event of consideration by the Commission of an access undertaking or arbitration of an access dispute. Rather, the Commission indicated that were it required to make an arbitral determination, or consider an undertaking provided to it in relation to the MTAS, a party may argue against the application of the pricing principles and the indicative price-related terms and conditions. In these circumstances, the Commission has indicated that it will have regard to the particular circumstances and the information provided to it at that point in time.

support much higher data rates, measured in megabits per second, intended for applications such as full-motion video, video conferencing and full Internet access.

3. Legislation relevant to an access undertaking[17]

This chapter sets out the form and content that an undertaking should take before it is assessed by the Commission, the criteria the Commission is required to apply in assessing an undertaking and the relevant procedural matters that apply to the Commission's assessment of an undertaking.

3.1. Form and content of an undertaking

Section 152BS of the Act provides that an ordinary access undertaking is a written undertaking given by the relevant carrier or CSP to the Commission under which the carrier or CSP undertakes to comply with the terms and conditions specified in the undertaking in relation to the applicable SAOs. Importantly, however, an undertaking need not specify all the terms and conditions on which the carrier or CSP proposes to supply the declared service.[18] An undertaking may take one of the following forms:

- the terms and conditions specified in the undertaking; or
- the terms and conditions are specified by adopting a set of model terms and conditions set out in the telecommunications access code, as may be in force from time to time.[19]

An access undertaking must not adopt a combination of these methods.

The Commission notes that the Undertaking submitted by Optus falls within the first category of undertaking.

3.2. Criteria for assessing an undertaking

Section 152BV(2) of the Act sets out the matters of which the Commission must be satisfied before it can accept an undertaking. This section applies where an access undertaking is given to the Commission that *does not* adopt a set of model terms and conditions set out in the telecommunications access code. As noted above, the Undertaking falls within this category of undertaking.

In this regard, section 152BV(2) of the Act specifies that:

> (2) The Commission must not accept the undertaking unless:
>
> (a) the Commission has:
>
> (i) published the undertaking and invited people to make submissions to the Commission on the undertaking; and
>
> (ii) considered any submissions that were received within the time limit specified by the Commission when it published the undertaking; and
>
> (b) the Commission is satisfied that the undertaking is consistent with the standard access obligations that are applicable to the carrier or provider; and

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17 There are 2 types of undertaking available under Part XIC – a 'special access undertaking' under section 152CBA and an 'ordinary access undertaking' under section 152BV. Optus submitted an 'ordinary access undertaking'. The use of the words 'access undertaking' or 'undertaking' in this decision refers to an 'ordinary access undertaking' under section 152BV of the Act.

18 See note to section 152BS and section 152AY(2)(b)(ii) of the Act.

19 Section 152BS(3) and (4) of the Act.

(c) if the undertaking deals with a price or a method of ascertaining a price – the Commission is satisfied that the undertaking is consistent with any Ministerial pricing determination; and

(d) the Commission is satisfied that the terms and conditions specified in the undertaking are reasonable; and

(e) the expiry time of the undertaking occurs within 3 years after the date on which the undertaking comes into operation.

The approach of the Commission to assessing each of these matters is considered in turn below.

3.2.1. Public process

Section 152BV(2)(a)(i) and (ii) of the Act require the Commission to publish the undertaking, invite submissions on it and consider any submissions that were received in response to it.

On 24 January 2005, the Commission published the proposed Undertaking and 'public versions' of Optus's supporting submissions on its website.[20]

On 25 February 2005, the Commission released a Discussion Paper in relation to the Undertaking and sought interested parties' views on the Undertaking and the supporting submissions. In response, the Commission has received submissions from seven interested parties. Many of these submissions contained multiple appendices. A list of the submissions received is at Appendix 1 to this report.

On 8 November 2005, the Commission released its draft decision to reject the Undertaking. In response, the Commission received submissions from six interested parties (including Optus). The Commission has considered these submissions in reaching its final view.

3.2.2. Consistency with the standard access obligations (SAOs)

Section 152BV(2)(b) of the Act provides that the Commission must not accept an undertaking unless the Commission is satisfied that the undertaking is consistent with the SAOs that are applicable to the carrier or provider. The SAOs are set out in section 152AR of the Act. In summary, if requested by a service provider, an access provider is required to:

- supply an active declared service to the service provider in order that the service provider can provide carriage and/or content services;
- take all reasonable steps to ensure that the technical and operational quality of the service supplied to the service provider is equivalent to that which the access provider is supplying to itself;
- take all reasonable steps to ensure that the service provider receives, in relation to the active declared service supplied to the service provider, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself;

[20] The Commission did not receive public versions of the six Optus supporting submissions until 21 January 2005.

- permit interconnection of its facilities with the facilities of the service provider for the purpose of enabling the service provider to be supplied with active declared services in order that the service provider can provide carriage and/or content services;
- take all reasonable steps to ensure that the technical operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself;
- if a standard is in force under section 384 of the *Telecommunications Act 1997*, take all reasonable steps to ensure that the interconnection complies with the standard;
- take all reasonable steps to ensure that the service provider receives interconnection fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself;
- provide particular billing information to the service provider; and
- supply additional services in circumstances where a declared service is supplied by means of conditional-access customer equipment.

The assessment of whether the Undertaking is consistent with the applicable SAOs is considered in Chapter 13 of this report.

3.2.3. Consistency with Ministerial Pricing Determination

Division 6 of Part XIC of the Act provides that the Minister may make a written determination setting out the principles dealing with price-related terms and conditions relating to the SAOs.[21] Section 152BV(2)(c) of the Act provides that the Commission must not accept an undertaking dealing with price or a method of ascertaining price unless the undertaking is consistent with any Ministerial Pricing Determination.

To date, a Ministerial Pricing Determination has not been made in relation to the MTAS. Accordingly, the Commission is not required to assess the Undertaking under this criterion

3.2.4. Whether the terms and conditions are reasonable

Section 152BV(2)(d) of the Act provides that the Commission must not accept an undertaking unless it is satisfied that the terms and conditions are reasonable. In determining 'reasonableness' in this context, the Commission must have regard to the range of matters set out in section 152AH(1) of the Act:

- whether the terms and conditions promote the long-term interests of end-users (LTIE) of carriage services or of services supplied by means of carriage services;
- the legitimate business interests of Optus, and its investment in facilities used to supply the declared service;
- the interests of all persons who have rights to use the declared service;

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[21] Section 152CH of the Act. 'Price-related terms and conditions' means terms and conditions relating to price or a method of ascertaining price.

- the direct costs of providing access to the declared service;
- the operational and technical requirements necessary for the safe and reliable operation of a carriage service, a telecommunications network or facility; and
- the economically efficient operation of a carriage service, a telecommunications network or a facility.

In addition, the Commission may consider any other relevant matter.[22]

The reasonableness of the *price* and *non-price* terms and conditions in the Undertaking is considered in Chapters 10 and 11 respectively. Set out below is a summary of the key phrases and words used in the above matters. It should be noted that only some of the criteria have been judicially considered, and in other contexts. Accordingly, in taking these matters into account, it is necessary for the Commission to form its own view as to their meaning.

Long-term interests of end-users (LTIE)

The Commission has published a guideline explaining what it understands by the phrase 'long-term interests of end-users' in the context of its declaration responsibilities.[23] The Commission considers that a similar interpretation would seem to be appropriate in the context of assessing an access undertaking.

In the Commission's view, particular terms and conditions promote the interests of end-users if they are likely to contribute towards the provision of goods and services at lower prices, higher quality, or towards the provision of greater diversity of goods and services.[24] To consider the likely impact of particular terms and conditions, the Act requires the Commission to have regard to whether the terms and conditions are likely to result in:

- promoting competition in markets for carriage services and services supplied by means of carriage services;
- achieving any-to-any connectivity; and
- encouraging the economically efficient use of, and economically efficient investment in
    - the infrastructure by which listed carriage services are supplied; and
    - any other infrastructure by which listed services are, or are likely to become, capable of being supplied.[25]

In the Commission's view, the phrase 'economically efficient use of, and economically efficient investment in ... infrastructure' refers to the concept of economic efficiency. This concept consists of three components:

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22 Section 152AH of the Act does not use the expression 'any other relevant matter'. Rather, section 152AH(2) of the Act states that the matters listed in section 152AH(1) of the Act do not limit the matters to which the Commission may have regard. Thus, the Commission interprets this to mean that it may consider any other relevant matter.

23 Australian Competition and Consumer Commission, *Telecommunications services — Declaration Provisions: A Guide to the Declaration Provisions of Part XIC of the Trade Practices Act*, July 1999.

24 *Ibid*, pp. 32-33.

25 Section 152AB(2) of the Act.

- *Productive efficiency* – This is achieved where individual firms produce the goods and services that they offer at least cost;
- *Allocative efficiency* – This is achieved where the prices of resources reflect their underlying costs so that resources are then allocated to their highest valued uses (i.e. those that provided the greatest benefit relative to costs); and
- *Dynamic efficiency* – This reflects the need for industries to make timely changes to technology and products in response to changes in consumer tastes and in productive opportunities.

The Australian Competition Tribunal, in its decision on access to subscription television services, noted in relation to the terms that make up the LTIE that:

> Having regard to the legislation, as well as the guidance provided by the Explanatory Memorandum, it is necessary to take the following matters into account when applying the touchstone – the long-term interests of end-users:
>
> End-users: "end-users include actual and potential (users of the service)
>
> Interests: the interests of end-users lie in obtaining lower prices (than would otherwise be the case), increased quality of service and increased diversity and scope of product offerings. This would include access to innovations … in a quicker timeframe than would otherwise be the case
>
> Long-term: the long-term will be the period over which the full effects of the … decision will be felt. This means some years, being sufficient time for all players (being existing and potential competitors …) to adjust to the outcome, make investment decisions and implement growth – as well as entry and/or exit – strategies. [26]

Legitimate business interests

The Commission is of the view that the concept of legitimate business interests should be interpreted in a manner consistent with the phrase 'legitimate commercial interests' used elsewhere in Part XIC of the Act. Accordingly, it would cover the carrier/ CSP's interest in earning a normal commercial return on its investment. This does not, however, extend to receiving compensation for loss of any 'above-normal' economic profits that occurs as a result of increased competition. In this regard, the Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 states:

> ... 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.[27]

When considering the legitimate business interests of the carrier or CSP in question, the Commission may consider what is necessary to maintain those interests. This can provide a basis for assessing whether particular terms and conditions in the undertaking are necessary (or sufficient) to maintain those interests.

Interests of persons who have rights to use the declared service

Persons who have rights to use a declared service will, in general, use that service as an input to supply carriage services, or a service supplied by means of carriage

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[26] Application by C7 Pty Limited & Seven Network Limited re: Foxtel and Telstra reasons for decision f 23 December 2004 at paragraph 120

[27] Explanatory Memorandum for the *Trade Practices Amendment (Telecommunications) Bill 1996*, p. 44.

services, to end-users. In the Commission's view, these persons have an interest in being able to compete for the custom of end-users on the basis of their relative merits. Terms and conditions that favour one or more service providers over others and thereby distort the competitive process may prevent this from occurring and consequently harm those interests.

While section 152AH(1)(c) of the Act directs the Commission's attention to those persons who already have rights to use the declared service in question, the Commission can also consider the interests of persons who may wish to use that service. Where appropriate, the interests of these persons may be considered to be 'any other relevant consideration'.

Direct costs

The Commission's Access Pricing Principles note that 'direct costs' are those costs necessarily incurred (caused by) the provision of access. As stated in the Explanatory Memorandum:

> … '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.[28]

This requires that the access price should not be inflated to recover any profits the access provider (or any other party) may lose in a dependent market as a result of the provision of access. In particular, the Efficient Component Pricing Rule (ECPR) may be inconsistent with this criterion.

At a minimum, an access price should cover the direct incremental costs incurred in providing access and should not exceed the 'stand-alone costs of providing the service', where this is defined to mean:

> … costs an access provider will incur in producing a service assuming the access provider produced no other services.[29]

Economically efficient operation of, and investment in, a carriage service

In the Commission's view, the phrase 'economically efficient operation' embodies the concept of economic efficiency set out above. It would not appear to be limited to the operation of carriage services, networks and facilities by the carrier or CSP supplying the declared service, but would seem to include those operated by others (e.g. service providers using the declared service).

To consider this matter in the context of assessing an undertaking, the Commission may consider whether particular terms and conditions enable a carriage service, telecommunications network or facility to be operated in an efficient manner. This may involve, for example, examining whether they allow for the carrier or CSP supplying the declared service to recover the efficient costs of operating and maintaining the infrastructure used to supply the declared service under consideration.

In general, there is likely to be considerable overlap between the matters that the Commission takes into account in considering the LTIE and its consideration of this matter.[30]

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[28] Explanatory Memorandum for the Trade *Practices Amendment (Telecommunications) Bill 1996*, p. 44.

[29] ACCC, *Access Pricing Principles – Telecommunications: A Guide*, July 1997, p. 10.

3.2.5. Expiry date and Term

Section 152BS(7) of the Act provides that an undertaking must specify the expiry time of the undertaking. Further, section 152BV(2)(e) provides that the expiry time of the undertaking must be within three years after the date on which the undertaking comes into operation.

The Commission notes that the Undertaking submitted by Optus proposes that the terms and conditions would take effect from when the Commission makes a decision to accept it, and would continue to the earlier of:

- 31 December 2007; or
- termination, withdrawal or replacement of this Undertaking in accordance with the Act.

The Commission notes, therefore, that the Undertaking satisfies this criterion.

3.3. Procedural matters

3.3.1. Confidentiality

The Commission recognises that the public consultation and its own decision-making process in relation to the Undertaking should be as transparent as practicable. That said, the Commission is aware of the need to protect certain elements of a provider's information where disclosure of such information may harm that provider's legitimate commercial interests.

The Commission notes, however, that unless it can corroborate commercial-in-confidence information in some way, it is constrained in the weight that it can give to the information. Accordingly, in order to balance the possible harm to a provider from the disclosure of sensitive information and the harm that interested parties may suffer if they are unable to comment on matters affecting their interests, the Commission considers that a more limited form of disclosure of the commercially sensitive information may be appropriate through the use of confidentiality undertakings.

This would allow the confidential information to be disclosed for the purposes of making submissions in this process, but at the same time preserve the confidentiality of the information. On this basis, interested parties should have an opportunity to access confidential information through the use of confidentiality undertakings.

In certain limited circumstances, in order to allow for confidential information to be independently corroborated, the Commission may supply the information to interested parties so as to allow its scrutiny. Conversely, there may be occasions where the Commission may decide that the disclosure of confidential information is not required.

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[30] Relevantly, and as noted above, in considering whether particular terms and conditions will promote the LTIE, the Commission must have regard to their likely impact on the economically efficient use of, and the economically efficient investment in, the infrastructure by which listed carriage services are supplied and any other infrastructure by which listed services are, or are likely to become capable of being supplied.

3.3.2. Statutory decision making period

The Commission has a six-month statutory time frame in which to make a decision to either accept or reject an access undertaking. If the Commission does not make a decision within this six-month statutory timeframe, section 152BU(5) of the Act stipulates that:

> … the Commission is taken to have made, at the end of that 6-month period, a decision under subsection (2) to accept the undertaking.

For the purpose of calculating the six-month time frame, certain periods of time are disregarded. Specifically, section 152BU(6) of the Act states that in calculating the six-month timeframe, the Commission should disregard:

> (a) if the Commission has published the undertaking under paragraph 152BV(2)(a) – a day in the period:
>
> (i) beginning on the date of publication; and
>
> (ii) ending at the end of the time limit specified by the Commission when it published the undertaking; and
>
> (b) if the Commission has requested further information under section 152BT of the Act in relation to the undertaking – a day during any part of which the request, or any part of the request, remains unfulfilled.[31]

Notwithstanding the six-month time limit, and those days which are to be disregarded as outlined above, the Commission notes that section 152BU(7) of the Act states that:

> The Commission may, by written notice given to the carrier or provider, extend or further extend the 6-month period referred to in subsection (5), so long as:
>
> (a) the extension or further extension is for a period of not more than 3 months; and
>
> (b) the notice includes a statement explaining why the Commission has been unable to make a decision on the undertaking within that 6-month period or that 6-month period as previously extended, as the case may be.

The decision-making period in relation to the Undertaking submitted by Optus is discussed below.

Calculating the decision-making period for the Undertaking

Information request under section 152BT of the Act

The Commission received the Undertaking from Optus on 23 December 2004. Since that date, the Commission has made the following requests for further information under section 152BT of the Act:

- on 28 January 2005, the Commission requested (among other things) the underlying workings relating to the model prepared on Optus's behalf by CRA. Optus provided a response to this information request on 28 February 2005;[32]

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[31] In relation to information requests about the undertaking, section 152BT(2) of the Act states that 'the Commission may request the carrier or provider to give the Commission further information about the undertaking; while section 152BU(3) states that 'the Commission may refuse to consider the undertaking until the carrier or provider gives the Commission the information'.

[32] The Commission notes, however, that Optus elected not to respond to one element of this information request which related to the disaggregation of data that Optus supplied to the Commission under the Regulatory Accounting Framework (the RAF) for 2002-03.

- on 27 July 2005, the Commission requested clarification on numerous unexplained data inputs and assumptions contained in a report prepared on its behalf by Charles River Associates Pty Ltd (CRA) and the accompanying economic model (the CRA model). Optus responded to this information request on 8 August 2005;
- on 19 August 2005, the Commission requested clarification on four areas relating to the Undertaking and supporting submissions: the non-price terms, the SAOs, the two statements from Professor Hausman (second received on 8 August 2005), and the CRA international benchmarking analysis. Optus responded to this information request on 20 September 2005; and
- on 25 August 2005, the Commission sought clarification on a number of further issues in relation to the CRA model. These questions were, primarily, follow-up questions in light of Optus's response of 8 August 2005 and its provision of a revised (or corrected) CRA model on this same date.[33] Optus responded to this information request on 26 September 2005.

In the Commission's view, the Undertaking 'clock' was stopped during the periods outlined above.

Public consultation process

On 25 February 2005, the Commission released a Discussion Paper and called for submissions on the Undertaking. In this Discussion Paper, the Commission indicated that the period of time for interested parties to make submissions was to be no later than six weeks from the date upon which Optus made certain relevant information reasonably available for industry assessment.

The reason for stipulating the public consultation period in this manner was because significant portions of Optus's supporting submissions were claimed to be 'commercial-in-confidence'. Therefore, this information was only available to interested parties subject to the provision of confidentiality undertakings.

To ensure that interested parties were given a reasonable opportunity to comment on the Undertaking, the Commission set a closing date for the public consultations six weeks from the time the confidential submissions were made reasonably available to interested parties. In this regard, the Commission determined that Optus's commercial-in-confidence information had been made reasonably available on 13 April 2005. It therefore set a closing date for submissions of 25 May 2005. A note to this effect was placed on the Commission's website.

In the Commission's view, the Undertaking 'clock' was stopped during the period 25 February 2005 to 13 April 2005 outlined above.[34]

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33 These questions were formulated in consultation with Analysys.

34 In a letter to the Commission, dated 4 April 2005, Optus indicated that it disagreed with the Commission's view that the Undertaking 'clock' was stopped for the period 25 February 2005 to 13 April 2005 due to the public consultation process. Rather, in Optus's view, it had arrangements in place to enable interested parties to receive access to its confidential information from 25 February 2005. Optus also argued that the 'clock-restarted' on 4 March 2005, rather than on 13 April 2005 as suggested by the Commission. In a reply letter to Optus, dated 13 April 2005, the Commission noted that although Optus claims that it had a proposed confidentiality undertaking that it was willing to offer interested parties from 25 February 2005 onwards, no party actually received Optus's confidential information until 5 April 2005. The Commission also indicated that

Extension of the decision-making period

As noted above, under the Act the Commission may extend the decision-making period for the assessment of an ordinary access undertaking under section 152BU(7) of the Act by written notice to the applicant for so long as the extension or further extension is for a period of not greater than three months and the notice includes a statement explaining why an extension was sought.

On 1 September 2005, the Commission notified Optus that it had extended the decision-making period by three-months. The reasons provided for seeking this extension were as outlined below.

i) This was the first time that the Commission had had to consider an access undertaking in respect of the declared MTAS. In this regard, the Commission is considering two undertakings which relate to a subset of the MTAS, simultaneously (submitted by Optus and Vodafone). The Optus Undertaking had been a difficult matter to assess, particularly given the volume and complexity of the supporting material provided by Optus, which include a technical and detailed cost model developed for Optus by CRA. This was the first time an access provider of this service had provided the Commission with an Australia-specified model which estimates the cost of providing the MTAS for assessment. The Commission has devoted considerable time and resources to evaluating the CRA model, given that it appears to form the basis for the proposed price terms in the Undertaking. To assist it in this regard, the Commission engaged two expert economic consultants.

ii) The original CRA model provided by Optus did not function, which exacerbated the time and attention needed to consider the reasonableness of the price terms in the Undertaking. After initiating an information request under section 152BT of the Act, the Commission received a revised version of the CRA model from Optus on 8 August 2005. In the interests of procedural fairness, the Commission considered that interested parties needed to have an opportunity to comment on the corrected version of the CRA model. The Commission understands that Optus provided interested parties with the corrected version of the CRA model, soon after 8 August 2005.

iii) Optus, on its own initiative, made two further submissions in support of its Undertaking; Professor Hausman's response to the paper submitted by Professor Gans on behalf of AAPT (received by the Commission on 8 August 2005) and a further submission responding to various views put forward by interested parties in submissions to the Undertaking (received on 16 August 2005). On 19 August 2005, the Commission wrote to Optus and, among other things, indicated its concern about the provision of submissions from Optus late into the decision-making period. The Commission also flagged to Optus that this did not assist the timeliness of

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it believes that the offer of a proposed confidentiality undertaking does not, of itself, mean that confidential information has been made 'reasonably' available.

its decision-making process with respect to the Undertaking. The consideration of these additional submissions required further time and resources which compromised the Commission's ability to complete its decision within the six-month timeframe.

iv) Correspondence between Optus and the Commission indicated that there was disagreement between the parties as to when the initial six-month statutory decision-making period was due to expire. This was largely because of a difference in view about when the Commission's public consultation process should have been deemed to have closed. Under section 152BU(5) of the Act, the consequences of the Commission not making a decision before the end of the six-month period is that the Commission is taken to have made a decision under section 152BU(2) of the Act to accept the Undertaking. Given the difference in views between the Commission and Optus, the Commission believed that it should extend the decision-making period so as to remove the possibility of a decision being made by default.

Pursuant to the requirements of section 152BU(8) of the Act, notice of the extension and the reasons for it, was placed on the Commission's website in early September 2005.

Revised undertaking assessment period

Since the lodgement of the Commission's draft decision, the Commission has received confirmation from Optus that it agrees the 'clock' will expire on or around 13 February 2006

Use and disclosure of confidential information in this report

In relation to this report, the Commission has relied upon commercially sensitive information supplied by Optus and interested parties in arriving at its draft view. The Commission has assessed this sensitive information having regard to its policy on the treatment of information,[35] and where applicable, has determined that this information should not be reproduced in this report.

Accordingly, where information that is commercially sensitive has been relied upon in reaching a conclusion in this report, it has either been aggregated to a level such that it is no longer commercially sensitive or, where this is not possible, it has been masked with the designation **[c-i-c]**. Unless it is otherwise indicated, the information masked with **[c-i-c]** is information provided by Optus, or an interested party, over which it has made a confidentiality claim.

3.3.3. Documents examined by the Commission

Under section 152CGA of the Act, where the Commission:

- makes a decision under section 152BU(2) accepting or rejecting an access undertaking; and
- gives a person a written statement setting out the reasons for the decision

it must specify the documents that the Commission examined in the course of making the decision.

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[35] ACCC, *Collection and Use of Information*, 2000.

In its assessment of the Undertaking, the Commission has primarily relied upon the supporting submissions provided by Optus, and the further submissions provided by Optus in response to the Commission's requests for further information under section 152BT of the Act. The Commission has also relied upon the submissions provided by interested parties in response to the Discussion Paper and draft decision, as well as specialist consultancy reports prepared for the Commission by *Analysys Consulting Ltd* and *WIK Consult* in relation to the *price* terms and conditions contained in the Undertaking. Public versions of these reports are available on the Commission's website at www.accc.gov.au. Where relevant, other documents relied upon by the Commission are referenced in the body of this report.

As required under section 152CGA of the Act, a complete list of the documents that the Commission examined in the course of making its final decision is in Appendix 2 to this report.

4. Summary of the Optus Undertaking

The Undertaking is provided by Optus under Division 5 of Part XIC of the Act, as the access provider of the Optus DGTAS.[36] As noted in Chapter 1, the terms and conditions in the Undertaking are not intended to be comprehensive.[37] Those not covered in the Undertaking are to be negotiated and agreed between Optus and an access seeker or, failing agreement, determined in accordance with sections 152CP or 152CPA of the Act (i.e. by Commission arbitration determination). The Undertaking is designed to commence from the time the Commission accepts the Undertaking and will end on 31 December 2007 or anytime earlier upon termination, withdrawal or replacement by Optus in accordance with the Act.[38]

A summary description of the relevant service (the Optus DGTAS), the price and non-price terms and conditions and the supporting documentation follows.

4.1. Service description (DGTAS)

Optus offers to supply its 'DGTAS' as specified in Schedule 1 of the Undertaking. Schedule 1 describes this service as:

> … an access service for the carriage of voice calls from a Point of Interconnection, or potential Point of Interconnection, to a B-Party directly connected to the Optus GSM Network.[39]

Optus indicates that its DGTAS comprises, first, the carriage of the call from the POI to the Optus network, and, second, the termination of the call on the Optus network.

Optus indicates that an access seeker to this service would hand over carriage of the call from its network to the Optus GSM network at the POI nearest to the location of the calling number at the time of the call. Optus also notes that its proposed Undertaking relates to a service that is narrower in scope than the MTAS that is currently declared under Part XIC of the Act. Specifically, the Undertaking relates only to voice calls terminating on Optus's GSM network (DGTAS) whereas the declared MTAS covers voice termination on all digital mobile networks in Australia.

4.2. Price terms and conditions

Schedule 2 of the Undertaking specifies the prices at which Optus offers to supply the Optus DGTAS to access seekers. In this regard, Optus offers two pricing options, one of which an access seeker must elect when acquiring the service. The two options (Option 1 and Option 2) were shown in Table 1.1 on page 1 of this report.

The amount payable to Optus under Option 1 would be the 'per minute charge' for the DGTAS multiplied by the actual number of minutes Optus supplied to the access seeker in a particular billing period.[40]

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36 Essentially, Optus undertakes to supply the DGTAS specified in Schedule 1, at the price specified in Schedule 2, on the terms specified in Schedule 3 and in satisfaction of the applicable SAOs specified in Schedule 4.

37 Clause 3.2 provides that the Undertaking does not specify all the terms and conditions on which Optus will comply with the applicable SAOs.

38 Notably, the Undertaking will have no effect in respect of the supply of the DGTAS by Optus to an access seeker where there is an existing supply agreement at the time the Undertaking is accepted by the Commission, and for as long as that agreement remains on foot.

39 The Optus Undertaking, Schedule 1, Clause 1.1, p. 1.

The amount payable under Option 2 is more complex, and includes a 'fixed' and 'variable' component. The *fixed* component remains unchanged for a particular quarter, and is based upon a formula outlined in section 9.1 of this report. The *variable* component is calculated using the same method as the Option 1 charge, but at a lower per-minute rate. Further details of how Option 2 charges are calculated are considered in Chapter 9 of this report.

Optus submits that both pricing options satisfy the statutory criteria in Part XIC of the Act, and should therefore be accepted by the Commission because they are prices revealed within a competitive market for mobile services, and consistent with the efficient cost of providing the MTAS.[41]

4.3. Non-price terms and conditions

Schedule 3 to the Undertaking specifies the terms and conditions on which Optus proposes to supply access to the DGTAS. A notable aspect of the non-price terms and conditions in relation to the terms of supply are the non-discrimination provisions. Clause 3.1 provides that:

> 3.1 In supplying the Optus DGTAS, Optus will treat the Access Seeker on a non-discriminatory basis as required by the Applicable Standard Access Obligations, including but not limited to, if requested by the Access Seeker:
>
> (a) taking all reasonable steps to ensure that the technical and operational quality of the Optus DGTAS supplied to the Access Seeker is equivalent to that which Optus provides to itself; and
>
> (b) taking all reasonable steps to ensure that the Access Seeker receives, in relation to the Optus DGTAS supplied to the Access Seeker, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which Optus provides to itself.[42]

The Undertaking also specifies, *inter alia*, non-price terms and conditions in relation to 'interconnection standards and procedures', 'term, suspension and termination', 'consequences of termination, expiry or suspension', 'force majeure', 'billing and settlement', 'network management and maintenance', 'information exchange' and 'confidentiality'.[43] Dispute resolution procedures are not included in the Undertaking. These are to be agreed between the parties, or failing that, arbitrated by Commission determination.

4.4. Supporting material to Optus's undertaking

4.4.1. The Optus submissions

Optus has provided nine submissions (excluding submissions made pursuant to a section 152BT request for information) in support of its Undertaking. These are:

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40 A worked example of the fees payable under Option 1 is provided on pp. 4-5 of Schedule 2 to the Undertaking.

41 Optus submission, p. 5.

42 The Optus Undertaking, Schedule 3, Clause 3.1, p. 4.

43 Further detail on these non-price terms and conditions can be found at Schedule 3, pages 1-18, of the Undertaking.

- Optus primary submission to the ACCC on DGTAS Undertaking (the Optus submission)[44];
- Appendix 1 – *Statement of Professor Jerry Hausman*, 17 December 2004;
- Appendix II – Report of CRA *Pricing Mobile Termination in Australia*, 22 December 2004;
- Appendix III – Report of CRA *International Benchmarking of Mobile Termination Charges – An Update,* 20 December 2004;
- Appendix IV – Report of NERA *Existence and Exercise of Market Power in Mobile Termination,* April 2004;
- Appendix V – Report of NERA, *Mobile Services as Jointly Produced Products: Concepts and Empirics,* May 2004;
- Statement of Professor Hausman, *Reply to Professor Gans*, June 27 2005;
- Optus submission in response to interested party views, 16 August 2005 (the Optus submission, 16 August 2005);[45] and
- Optus submission in response to draft decision, 13 December 2005.[46]

4.4.2. The Statement of Professor Jerry Hausman

Appendix I of the Optus submission is the *Statement of Professor Jerry Hausman*.[47] It appears to contain two key contentions:

- that the Commission has not demonstrated that Optus has significant market power in FTM calls; and
- the type of regulation of the MTAS proposed in the Commission's MTAS Final Report will harm the LTIE.

In developing these contentions, the Hausman Statement considers a number of issues, and reaches a number of conclusions, including that:

- the constraining effect of mobile to mobile (MTM) calls on the price of FTM means that these should be considered to be in the same market (the 'mobile services' market);
- the Commission's claim that each MNO is a monopoly provider of the MTAS is not supported by market data;
- the mobiles services market in Australia is effectively competitive;
- the Commission has incorrectly valued the social value of additional mobile subscriptions and its policy would harm the LTIE; and
- there are better alternatives to the Commission's approach to regulation of the MTAS service, including requiring fixed/mobile carriers to inform the calling

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44 Optus, *Optus submission to the Australian Competition and Consumer Commission on Domestic GSM Terminating Access Service* (the Optus submission), December 2004.

45 Optus, *Optus submission to the Australian Competition and Consumer Commission on submissions on Optus' Domestic DGTAS undertaking*, 16 August 2005.

46 The Commission notes paragraph 7.4 of this submission was revised by Optus and provided to the Commission on 21 December 2005.

47 Professor Hausman, *Statement of Jerry Hausman*, 17 December 2004.

party the rate at which a call will be charged, and through a two-part tariff charge for the MTAS (as proposed in the Undertaking, Option 2 Pricing structure).

One section of significant relevance to the Undertaking appears to be that which conceptualises and estimates the social value of additional subscribers. Additional consumer surplus accruing to FTM callers from handset subsidies is estimated as between $153 million and $568 million per annum. Professor Hausman compares this with the gain in consumer surplus to calling parties from a lower FTM price (i.e. based on a price for the MTAS of 12 cpm as proposed in the Commission's MTAS Pricing Principles Determination). This is estimated at between $32 and $37 million per annum. Based on this analysis, Professor Hausman concludes that 'the ACCC proposal would make Australian consumers significantly worse off and thus is not in the LTIE'.[48]

4.4.3. The CRA model

Appendix II to the Optus submission is a report by CRA titled *Pricing Mobile Termination in Australia* (the CRA Report).[49] It is based on a model developed to estimate the 'welfare-maximising' level of MTAS charges in Australia (the CRA Model). The CRA model accomplishes two tasks.

As a first step, CRA developed a 'top-down' model to estimate 'the forward-looking long-run incremental cost' (FL-LRIC) of Optus supplying voice termination on its GSM mobile network – termed the 'DGTAS' by Optus (and elsewhere in this report). It also estimates the FL-LRIC of Optus supplying 'mobile subscription', mobile-to-mobile '(MTM) on-net call' and 'MTM off-net call' services.

A 'top-down' model is a model that is based on a company's actual accounting information – in this case, Optus's 2003-04 accounting information (i.e. costs, traffic volumes etc).[50] Optus supplied the relevant data to CRA based on its 'stand-alone' mobile costs. In effect, this meant that Optus sought to remove the impact of certain efficiencies it enjoys by owning and operating both a fixed-line and mobile network, by making an upward adjustment to particular cost categories – '**c-i-c**', '**c-i-c**' and '**c-i-c**' costs.[51]

The CRA model is 'forward-looking' in that it adjusts the historic value of Optus's network assets to reflect 'current costs' based on a price index. A forward-looking 'tilted annuity formula' was then applied to the adjusted asset values in order to generate an annualised (depreciation) cost for each asset.[52]

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48 Professor Hausman, p. 33.

49 Charles River Associates, *Pricing Mobile Termination in Australia* (the CRA Report), 22 December 2004.

50 This is in contrast to a 'bottom-up' model which would attempt to model the costs of an 'efficient hypothetical operator'.

51 This has also been termed removing the impact of any 'economies of scope' that Optus enjoys from owning both a fixed-line and mobile network.

52 Contrary to a 'straight-line accounting depreciation' method, a tilted annuity approach takes into account future price trends in the price of network assets. In practical terms, this means that if the price of network assets is assumed to decline over an asset's lifetime, a tilted annuity will result in relatively more depreciation being recognised at the beginning of an asset's lifetime compared to a straight-line approach.

The CRA model allocates Optus's 'stand-alone' mobile costs (both network and non-network costs) to three service categories: 'subscription service', 'subscriber acquisition' and 'traffic services'. The remaining costs are allocated as 'fixed and common costs' (FCCs). Costs allocated to 'traffic services' are subsequently allocated between 'inbound', 'on-net' and 'outbound' and 'mobile data' services' with the use of routing factors'.[53] Routing factors measure the extent to which each service uses particular network elements.[54]

As a second step, CRA translates this cost estimate into a 'welfare-maximising' charge for the MTAS in Australia. To do this, CRA applied a partial equilibrium economic model, known as the 'Rohlfs model'. The Rohlfs model was developed by Dr Jeffrey Rohlfs for the UK telecoms regulator, Oftel (now Ofcom).[55] The model was subsequently used by Ofcom to assess the 'welfare-maximising' level of MTAS charges in the UK. Importantly, the Rohlfs model actually consists of a number of models capable of determining efficient or profit maximising prices under a number of different constraints. These include:

- *a 'Ramsey model'*, which calculates the linear (one-part) prices that maximise welfare assuming that the firm is subject to a 'breakeven' constraint[56];
- *a 'targeting model'* which calculates prices based on the assumption that MNOs have an ability to distinguish between marginal and inframarginal subscribers through price discrimination;
- *an 'unregulated model'*, which calculates prices assuming that firms maximise profits and the welfare of mobile (but not fixed) users; and
- *a 'principal-agent model*, which calculates efficient prices taking account of the fact that a regulator is unlikely to set retail prices as well as wholesale MTAS charges.

Each model can be run using either linear or constant elasticity functional forms for demand.

In CRA's case, the Commission understands that it has selected the 'Ramsey' version of the Rohlfs model and has assumed 'linear demand curves' in its analysis.[57] It then uses this model to calculate 'welfare-maximising' prices for 'mobile subscription', MTM on-net call, MTM off-net call and fixed-to-mobile (FTM) call services.

The 'Ramsey' version of the Rohlfs model distributes FCCs to the FL-LRIC of each modelled service according to complex elasticity and price-based equations.

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53 This is with exception of 'mobile data' services. An assumption is made that **c-i-c** per cent of Mobile Switching Centre (MSC) costs should also be allocated to 'Data'. No 'fixed and common' costs are allocated to mobile data services. This issue is discussed further in section 5.2.1.

54 These 'routing factors' were provided to CRA by Optus and are discussed in section 5.2.1.

55 For a full explanation see the paper by J. Rohlfs, *A Model of Prices and Costs of Mobile Network Operators*, Report for Oftel, 22 May 2002.

56 This model was also enhanced by Rohlfs to calculate optimal non-linear prices (i.e. two and three-part pricing).

57 In the UK, Ofcom used the Rohlfs 'Ramsey' model to inform the value of the NES that it deemed should be included in the price that mobile operators were required to provide the MTAS. Importantly, however, Ofcom did not also advocate the inclusion of a R-B mark-up on incremental costs. Instead, it proposed that common costs should be recovered according to an EPMU approach. This accords with the Commission's MTAS Pricing Principles Determination. .

Specifically, it calculates two 'mark-ups' over the FL-LRIC of Optus supplying these mobile services to reflect:

- the recovery of Optus's FCCs based on Ramsey-Boiteux (R-B) principles; and
- the inclusion of a network externality surcharge (NES) on the DGTAS (i.e. on the FTM service listed above).

The resulting 'welfare-maximising' prices calculated by CRA in its 'base case'[58] model, are shown in Table 4.2 below.

Table 4.2: Results of the CRA Model

	2004-05	2005-06	2006-07	2007-08
Subscription ($ p.a.)	$**c-i-c**	$**c-i-c**	$**c-i-c**	$**c-i-c**
MTM on-net calls (cpm)	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
FTM calls (cpm)	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
Off-net MTM calls (cpm)	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
DGTAS (termination)	**17.0**	**16.6**	**16.1**	**c-i-c**
Nominal termination charge (cpm)	**17.0**	**17.0**	**16.9**	**c-i-c**

The welfare-maximising prices for the DGTAS were calculated by subtracting **c-i-c** cpm for the 'fixed retention rate' comprising costs of fixed-line retention, transmission and retail.[59]

The results of the CRA model appear to form the basis for the target prices in the Undertaking price terms and conditions (both Option 1 and Option 2). Therefore, a significant part of this report has been devoted to assessing the merits of the CRA model. In this regard:

- Chapter 5 assesses the empirical cost estimates used in the CRA model based on Optus's 2003-04 data, including the FL-LRIC estimate of Optus supplying its DGTAS and the magnitude of FCCs;
- Chapter 6 assesses the 'mark-up' over the FL-LRIC estimate of Optus supplying its DGTAS to reflect the recovery of FCCs on the basis of R-B principles; and
- Chapter 7 assesses the 'mark-up' over the FL-LRIC estimate of Optus supplying its DGTAS to reflect the inclusion of a NES.

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[58] The CRA 'base case' model assumes that marginal subscribers make and receive one-third of the average number of calls made and received by other mobile subscribers (m = 0.33). In another scenario, CRA changes this assumption such that marginal subscribers are assumed to make and receive one-half of the calls of the average number of calls made (m = 0.5). This results in the CRA model generating a higher 'welfare-maximising' price for the DGTAS.

[59] In a letter to the Commission dated 26 September 2005, Optus indicated that it reviewed its original estimate of the 'fixed retention rate' from **c-i-c** cpm to **c-i-c** cpm. It also notes that re-running the CRA model to account for this revision results in an increase in the 'welfare-maximising' price for the DGTAS.

4.4.4. The CRA international cost benchmarking study

Appendix III to the Optus submission is a report by CRA titled *International Benchmarking of Mobile Termination Charges – An Update*.[60] This is an update of a study finalised by CRA on 28 May 2004 (The May 2004 Report) which was provided as a supporting submission to Optus's (3 May 2004) submission to the Commission's March 2004 MTAS Draft Decision.

The purpose of the report would appear to be a response to the Commission's use of particular international cost benchmarking information for the purposes of determining the price related terms in the MTAS Pricing Principles Determination. It also appears, in part, a response to the report prepared on the Commission's behalf by Analysys - *Examination of Mobile Termination Costs: Final Report for ACCC* (30 June 2004) – during the Mobile Services Review.

The revised CRA international benchmarking report can be broadly divided into two main sections:

i. an international benchmarking analysis of three 'comparator' countries (Malaysia, Sweden and the UK) which purportedly makes adjustments for 'all' the cost factors identified in the MTAS Final Report which lead to costs differences between these countries and Australia; and

ii. a survey of the latest developments (since CRA's May 2004 report) in international jurisdictions in developing 'cost' estimates for the MTAS.

Each of these is discussed further below.

International benchmarking analysis

In selecting the three 'comparator' countries for its benchmark analysis, CRA has sought to address the Commission's preference that cost estimates be based, at least in part, on bottom-up modelling exercises.[61] CRA states that the final selection of Malaysia, Sweden and the UK was based on the public availability of detailed and accessible data for differences in cost drivers between these countries to 'yield meaningful and reliable benchmarks'.[62]

The CRA international benchmarking analysis is an extension of CRA's May 2004 report in that it claims to 'take into account all of the other cost factors' identified by

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60 Charles River Associates, *International Benchmarking of Mobile Termination Charges: An Update* (the CRA International Benchmarking Report), 20 December 2004.

61 This is based on the advice of Analysys, which recommended that the cost estimates for the MTAS in the UK, and in due course Sweden, were the most up to date for the determination of an applicable cost estimate for Australia. Further, Analysys also indicated that the Malaysian LRIC estimates were also relevant for consideration since they had been determined on an efficient cost structure.

62 CRA submits that it did not select estimates made in South Korea because of the unavailability of any detailed information about the estimate, or estimates made in Israel and Greece because the details of the LRIC modelling were not public. CRA also submits that it did not include estimates from other European countries (i.e. Austria, Belgium, Finland, France, Italy) because, among other things, there were no financial models in the public domain to validate the cost estimates for the MTAS in these countries Further, CRA did not use estimates from the US because they were based on a different spectrum band (i.e. 1900 MHz) and, as they related to 1999, were likely to be out of date.

the Commission in the MTAS Final Report.[63] That said, the CRA international benchmarking analysis appears to only make adjustments for 'exchange rates/PPP', 'cost of capital' and 'geographic terrain and network coverage'. An analysis of the adjustments which CRA has made, and its reasons for not adjusting for all of the factors identified by the Commission in its MTAS Final Report, is considered in Chapter 9 of this report. Based on the adjustments that it did make, CRA estimates that the LRIC level of supplying MTAS services in Australia falls in the range of 9.99 – 20.07 cpm, and therefore concludes that:

> … the ACCC's target price of 12 cpm – which lies towards the lower bound of our estimated range – carries a substantial risk that MTAS charges will be set well below the LRIC incurred by Australian mobile operators in supplying MTAS services with potential harm to efficiency and overall welfare.[64]

Survey of latest cost estimates

The updated CRA international benchmarking report also includes a survey of developments in several of the countries since its May 2004 report and the Commission's MTAS Final Report. This includes countries such as Austria, Belgium, Finland, France, Italy and the United States, as well as Greece and Israel. The results of this survey are considered in Chapter 9 of this report.

4.4.5. The NERA report on the existence and exercise of market power in mobile termination

Appendix IV to the Optus submission is a report prepared by NERA titled *Existence and Exercise of Market Power in Mobile Termination*.[65] This report was also originally submitted in response to the Commission's MTAS Draft Decision of March 2004 and is explicitly 'a critique of the Commission's Draft Decision on … the declaration'.[66] Moreover, this NERA report was originally submitted prior to the Commission's MTAS Final Report, and therefore does not respond to the Commission's discussion of the NERA report in the Final Report.

The Commission notes that this NERA report considers the issue of market power in termination in the light of 'mobile subscription benefits to the calling party'. In summary, NERA argues that high MTAS charges are a way of extracting the economic value of subscription from calling parties, and to the extent that this is not done to the full, 'current market prices charged for mobile subscriptions are inefficiently high'.[67] NERA notes that the existing MTAS pricing structure 'will also destroy some value – by artificially restricting the number of calls to mobile subscribers'. NERA then places the issue as one between 'whether the benefits … [from] correcting the distortion in the number of calls per subscriber exceed the costs in worsening the subscription distortion'.[68]

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63 In the MTAS Final Report, the Commission identified nine factors that may give rise to differences in the cost of supplying the MTAS between countries, including geographic terrain, population density, network usage and scale, land and labour costs, spectrum allocations, the extent to which MNO's are integrated fixed-mobile operators, network purchasing power, cost of capital and technology employed.

64 The CRA International Benchmarking Report, p. 8.

65 NERA, *Existence and Exercise of Market Power in Mobile Termination*, April 2004.

66 *Ibid.,* p. 1.

67 *Ibid.,* p. 16.

68 *Ibid.,,* p. 17.

4.4.6. The NERA report on mobile services as jointly produced products

Appendix V to the Optus submission is a report prepared by NERA titled *Mobile Services as Jointly Produced Products: Concepts and Empirics*.[69] This report was also originally submitted in response to the Commission's MTAS Draft Decision of March 2004.

In summary, this NERA report reviews the Commission's analysis of the costs and benefits of regulating the price of the MTAS. It begins by analysing the production of mobile subscription and the MTAS as joint products, and this analysis is used to establish that MNOs are unlikely to be able to extract the full valuation for termination to a marginal subscriber.

The main relevance of this report to the assessment of the Undertaking would appear to be in its theoretical and empirical analysis of the costs and benefits of regulating the MTAS, taking into account the 'direct benefit in increased FTM calls' and the 'social surplus per mobile subscriber'. Under NERA's approach, the reductions in the MTAS charge led to increases in subscription prices. In turn, this reduces the number of mobile subscribers. This results in a reduction in the amount of FTM calling[70] at any given price for FTM calls. NERA argues that while there is an efficiency gain from the reduction in the FTM price, this is outweighed by the loss in surplus from the reduction in the number of FTM calls at any given price for the service. In NERA's analysis, inclusion of call externalities, that favour lower MTAS charges in order to encourage FTM calls because they are valued by mobile subscribers, does not change the net welfare effect of reducing MTAS charges. NERA also incorporates the loss of surplus on MTM calls as a consequence of the loss in mobile subscription flowing from the reduction in the MTAS charge.

In its empirical analysis, NERA considers different possible values for the own-price elasticity of demand for FTM calling, the intercept of the FTM demand curve on the vertical axis, the responsiveness of FTM demand to the number of mobile subscribers, the own-price elasticity of demand for mobile subscription, etc. Under all these scenarios, a net welfare loss from reducing the MTAS charge is estimated. For example, under Optus's assumptions with respect to a number of these parameters, a 5 cpm reduction in the price of the MTAS would result in an efficiency cost (net loss in social surplus) of $1.275 billion per annum.

NERA also estimates the threshold level of the subscription elasticity that would be necessary to give a positive efficiency effect from the reduction in the price of the MTAS under a set of assumptions about the other values. This would require a subscription elasticity of –0.042. NERA concludes:

> This would appear to be below all credible estimates of the true elasticity of demand for subscriptions. As such, it would appear to imply that much more analysis is required by the ACCC before it satisfies the 'burden of proof' generally required to justify heavy handed regulation of prices.[71]

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[69] NERA, *Mobile Services as Jointly Produced Products: Concepts and Empirics*: A Report for Optus, May 2004.

[70] Diagrammatically, this reduction is represented by an inwards swivel of the demand curve for FTM calls.

[71] NERA, *Mobile Services as Jointly Produced Products: Concepts and Empirics*: A Report for Optus, p. 29.

5. Modelling Optus's cost of providing its DGTAS

As noted previously, the target prices in the Undertaking price terms and conditions are based on a model developed by CRA (the CRA model). In section 4.4.3, it was noted that the CRA model estimates the 'welfare-maximising' price for Optus supplying a range of mobile services, including the DGTAS which is shown (in both real and nominal terms) in Table 5.1 below.

Table 5.1: CRA's estimate of 'welfare-maximising' price for the DGTAS (cpm)

Estimate	2004-05	2005-06	2006-07	2007-08
Real terms	17.0	16.6	16.1	**c-i-c**
Nominal terms*	17.0	17.0	16.9	**c-i-c**

* Assuming inflation rate of 2.5 per cent per annum

The CRA model estimates that the 'welfare-maximising' price for the DGTAS in 2004-05 is 17.03 cpm. This estimate can be broken down into three components:

- **c-i-c** cpm – the forward-looking long-run incremental cost (FL-LRIC) of Optus supplying its DGTAS based on its 2003-04 data;
- **c-i-c** cpm – a mark-up to reflet the recovery of 'fixed and common costs' (FCCs) based on Ramsey-Boiteux (R-B) principles; and.
- 2.12 cpm – a mark-up to reflect the inclusion of a network externality surcharge (NES).[72]

This chapter focuses on the FL-LRIC estimate of **c-i-c** cpm for the DGTAS and the magnitude of the FCCs based on Optus's 2003-04 data. The actual allocation of FCCs is considered in Chapter 6, while the inclusion of a 'NES' is considered in Chapter 7.

Importantly, it should be noted that chapters 5, 6 and 7 do not represent the Commission's assessment of whether Optus's proposed price terms and conditions are 'reasonable' based on consideration of the criteria in 152AH of the Act. Rather, the aim of the assessments in these three chapters is to allow the Commission to consider the appropriateness of the methodology, assumptions and data inputs used by CRA to generate its 'welfare-maximising' estimates. This analysis ultimately assists (as opposed to determines) the Commission's assessment of the reasonableness of Optus's proposed price terms and conditions – which are considered as a whole (i.e. including all three components) – in Chapter 10 of this report.

This chapter is divided into two main sections. Section 5.1 considers the conceptual modelling approach adopted by CRA, while section 5.2 considers the actual model inputs used.

[72] The Commission notes that in an email dated 2 November 2005, Optus indicated that the breakdown of the 17.0 cpm estimate involves a number of assumptions which have not been provided in support of the Undertaking.

5.1. Conceptual approach of the CRA model

In seeking to estimate the FL-LRIC of Optus supplying its DGTAS and other mobile services, CRA was required to make a number of modelling decisions at a conceptual level. These included:

- whether to use a 'top-down' or 'bottom-up' modelling approach;
- what sized mobile operator to use for its benchmark to generate cost estimates (i.e. operator-specific or some sort of industry average), and how to treat economies of scope between a fixed-line and mobile business;
- whether to model the 'efficient' costs based on a 2G, 3G or combined 2G/3G mobile network;
- the definition of the increment to be modelled; and
- the identification of 'common costs' to be recovered in the model.

These issues are considered in turn.

5.1.1. The use of a 'top-down' FL-LRIC model

The CRA model is a 'top-down' model in that it is based on Optus's *actual* (historical) accounting information (i.e. costs, traffic volumes, etc.) for 2003-04. The main adjustment to Optus's historical 2003-04 accounting information is that Optus's GSM network assets have been revalued to reflect their 'current costs'. For this reason, Optus describes the CRA model as 'forward-looking'.

In its Undertaking submission, Optus submits that a top-down model based on its actual network configuration will lead to a reasonable but 'conservative' approximation of the efficient costs of service provision.[73] This is because, in its view, a substantial proportion of investment in the Australian mobile networks has been undertaken relatively recently, and furthermore, in a competitive market environment. Optus also submits that a top-down approach for modelling the costs of the MTAS has precedence in international regulatory processes, including in the UK and Sweden.

Moreover, in response to the Commission's draft decision, Optus submits that the conceptual assumptions that underlie the CRA model – including the decision to use a top-down FL-LRIC model – have been accepted by the Commission and its consultant, Analysys.[74]

On the subject of alternative 'bottom-up' models, CRA submits that these can be 'protracted exercises and prone to inaccuracy given the scope for the theoretical exercises to miss actual constraints on network design'.[75]

Submitters' views

Two submitters have questioned whether it is appropriate for the Commission to rely on a top-down model to estimate efficient MTAS costs. In this regard, the consultants engaged on behalf of Hutchison (Marsden Jacob Associates or 'MJA') and the Competitive Carriers Coalition (Professor Martin Cave and Charles Chambers) have

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73 Optus submission, p. 33.
74 Optus submission in response to draft decision, p. 8.
75 The CRA Report, p. 8.

argued that a 'bottom-up' LRIC model, and subsequent reconciliation with a top-down model, would provide for a more robust modelling approach.

Hutchison submits that CRA's decision to use a top-down approach is not reasonable because the cost estimates are based on Optus's older and less efficient GSM network. In this regard, Hutchison notes the view of its consultant, MJA, that:

> … the approach adopted by Optus will tend to err on the side of overstating the economic costs of providing the MTAS. As such it is unlikely to derive an efficient forward-looking economic cost estimate of the MTAS.[76]

The consultants engaged on behalf of the CCC submit that it would be dangerous for the Commission to rely on the cost modelling presented by Optus without significant further analysis – possibly involving an audit.

Telstra submits that a 'bottom-up' costing of the network of an efficient MNO would be the optimal approach to determining efficient MTAS prices. That said, Telstra considers that an actual mobile network is likely to provide a reasonable approximation of efficient costs, and that there are significant benefits associated with a top-down approach, including that it is grounded in reality, and hence, captures the costs that are necessarily incurred in providing the MTAS. Telstra also submits that it recognises the substantial effort, cost and time required to develop a bottom-up model.

The Commission's view

The Commission considers that, ideally, the most appropriate method for estimating the 'efficient costs' of the MTAS is via a 'bottom-up' model. Moreover, the Commission considers that the reconciliation of a bottom-up model with a top-down model is likely to further strengthen the credibility of the model results, provided that the reconciliation is performed in a transparent and reasonable manner. However, the Commission acknowledges that the development of a bottom-up model is likely to be a relatively costly and time-consuming exercise.[77] .

Accordingly, for the purposes of its MTAS Pricing Principles Determination, the Commission sought to estimate the TSLRIC+ of providing the MTAS using reasonable cost estimates that were available to it. This included information from other countries on the cost of supplying the MTAS and regulatory accounting information provided to the Commission under the Regulatory Accounting Framework (the RAF). Based on this information, the Commission determined that the TSLRIC+ of supplying the MTAS in Australia was likely to fall within the range of 5 – 12 cpm.[78]

In the Commission's view, a properly-specified top-down model populated with reasonable inputs would provide an estimate of the TSLRIC+ of providing the MTAS no less reasonable than that relied upon by the Commission when making its MTAS Pricing Principles Determination. The Commission also considers that the reliance on

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[76] Marsden Jacobs Associates, *Comments on Discussion Paper: Optus Undertaking in Relation to the Domestic Digital Mobile Terminating Access Service* (MJA Report), 23 May 2005, p. 10.

[77] In the MTAS Final Report the Commission noted (pp. 210-211) that the estimation of a TSLRIC+ model would be 'costly and time-consuming' to implement.

[78] The MTAS Pricing Principles Determination specifies that the adjustment path of prices for the MTAS should have an end price set at the upper end of the range of reasonable estimates of the TSLRIC+ of supplying the service that were available (i.e. 12 cpm).

a top-down cost model in this context could also be strengthened if considered in conjunction with other sources of information about the TSLRIC+ of providing the MTAS – such as an appropriate international cost benchmarking analysis.

That said, while the Commission accepts the appropriateness of CRA's decision to use a top-down modelling approach in this context, it considers that CRA's particular model, which is based on historical data pertaining to Optus's GSM network and which does not make any adjustments to optimise 'operating' and/or 'non-network' costs, would, at best, tend to suggest an 'upper bound' estimate of the 'efficient costs' of providing the MTAS. This is because, in the Commission's view, the development and operation of Optus's GSM network has not occurred within an effectively competitive market structure. Therefore, the actual costs incurred by Optus are likely to contain some elements of inefficiency. In this regard, the Commission notes PricewaterhouseCoopers (PwC) general view[79] on the potential for 'top-down' models to include an element of inefficiency:

> … it is possible that the observed costs of an operator may include a level of inefficiency which the regulator may wish to exclude for the purpose of setting interconnection prices. Since inefficiencies are asymmetric there is a natural tendency for top-down models to overstate rather than understate costs.[80]

For these reasons, while the Commission considers that a properly-specified top-down model can be used to inform the costs of providing the MTAS in Australia, in this regard the model specified by CRA would, at best, tend to suggest an upper bound on the efficient costs of service provision.

5.1.2. Benchmark operator modelled – Optus's 2003-04 'stand-alone' mobile costs

One of the key initial modelling decisions to be made by CRA was the benchmark upon which to base its FL-LRIC estimates. In principle, at least, there were a number of options open to CRA in this regard, from opting to base it on some measure of the 'most efficient network operator' supplying the MTAS to using an 'industry average' benchmark.[81]

CRA elected to base its model on the actual operations of Optus using its 2003-04 data. It considers this a 'conservative approach' because, in its view, using Optus's actual traffic volumes will lead to a lower cost estimate than if the lower traffic volumes of an average or marginal Australian operator were used.[82] As evidence of 'strong' economies of scale in mobile networks in Australia, Optus notes that

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[79] The Commission notes that in response to the draft decision, Vodafone submits (25 November 2005) that the following quote from PwC was taken out of context, and considers that the use of this quote does not support the Commission's conclusion in relation to top-down modelling. In support of this view, PwC also provided (on behalf of Vodafone) a short note which indicated that this quote 'is a general comment relating to a single aspect of top-down models' and that a 'balanced judgements of usefulness of top-down modelling approaches requires broader consideration of issues and context'.

[80] PricewaterhouseCoopers, *TSLRIC Conference*, 16-17 July 2003, p. 22.

[81] Indeed, as CRA has noted, the latter approach was adopted in the UK by the Competition Commission which 'adopted a cost based on a market share that was achievable by all operators' (determined as 20 per cent of the retail mobiles market). CRA also notes that the modelling approaches undertaken in Malaysia and Sweden were also based on modelling an operator with an 'average market share'.

[82] The CRA Report, p. 7.

Vodafone's cost estimate of the MTAS on its network is significantly above its own estimate.[83] Optus further submits that modelling the costs on the share and scale a new entrant in the Australian mobiles market would expect to gain in the long-run would appear to be the most appropriate modelling approach to promote the LTIE.[84]

In addition, CRA modelled Optus's 2003-04 mobile costs as if it were a 'stand-alone' mobile operator. In effect, this meant that in providing the relevant data to CRA, Optus sought to remove the impact of efficiencies (economies of scope) that, it claims, result from it owning and operating both a fixed-line and mobile network. In practical terms, this meant allocating a greater portion of 'transmission', 'switching' and 'IT' and operating costs to its 'Mobile' business than it would otherwise do in the normal course of its financial reporting allocations.[85]

Optus submission in response to the draft decision

In response to the draft decision, Optus strongly objected to the position that the appropriate benchmark in this context should be an integrated fixed-line and mobile network operator. In the first instance, Optus notes that, in its consideration of various access undertakings from Telstra with respect to the PSTN originating/terminating service, the Commission has 'consistently accepted that it is reasonable to use a 'stand alone' cost model to estimate the cost of supplying declared services.[86] That is, efficiencies that Telstra may enjoy through owning a fixed-line and mobile network were not considered in assessing the PSTN O/T charges.

Optus further submits that that a 'stand alone' approach in this context encourages efficient 'build or buy' decisions. At conceptual level, Optus argues that the critical decision faced by an access seeker is whether to build a network on which calls are terminated, or buy terminating access to such a network. Optus contends that its other network infrastructure (i.e. the fixed-line network) is not relevant to the access seeker because it is not used in the provision of the Optus's MTAS.[87] Moreover, Optus submits that the Commission has accepted that the efficient 'build or buy' decision is the key determinant of the extent to which dynamic and allocative efficiencies are achieved.[88]

Optus observes that the Commission's premise appears to be that the 'most efficient operator' is the appropriate benchmark, though the reasoning and justification for this choice is not provided in the draft decision. Optus also notes Analysys's conclusion that 'it would not seem appropriate to reflect Optus's fixed and mobile economies of scope in its directly regulated mobile termination rate'.

Submitters' views

On the decision to use 'Optus's 2003-04' data as the model benchmark, Telstra submits that it would be optimal to use the 'efficient network operator' standard for assessing the efficient cost of the MTAS, and that it is important to set a single industry-wide standard to encourage MNOs to out-perform the 'industry-wide' rate by

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83 Optus submission in response to draft decision, p. 17.

84 In its submission to the draft decision, Optus notes that (p. 16) a fifth entrant in the Australian mobiles market might expect to gain 20 per cent of the market in the long-run.

85 The actual cost allocations made by Optus in this regard are discussed in section 5.2.1 below.

86 Optus submission in response to draft decision, pp. 10-12.

87 Optus submission in response to draft decision, p. 12.

88 Optus submission in response to draft decision, p. 13.

achieving efficiencies through scale or other means. Due to difficulties, effort and time associated with building an efficient network model for this purpose, however, Telstra is not opposed to the use of Optus as the model benchmark, provided that appropriate adjustments are made and the approach adopted is taken into account when interpreting the results of the costing study.

On the other hand, Slimtel submits that Optus's costs of providing the MTAS are distorted by its own actions. In this regard, Slimtel submits that temporarily barred Optus customers on post-paid contracts (between 5 and 10 per cent of post-paid customers at any given time) can still receive inbound calls. Moreover, Slimtel submits that Optus's recent changes to a new default set-up means that any call not answered goes to the voicemail box which generates an SMS to advise that the call was made. Slimtel submits that, previously, such calls were not answered, and thus, not terminated.

On the issue of modelling 'stand-alone' mobile costs, Telstra submits that this is appropriate as it ensures that the estimated costs reflect those that would be achievable by all MNOs, and not just an integrated fixed-line and mobile carrier. In Telstra's view, efficiencies associated with vertical integration are legitimate efficiencies that should not be incorporated into lower MTAS rates.

Hutchison's consultant, MJA, submits that because Optus is an integrated carrier, it will take a global cost-minimising view incorporating all aspects of its business. Therefore, MJA submits that it cannot be ruled out that Optus has made historical choices which are not optimal from the perspective of a 'stand-alone' mobile operator. In this regard, Hutchison's other consultant, Gibson-Quai-AAS, submits that Optus is the only MNO in Australia to use different technology vendors for different parts of its GSM network – i.e. Nokia for the major radio parts and Nortel for the major switching parts. GQ-AAS notes that this decision may have been influenced by the fact that Optus uses Nortel switching parts for its fixed-line network.

More generally, Telstra, Hutchison and AAPT submit that there is a lack of transparency as to how the adjustments to the relevant cost categories were actually made. In addition, AAPT submits that, from a theoretical perspective, Optus's 'stand-alone' mobile costs should be considered an 'upper bound' or a 'price ceiling' in this context.

Analysys's view

Analysys considers that because Optus's market share for 2003-04 was **c-i-c** per cent, it could be expected that adjusting its costs to represent a hypothetical operator of smaller scale would (other things being equal) result in a higher per-unit cost estimate due to lower economies of scale. It also notes, however, that the CRA model assumes that Optus's traffic volumes remain constant throughout the modelled period (i.e. 2004-05 to 2007-08) and **c-i-c**.[89] Analysys also notes that Optus has not attempted to define and apply Cost-Volume Ratios (CVRs) to capture the effect of any economies of scale over this period.[90] Based on this, Analysys concludes that:

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[89] Analysys Report, pp. 31-32.

[90] Analysys also notes that Optus has confirmed that it is uncertain whether the price trends it has used sufficiently account for both volume and cost evolution to 2007-08.

c-i-c.[91]

In principle, Analysys considers that Optus's approach of modelling its 'stand-alone' mobile costs can be considered consistent with the prices that would occur if the market were competitive, since competing operators would be required to incur these stand-alone costs.

The Commission's view

The Commission notes Optus's further submission on the issue of the appropriate benchmark for modelling the costs of the MTAS. To date the Commission has held the view that the most appropriate benchmark to model the costs in this context is the 'most efficient provider' of the MTAS in Australia. The Commission has noted that, in its view, an access price for the MTAS that is determined according to this benchmark would be more likely to promote allocative, productive and dynamic efficiencies in the relevant markets, and is also consistent with the Commission's access pricing principles released in 1997.

The Commission notes that Optus appears to raise two main points with respect to the appropriate benchmark for modelling MTAS costs. Firstly, Optus considers that its approach of using its own costs and volumes is 'conservative' because due to its market share of **c-i-c** per cent and the existence of 'strong' economies of scale in mobile networks. Secondly, Optus considers that the appropriate benchmark when modelling MTAS costs is that of a 'stand alone' mobile operator. In this regard, Optus rejects the Commission's view, expressed in the draft decision, that the appropriate benchmark in this regard is that of the 'most efficient operator', and rejects the view that the appropriate model benchmark is an integrated fixed-line and mobile network operator.

On the first issue, while the Commission accepts, in principle, Optus's view that there are likely to be scale economies associated with mobile networks, the significance of these economies is not clear. Indeed, the fact that Optus's own model implicitly suggests that Optus will not achieve any economies of scale over the Undertaking period appears to be at tension with its view elsewhere that there are 'strong' economies of scale in mobile networks.

In any case, to the extent that an efficient operator will normally have achieved minimum efficient scale, the Commission does not accept that Optus's approach is 'conservative' when assessed against this benchmark. In essence, Optus appears to be arguing that it is more efficient when compared against a less-efficient operator.

On the second issue, the Commission does not accept Optus's suggestion that, in the late 1990s, it modelled Telstra's PSTN origination and termination (PSTN OTA) costs on a 'stand-alone basis'. Rather, the Commission consistently rejected Telstra's requests for stand-alone costing and has insisted on taking into account the sharing of all relevant common costs between the PSTN and other services sharing common infrastructure.[92] For example, as stated in the 2000 PSTN OTA report, the Commission's approach is as follows:

> Leased lines and ISDN traffic is included in the model to calculate and allocate common costs where network components such as switching and transmission capacity are shared between

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[91] Analysys Report, p. 32.

[92] The relevant shared costs at this time were seen as those of the ISDN and leased lines.

> these services and PSTN services. To not do so would result in the Commission over-estimating the costs of supplying the declared service. [93]

The same cost-sharing principle underlies the Commission's position on this service.

Specifically with respect to inclusion of the sharing of the common costs of fixed-line networks with mobile networks, this was not seen as a major issue in the late 1990s when the fixed-line modelling exercise was being carried out. However, the issue of cost sharing between fixed-line and mobile networks was raised by Optus in a 2003 submission, where Optus argued in favour of cost sharing:

> From previous experience with TSLRIC modelling in Australia we see inadequate sharing assumptions. This has arisen due to misunderstanding or misrepresentations of the degree of trench sharing … between fixed voice telephony and other Telstra business, including mobile …[94]

This submission from Optus implies that economies of scope should be taken into account when modelling fixed-line costs, and consistency would imply that these economies should also be taken into account when modelling mobile costs.

The Commission also notes Optus's view that modelling 'stand-alone' mobile costs encourages efficient 'build or buy' decisions and that the Commission accepted the merits of a 'stand-alone' approach when it considered Telstra's PSTN OTA undertakings. However, the Commission notes that the 'build or buy' decision with respect to the MTAS is complicated by the fact that in the absence of all mobile calls being carried 'on-net' it is impossible for an access seeker to 'build' to supply mobile termination on Optus's network. Further, it is also complicated by the fact that the build or buy decision will be different depending on whether the access seeker is a fixed-line only, or a mobile-only operator.

That said, the Commission notes that it has received limited independent information on the empirical importance of economies of scope in this context. Further, the Commission considers that, based on the submissions received, there is at least some residual uncertainty as to whether these economies are 'material'.[95]

For this reason, the Commission considers that there is still substantial uncertainty regarding the issue of the most appropriate operator to benchmark for the purposes of a TSLRIC modelling exercising, and that it is likely to be a matter for further consideration by the Commission in the future. Should the Commission choose to undertake an exercise to itself model the TSLRIC+ of supplying the MTAS, the Commission anticipates the modelling of a number of different scenarios (for example, the costs for an integrated fixed and mobile operator supplying the MTAS, the costs for a mobile-only operator supplying the MTAS) would assist greatly in

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93 See ACCC, *A Report on the Assessment of Telstra's Undertaking for the Domestic PSTN Originating and Terminating Access Services*, July 2000, p. 48.

94 Optus, *Optus Submission to Australian Competition and Consumer Commission on Model Price Terms and Conditions for PSTN, ULLS and LCS*, May 2003, paragraph 9.39, p. 58.

95 On the one hand, while Optus has made an upward adjustment to its Mobile GBV (+**c-i-c** per cent) and operating costs (+**c-i-c** per cent) for 2003-04 to remove the impact of economies of scope between its fixed-line and mobile networks; on the other hand, Hutchison's consultants (Gibson-Quai AAS and MJA) have submitted that, as an integrated fixed-line and mobile operator, Optus may have made some investment decisions which may not have necessarily been efficient for a 'mobile stand-alone operator'. For example, GQ-AAS notes that Optus is the only MNO in Australia to use different technology vendors for different parts of its GSM network.

identifying the most appropriate benchmark. However, for the purposes of assessing the Optus Undertaking the Commission considers, on balance, and based on the information currently available to it, that it is more likely that in the current circumstances it should consider Optus's costs as an integrated fixed and mobile operator. As such, the Commission has concerns that CRA's (and Optus's) decision to model Optus's costs of supplying the MTAS on a stand-alone basis is likely to represent an upper bound, if not an overestimate, of the efficient costs of supplying the MTAS.

5.1.3. The decision to model Optus's GSM (2G) costs

A further decision was the technology that would form the basis for the underlying cost estimate. Optus currently owns and operates two mobile networks – a GSM network (2G technology) with coverage of approximately 94 per cent of the Australian population (and the capability of also providing 2.5G services) and a wideband-CDMA (3G) network which it continues to build in conjunction with Vodafone.[96] Therefore, Optus had, at least, three options when determining the network technology that would form the basis of its cost estimates; namely its 2G network, its 3G network or a combination of the two. Although the CRA model is described as 'forward-looking', it is based on the costs and traffic volumes associated with Optus's older GSM (2G) network. Moreover, Optus's proposed service description for its Undertaking only covers mobile voice termination on its GSM (2G) network, and not on its 3G network.

Submitters' views

Two submitters (the CCC's consultants and Hutchison) have questioned the appropriateness of Optus's proposed service description in light of the Commission's broader service description for the MTAS. In this regard, the consultants engaged by the CCC (Cave and Chambers) submit that, because a calling party has no control or foreknowledge on what technology will be used to terminate a call when the termination network operator has more than one technology (i.e. combined 2G/3G operator), a combined voice call MTAS rate should also be used.

Both the CCC and Hutchison also submit that Optus's price terms are not based on the most efficient forward-looking technology (3G), and therefore, are likely to contain inefficiencies. In this regard, Cave and Chambers cite evidence that, while a 3G site may cost 20-40 per cent more than a 2G site, it could support as much as 10 times more traffic, while Hutchison cites evidence that 3G technology is 25 per cent cheaper than GSM technology. Based on such evidence, these parties believe a cost estimate based on a combined 2G/3G network could be 'significantly less' than a rate established with reference to the cost of a 2G-only network.

The Commission's view

In the first instance, the Commission notes that Optus's proposed service description is narrower than that specified in the MTAS Pricing Principles Determination. That

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[96] In relative terms, Optus's 3G network is in its infancy stage. It launched its 3G service in Canberraon 27 April 2005, and at this stage its services have been targeted at the corporate/business end of the market. In a media release dated 27 April 2005, Optus indicated that it plans to continue the 3G network implementation in Sydney, Melbourne, and other major capital cities. It also indicated that the initial build out of more than 2000 base stations covering the six major capital cities is scheduled to be completed by March 2007.

said, under section 152BS of the Act, a carrier is legitimately within its rights to lodge an ordinary access undertaking for a subset of a declared service. Although the CCC's consultants are correct that a calling party does not control (or necessarily have knowledge of) which technology will be used to terminate a call, the Commission notes that the MTAS on Optus's 3G network remains a declared service. Therefore, even though the Undertaking does not cover this element of the declared service, access seekers will still have the opportunity to negotiate access to this service on commercially-agreeable terms. Failing that, access seekers will have the option of seeking recourse via the arbitration process. In this context, the Commission notes that acceptance of the Undertaking with respect to the MTAS on Optus's 2G network would not constitute acceptance of these terms and conditions with respect to the MTAS on Optus's 3G network.

On the subject of whether 3G costs should be used to model 'efficient' 2G costs, the Commission considers that, ideally, an estimate of the FL-LRIC of providing the MTAS should be based on the most efficient technology available. In the Commission's view, such an approach is more likely to promote efficient build or buy decisions, and will also be more likely to promote productive and dynamic efficiencies.

In this regard, the Commission is inclined to accept the proposition that, in a forward-looking sense, 3G networks are likely to represent the most efficient technology for the provision of a range of mobile data and voice services. For this reason, the Commission is also inclined to accept the proposition that, over the long-term, the per unit costs of supplying the MTAS on 3G networks have the potential to be lower than on 2G networks. This is based on the view that a 3G site will support much greater traffic volumes and will facilitate a wider suite of services (i.e. including voice and data services) over which costs can be recovered. It is also informed by evidence provided by the CCC and Hutchison, as well as Analysys's advice that **c-i-c**.[97]

That said, based on the advice of Analysys, the Commission considers that, at this time, it is not practical or desirable for an MNO such as Optus to derive long-run 3G network costs from its own top-down cost data. Therefore, in this regard, the Optus approach appears appropriate for the proposed undertaking period (i.e. 2005 to 2007). Having said this, the Commission agrees with Analysys's view that Optus's 2G (GSM-only) costs more than likely represent a 'ceiling' to the long-run cost of providing mobile voice traffic in the future.

The Commission notes Optus's view that neither the Commission nor Analysys has provided any data to support their claims or considered the sensitivity to the cost estimate if demand for non-voice services was below expectations. The Commission also notes that, despite formal requests, Optus has not clarified whether the 2G asset price trends applied in its model adequately reflect the migration towards 3G networks – potentially another way of factoring in the emergence of 3G into the cost model estimate.[98]

The Commission accepts that, due to the infancy of 3G networks, there is insufficient data available at this point to conclude with absolute certainty on this issue. However, based on the evidence provided by submitters and the advice of Analysys, the

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[97] Analysys Report, p. 25.

[98] In its report Analysys noted that (p. 25) in its experience this proxy can be captured in forward-looking price trends that reflect continued capacity-adjusted equipment prices.

Commission believes that it is reasonable to reach the view that, on balance, per-unit MTAS 3G costs have the potential to be lower than 2G costs. With respect to Optus's point about the uncertainty of future demand for non-voice 3G services, the Commission notes that it is not only non-voice services that would appear relevant in this context. That is, it is expected that MNOs will increasingly migrate their 2G subscribers over to 3G mobile networks, after which, all mobile services – including voice services – will be supplied over these networks and therefore be relevant for cost estimation purposes.

5.1.4. Choice of increment to be modelled

Another key decision when seeking to model MTAS costs is defining the relevant 'increment'. In relation to the CRA model, this decision will impact on those costs which are identified as FL-LRIC (incremental) and those costs which are identified as FCC. In its submission, Optus notes that:

> FL-LRIC modelling involves explicitly identifying all incremental costs of the service in question. Fixed and common costs are estimated separately and recovered through a mark-up over and above incremental costs … This differs to a TSLRIC approach in which the whole service, including any fixed and common costs, is modelled as the relevant increment.[99]

An analysis of the underlying model appears to reveal that, in the first instance, CRA has estimated the FL-LRIC of the following increments: 'traffic', 'subscriber acquisition' and 'subscription service'. The 'traffic' increment effectively comprises costs relating to three call service types – 'inbound', 'on-net' and 'outbound' – as well as costs relating to 'mobile data services'. The CRA model subsequently allocates costs between these services.

Those costs which are not deemed as FL-LRIC are allocated as FCCs.

Submitters' views

Submitters did not comment extensively on CRA's choice of the increment to be modelled when estimating the 'efficient costs' of Optus's DGTAS. In discussing cost concepts, AAPT submits that, due to practical difficulties with determining 'long-run marginal cost', regulators have adopted TSLR(A)IC to determine cost-based access prices for interconnection for the service, although it is more commonly referred to as a TSLRIC price. AAPT further submits that TSLRIC or TSLR(A)IC can also be defined over some sub-group of services.

The Commission's view

The Commission considers that, in defining the relevant increment as 'traffic' on Optus's GSM network (i.e. both call minutes and data), and then allocating incremental costs of the relevant services based on (routing factor-adjusted) traffic volumes, the CRA approach appears to be broadly consistent with regulatory approaches adopted in the UK, Sweden and Malaysia.[100] This is also the view of Analysys.[101]

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[99] Optus submission, p. 33.

[100] In this regard, the Commission understands that in the UK, the relevant increments were defined as 'subscribers', 'traffic' and 'coverage', where the traffic increment included all incremental costs associated with mobile voice minutes and data services. In Sweden, the telecommunications regulator (Post och Telestyrelsen) defined the relevant increments as 'traffic' and 'subscribers',

As noted by Analysys, estimating the TSLRIC of Optus's DGTAS should, in theory, involve making a judgment about the effect that this service has on the network capacity that Optus has to provide. This would require information about 'busy-hour traffic'. Analysys also notes that Optus's submission does not include modelling of busy-hour traffic, but rather is conducted on an *average traffic* basis. Therefore, it cannot ascertain whether the Optus approach exaggerates or underestimates the true total service long run incremental cost of providing the DGTAS.

The Commission notes that the definition of 'total service' which appears in its MTAS Pricing Principles Determination is not explicit in relation to the appropriate increment to apply when estimating the cost of mobile termination services. That said, the Commission considers that the approach adopted by CRA appears to be at least broadly consistent with the way in which TSLRIC is typically implemented in practice with respect to telecommunications services. Moreover, the Commission considers that CRA's approach of defining the relevant increment is appropriate for two main reasons.

Firstly, as noted by Analysys, the definition of the 'total service' increment in very strict theoretical terms would require detailed information about 'busy-hour' traffic loading on mobile networks. However, this is often not available. Second, many (if not most) of the network elements used to provide mobile services are used jointly. This makes it relatively difficult to isolate costs which are attributable to the MTAS in isolation.[102]

On the use of a FL-LRIC approach, the Commission notes CRA's view that:

> … this approach contrasts with a Total Service Long Run Incremental Cost (TSLRIC) approach in that fixed costs are explicitly separated and recovered through a mark-up. A TLSRIC approach instead models the whole service as the relevant increment (effectively an average cost approach) so that any fixed costs incurred in supplying the service are included in the TSLRIC estimate rather than the mark-up.[103]

In response to this view, the Commission notes that its TSLRIC+ pricing principle allows for the separate identification and allocation of 'organisational level' costs (represented by the '+') over TSLRIC. Therefore, with respect to these particular 'common' costs, the Commission's approach to cost identification is conceptually consistent with the one advocated by CRA – notwithstanding the fact that Optus is advocating a different allocation method for these costs.

That said, the Commission notes that the material submitted by Optus indicates that a possible divergence between the Commission's preferred TSLRIC+ concept, and the FL-LRIC concept advocated by Optus, is the delineation of incremental and common costs. However, on the evidence available, such a divergence would appear to be more in the implementation of the respective concepts, rather than any fundamental differences at a conceptual level. This issue is discussed further at a conceptual level in the next section, and at an implementation or practical level in section 5.2.2.

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and again, the traffic increment included all incremental costs associated with mobile voice minutes and data services.

101 Analysys Report, pp. 16-17.

102 The Commission also notes that the development of its model to estimate the TSLRIC+ of Telstra providing PSTN OTA used this type of approach in that it defined the relevant increment as 'traffic' or 'call minutes'. Subsequently, costs were allocated between 'origination' and 'termination' services based on the minutes carried by each type of service.

103 The CRA Report, p. 10.

5.1.5. Use of the term 'fixed' costs

As noted above, FCCs are allocated as a mark-up above FL-LRIC in the CRA model. In this regard, CRA defines 'fixed costs' as those that:

> … do not vary with the level of output. To identify whether a cost is fixed, a timeframe should be chosen that is relevant to the particular economic decision being made.[104]

Common costs are defined as those incurred in the production of two or more products and that are not incremental to any one product.

CRA notes that where FCCs 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 costs to recover either type of cost is identical. The magnitude and composition of the FCCs identified in the CRA model is considered in section 5.2.2.

Submitters' views

AAPT notes the incorrect or 'confused' use of the term 'fixed' costs by Optus and its consultants in the context of CRA's long-run cost model. In this regard, AAPT submits that traditional neo-classical economics distinguishes between 'short' and 'long' run costs. It further notes that there are no 'fixed' costs in the long-run since this is a period of time when all factors of production (and therefore all costs) are variable. AAPT submits that the only costs that remain constant over both the short and long-run are those joint, common or shared costs of production that cannot be directly attributed or allocated to any one service.

AAPT submits that a TSLR(A)IC based access price already provides for the recovery of 'fixed' costs. It therefore submits that it would be inappropriate to require the Commission to add a further mark up above the TSLR(A)IC to take such traditionally defined 'fixed' costs into account, and would be tantamount to 'double-counting' the common costs in the CRA model. AAPT notes that confusing references to 'fixed' costs arising in the long run originates from Contestable Markets Literature, and in particular, a 1981 paper by Baumol and Willig which redefined the well-established economic meaning of 'fixed' costs'.[105] In this regard, AAPT submits that:

> When referring to "fixed costs" in the long-run, Baumol and Willig and many other economists actually seem to be identifying either joint, shared or common costs of production that cannot be directly attributable or allocated to any particular service in the long-run.[106]

AAPT further submits that:

> One problem with having two definitions for fixed cost is that it is open for network operators to exploit this confusion and potentially over-recover their costs.[107]

Commission's view

In very strict terms, the Commission notes that economic theory suggests that the 'long run' is a period of time in which all factors of production are variable. Based on this logic, it follows that a long-run cost model should not include 'fixed' costs, since all costs (including those which do not vary with output in the short run) will be variable in the long-run. In this regard, the Commission notes that the FL-LRIC

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104 The CRA Report, p. 6.

105 W.J. Baumol and R.D. Willig, 'Fixed Costs, Sunk Costs, Entry Barriers, and Sustainability of Monopoly', *The Quarterly Journal of Economics*, 96, 1981, pp. 405-31.

106 AAPT, *Critique of the CRA model*, June 2005, Appendix A.4.2, p.17.

107 AAPT, *Critique of the CRA model*, Appendix A.4.2, p.17.

model provided by Optus and the TSLRIC definition set out by the Commission are both unequivocally and explicitly long-run cost concepts.

At a more practical level, the Commission considers that the use of the term 'fixed' costs in relation to a long-run cost model concept is somewhat problematic. This is because it could potentially imply the over-recovery of costs beyond the 'efficient' level. The confusion on this point is exacerbated by the fact that it is not immediately clear, based on the information provided by Optus and CRA, which costs in its model are 'fixed' and which are 'common'.

That said, the Commission considers that, in this context, this is likely to be more an issue of terminology rather than a substantive issue that will necessarily impact on the CRA model results. To the extent that the costs identified in CRA's FCC pool represent legitimate costs for recovery in a long-run context, and cannot be attributed to the FL-LRIC of providing a particular service, it is arguably secondary as to how they are labelled. This is particularly so since both 'fixed' and 'common' costs are recovered in the same way in the CRA model. This view would also appear to be consistent with that of WIK, which states that:

> … the ACCC needs to be guided by substantive issues rather than words. Important for the cost allocation and pricing issues at hand are economies of scale and scope … Typically, in the literature, economies of scale are illustrated by a cost function with fixed costs and constant variable costs. The assumption here is that, while these costs may be variable in the long run, they are nevertheless incurred if one wants to produce any output.[108]

Notwithstanding this view, a key issue to consider is the magnitude and composition of the 'fixed and common' costs identified in the CRA model. This issue is considered in section 5.2.2.

5.1.6. Conclusion on conceptual approach

Overall, the Commission considers that the conceptual approach applied by CRA to model the FL-LRIC of supplying the MTAS in Australia is likely to, at the very best, generate an upper bound estimate of the 'efficient' costs of providing the MTAS in Australia. The reasons for the Commission reaching this view are that:

- the use of a 'top-down' model rather then some form of bottom up optimised model is likely to, at the very best, generate an upper bound estimate of the 'efficient' cost of providing the MTAS in Australia. This is because the CRA model is based on Optus's actual accounting information, which is likely to contain some elements of inefficiency given the Commission's view that the markets within which mobile services are supplied are not effectively competitive;
- based on the advice of Analysys, the CRA model is effectively 'anchored' on Optus's 2003-04 costs and traffic volumes, which would tend to suggest that Optus will not experience any economies of scale over the three-year Undertaking period. From one perspective, this seems inconsistent with Optus's views that there are 'strong' economies of scale in mobile networks in Australia, and also RAF data supplied by Optus which shows that over the period 2002-03 to 2004-05 its total call minutes from its GSM mobile business

[108] WIK Consult, *Mobile Terminating Access Service: Network Externality and Ramsey Pricing Issues, Final Report*, October 2005, p. 9.

grew at a faster rate than the total costs allocated to its GSM mobile business. To the extent that Optus will experience economies of scale over the Undertaking period, this would suggest, other things being equal, that the CRA model estimate for 2003-04 will overstate the per unit costs of Optus supplying the DGTAS from 1 January 2007 onwards;

- to date the Commission has held the view that the most appropriate benchmark to model costs is that of the 'most efficient operator'. The Commission notes that Optus has made adjustments to three cost categories ('transmission', 'switching' and 'IT') in order to remove the impact of any economies of scope that Optus experiences from having a fixed-line and mobile network. For the purposes of assessing the Optus Undertaking the Commission considers, on balance, that it is more likely that in the current circumstances it should consider Optus's costs as an operator of a fixed-line and mobile network, in determining forward-looking efficient costs; and
- although it was not practical for Optus to have modelled its per-unit 3G costs, the Commission considers it more likely than not that the TSLRIC+ of providing the MTAS over a 3G network would be lower, in the long-run, than over a 2G network. Therefore, the Commission agrees with its consultant, Analysys, that Optus's estimate of the 2G per unit costs of supplying the MTAS should be considered a ceiling to the forward-looking efficient cost of providing the MTAS in Australia.

5.2. Assessment of the model inputs

In using Optus's 2003-04 data to populate its version of the Rohlfs 'Ramsey model', CRA was required to estimate a number of inputs for each of the four modelled services, outlined in section 4.4.3. This included cost, traffic volume and price parameters.[109] It also estimates the magnitude of FCCs.[110] This chapter considers aspects of the derivation of 'incremental (FL-LRIC) costs', 'FCCs' and 'traffic volumes' used in the CRA model.

5.2.1. Incremental cost inputs

There were a number of steps involved in CRA determining the FL-LRIC costs of Optus supplying its DGTAS (and the other mobile services modelled by CRA). Some of the key steps are discussed in turn.

Revaluing Optus's network assets on a 'current cost' basis

As noted by Analysys, the first step in the modelling process was for CRA to revalue Optus's capital assets on a 'current cost' basis. This involved CRA determining the 'gross replacement cost' (GRC) of Optus's capital assets. In this regard, CRA submits that its model measures 'the costs that would be incurred by a new entrant

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[109] Where appropriate (i.e. where the inputs are not in 'per-unit' terms), the input parameters were scaled up to 'industry-level', mainly through the use of market share information.

[110] Note that the application of the Rohlfs model also required a number of other inputs such as relevant own and cross-price elasticity estimates for each service and a number of parameters relating to 'externalities'. These are discussed in detail in Chapters 6 and 7.

supplying the GSM services, rather than the historical costs of Optus' past equipment purchases'.[111]

An analysis of the underlying CRA model reveals that it has adjusted Optus's GSM network assets through the application of a 'price index'. The price index itself was calculated using the following pieces of information:

- *a 'real' asset price trend for each asset* – These were sourced by Optus from reports by **c-i-c** and the **c-i-c**. All price trends were assumed to remain constant over the period 1994-95 to 2003-04;
- *asset average lives* – These were estimated by Optus's engineers;
- *an inflation rate* – This was estimated by Optus at 2.50 per cent per annum and assumed to remain constant over the period 1994-95 to 2003-04;
- *a 'nominal' asset price trend* – This was calculated by CRA using the 'real' asset price trend and inflation rate listed above. This is then used to create a 'weighted price index'; and
- *Optus's annual capital expenditure data* – Sourced by Optus for the years 1999-00, 2000-01, 2001-02, 2002-03 and 2003-04. This is then used to create a 'capital expenditure' index.

The price index was then applied to the 'Gross Book Value' (GBV) of each asset in order to determine a 'current cost' or GRC estimate for each asset. These adjustments resulted in an overall increase in the value of network assets (i.e. GRC > GBV).

Analysys's view

Analysys has two main concerns with the 'current cost' adjustments made in the CRA model. Firstly, it notes that the GBV of assets is specified for the annual period ending 30 June 2004, which is different from the financial year ending 31 March 2004 applied in all other areas of the CRA model. Analysys further notes that clarification sought from Optus on this point revealed that the GBV of assets at 31 March 2004 was **c-i-c** per cent of the GBV implemented in the model. In Analysys's view:

> **c-i-c**.[112]

Analysys notes that Optus has not supplied a revised 31 March 2004 GBV by asset category, and therefore it cannot assess the exact magnitude of the reduction in the per unit cost of Optus's DGTAS. However, Analysys expects it to be 2-3 per cent lower.

The second main concern relates to the asset price trends applied by CRA when making these 'current cost' adjustments. The price trends applied to each particular asset category are shown below in Table 5.2.

Table 5.2: Real asset price trends applied to particular asset categories

Asset category	Real asset price trend applied (per cent)
Mobile (includes BSS, NSS, mobile data, STP/MNP, coverage, HLR and voicemail)	From **c-i-c** to **c-i-c**
Transmission	**c-i-c**
Switching	**c-i-c**

[111] The CRA Report, p. 9.
[112] Analysys Report, p. 38.

International	**c-i-c**
IT	**c-i-c**
Corporate	**c-i-c**
OB Other	**c-i-c**
Interexchange	**c-i-c**

In Analysys's view, the real price trends applied to Optus's network equipment (i.e. switching, transmission, mobile data, NSS+ and radio) of **c-i-c** to **c-i-c** per cent per annum 'do not appear steep enough'.[113] In other words, Analysys is of the view that the price of Optus's network equipment is likely to fall by more (on a per annum basis) than is suggested by the CRA model.[114] In Analysys's opinion, 'price trends of the order of **c-i-c** to **c-i-c** per cent per annum would more closely reflect the historic evolution of GSM per unit capacity.[115]

Overall, in Analysys's opinion, 'obtaining a GRC greater than GBV for a mobile network which has been in operation for ten years is a material overstatement of current costs'.[116] Analysys further notes that applying its recommended price trends to Optus's network assets would reduce the DGTAS per-unit estimate by between approximately **c-i-c** per cent and **c-i-c** per cent.[117]

The Commission's view

At the outset, the Commission considers that the use of an 'indexing' approach to revaluing network assets on a 'current cost' basis has limitations and is unlikely to be the most robust method for estimating the network build costs that an entrant in the GSM mobile market would face today. In the context of the development of Telstra's 'current cost accounting regime', the Commission has previously noted that the limitations of an indexing approach in this context are:

- when the entity's historical cost data on fixed assets are incomplete, inaccurate or old, the use of indexation will compound such inherent problems to produce misleading results;
- if the process in which the assets are used is obsolete and could be replaced with a more efficient modern process at a lower cost, the use of indexation would result in overvaluation of the assets involved (and, consequently, overstatement of the related depreciation charges); and
- if improvements in technology, design standards and economies of scale have resulted in cost reductions in real terms of the assets themselves, again

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[113] Analysys considers that the real price trends CRA used for land-based assets and non-network/overhead assets, and the historic inflation figure of **c-i-c** per cent for Australia appear reasonable.

[114] Analysys further notes that Optus has indicated (in a letter to the Commission dated 26 September 2005) that it does not know whether, or to what extent, the price trends it used take into account capacity improvements over time and/or the impact of the emergence of 3G technologies. Moreover, Analysys notes that Optus has not provided any supporting information from its own GSM network to verify whether these price trends are appropriate.

[115] Analysys also notes (p.43) that its view in this regard is consistent with the price trends which were recommended by Gibson-Quai and Ofcom in its current LRIC model.

[116] Analysys Report, pp. 45-46.

[117] Analysys Report, pp. 45-46.

the use of indexation would result in overvaluation of the assets and overstatement of the depreciation charges.[118]

The Commission notes that the *Asset allocations* worksheet in the CRA model appears to reveal 'current cost' revaluations to particular asset categories, as shown below in Table 5.3.

Table 5.3: Results of CRA 'current cost' adjustments

Asset category	Percentage change (–/+)
Mobile network	**c-i-c** per cent
Transmission	**c-i-c** per cent
Switching	**c-i-c** per cent
International	**c-i-c** per cent;
IT	**c-i-c** per cent
Corporate	**c-i-c** per cent
Other	**c-i-c** per cent
Total	**c-i-c** per cent

As noted above, overall, the current cost revaluation conducted by Optus resulted in an upward adjustment to GBV (i.e. GRC > GBV). The Commission also notes that, not only is this result described by Analysys as a 'material overstatement of current costs', it would also appear inconsistent with empirical evidence which suggests that GSM (2G) network asset costs have fallen in real terms over the period 1994 – 2004 (even once inflation is taken into account). For example, the Commission notes that:

- the **c-i-c** per cent upward revaluation of Optus's 'mobile network assets' would appear to be inconsistent with Telstra's current cost report for 2003-04 which indicates that the value of Telstra's 'Mobile Network and Terminal Equipment' decreased by **c-i-c** per cent when revalued in 'current cost' terms; and
- the **c-i-c** per cent upward revaluation of Optus's total asset base would appear to be inconsistent with the PwC model developed for the purpose of Vodafone's MTAS Undertaking, which estimated that the gross book value of Vodafone's assets at 31 March 2003 declined from $**c-i-c** million to $**c-i-c** million (–**c-i-c** per cent) after assets were revalued on a 'current cost' basis.[119]

Moreover, on the advice of Analysys, the Commission considers that the 'real asset price trends' used by CRA to revalue some of Optus's network assets are unlikely to be steep enough, and should be in the order of −5 to −11 per cent per annum (rather

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[118] That said, the Commission notes that the preparation of Telstra's initial current cost reports required compromises to be made in relation to the methodology, measurement and reporting to be adopted. This included that the cost adjustment were only applied to Telstra's 'fixed-assets' and approximately **c-i-c** per cent (by Written Down Value or 'WDV') of the assets in Telstra's asset register were valued using an indexation method. The Commission noted, however, that these compromises were not to be construed as the Commission endorsing the initial report framework as a basis for the preparation of subsequent current cost reports. Indeed, the Commission's view was that the limitations in respect to the methodology, measurement and reporting of the initial current cost report framework make it unsuitable as a longer-term approach to the development of an effective current cost regime for Telstra.

[119] Vodafone letter to the Commission, 10 February 2005, p. 7.

than the **c-i-c** to **c-i-c** per cent per annum used by CRA). This is an important point because the application of a steeper price trend would, other things being equal, imply that the 'current cost' estimate for a particular asset would be lower. In this regard, Analysys notes that the application of its preferred price trends would result in the 'per unit' cost of the DGTAS falling by between 2 and 6 per cent.

The Commission also notes that Optus cannot confirm whether the real price trends it supplied to CRA factor in changes in the functionality of the particular assets since they were originally deployed.[120] In the Commission's view, it is possible that the discrepancy between the price trends estimated by CRA and those recommended by Analysys could be explained, at least partly, by the fact that the CRA price trends *do not* take into account functionality improvements in GSM equipment over this period and/or the emergence of 3G technologies.

Inflation adjustment to Optus's 2003-04 gross 'current cost' estimates

The CRA gross 'current cost' values relate to Optus's 2003-04 asset values. These estimates are then multiplied by 'one plus the inflation rate' to generate a replacement cost for 2004-05. However, there is an inconsistency in the CRA model in that the same inflationary adjustment is not applied to Optus's operating costs.

Optus was asked to explain this apparent inconsistency in a letter sent by the Commission under section 152BT of the Act on 25 August 2005. In reply, Optus conceded that there was an inconsistency in its original model, and advised that correcting this factor would increase the FL-LRIC of Optus's DGTAS from **c-i-c** cpm to **c-i-c** cpm, and more broadly, the 'welfare-maximising' price for this service from **c-i-c** cpm to **c-i-c** cpm.[121]

In response to the draft decision, however, Optus submits that it modelled two inflation scenarios – one where it inflated the 'capex' only (which increased the 'welfare-maximising' estimate from **c-i-c** cpm to **c-i-c** cpm) and the other where it inflated both 'capex' and 'opex' (which increased the 'welfare-maximising' estimate from **c-i-c** cpm to **c-i-c** cpm).[122]

The Commission's view

The Commission considers that it is not clear, from the information provided by Optus, how these revised figures it provided in its submission to the draft decision reconcile with those provided by Optus in its letter of 26 September 2005. In the first instance, Optus's revised estimates suggest that the welfare-maximising charge would be **c-i-c** cpm if the inflation adjustment was only made to 'capex'. However, the Commission understands that the original model which estimated a 'welfare-maximising' price of 17.0 cpm allowed for this inflation adjustment. Thus, the basis for this modelling scenario presented by Optus is unclear.

Further, the Commission notes that Optus's second modelling scenario (where both types of costs are inflated) apparently generates a 'welfare-maximising' price of **c-i-c** cpm. However, the Commission understands that Optus indicated in its letter of 26 September 2005 that this modelling scenario would yield a 'welfare-maximising' price of **c-i-c** cpm. Thus, given that this apparent inconsistency in its own information

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120 In a letter to the Commission dated 26 September 2005, Optus indicated that it **c-i-c**.

121 Letter from Optus to the Commission, 26 September 2005.

122 Optus submission in response to draft decision, p. 23.

is not explained by Optus, it is not clear to the Commission how these two results reconcile with each other

In any case, the Commission notes that the primary consideration in the context of this chapter is the FL-LRIC estimate, and not the impact on the overall 'welfare-maximising' price. Therefore, in the absence of any contrary information, the Commission maintains its view that applying the inflationary adjustment to Optus's 2003-04 operating cost data would result in a relatively small increase in the estimated FL-LRIC of Optus's DGTAS (i.e. from **c-i-c** cpm to **c-i-c** cpm).

Cost of capital (WACC) applied

In its model, CRA uses a vanilla WACC of **c-i-c** per cent, and a post-tax nominal WACC of **c-i-c** per cent. In its submission, Optus has noted that the approach that was adopted to estimate the WACC was designed to be broadly consistent with the Commission's previous decisions. The WACC parameters used by CRA are provided on page 67 of the confidential CRA Report.

Submitters' views

Telstra submits that the 'Officer approach' proposed by Optus (i.e. post-tax nominal WACC of **c-i-c** per cent) is only appropriate if it reflects the tax burden faced. Telstra submits that from Optus's supporting material, it appears that taxation liabilities are appropriately incorporated with the necessary pre-tax revenues being established via the proposed tilted annuity formula. That said, Telstra considers that it is not clear whether CRA applies an effective tax rate in its tilted-annuity equation, and notes that it would be inappropriate to do so given that the tilted annuity formula separately accounts for depreciation.

Hutchison's consultant, MJA, considers that the CRA approach is reasonable in the current circumstances, although it would prefer the Commission's conventional approach of using a vanilla WACC because it avoids potential problems with transformation formulae. MJA also provides some alternate WACC parameters to those used by CRA. A key departure from CRA's parameters relates to the 'asset beta'. Based on the available evidence, MJA submits that a reasonable range for an MNO in Australia is 0.7 – 1.1. It selects the lower bound of this range based on the view that the asset beta for the MTAS will be lower than the mobile business as a whole. Based on its set of parameters, MJA submits that a reasonable estimate would be a vanilla WACC of 9.24 per cent and a post-tax nominal WACC of **c-i-c** per cent.

The Commission's view

In the Commission's view, and on the advice of Analysys, the cost of capital used in the CRA model appears to be within acceptable bounds, and is broadly consistent with the Commission's approach to estimating the relevant WACC parameters. On the existence of a higher asset beta than in the fixed-line space, the Commission notes Analysys's views that this outcome is consistent with those in certain international jurisdictions. The Commission notes Analysys's view that there may be intuitive reasons why an MNO would have a more risky profile than a fixed-line operator. On the asset beta of 1.09 used in the CRA model, the Commission notes Analysys's view that this is 'reasonable'. Based on this advice, the Commission notes that it does not have concerns with the value of this parameter at this stage.

Use of a tilted annuity formula to generate 'annualised' capital costs

To determine the annual level of Optus's network asset costs, CRA applied a tilted annuity formula.[123] The application of a tilted annuity formula required a number of inputs, including the GRC of each asset, forward-looking asset price trends, useful lives and cost of capital. The output of the tilted annuity formula is the annualised cost for each network asset for each year from 2004-05 to 2007-08. The Commission has already expressed certain concerns with some of these inputs. To avoid repetition, however, these concerns are not repeated or referred to in this section.

CRA notes that it has not applied a full economic depreciation approach even though it is the conceptually correct approach.[124] In this regard, Optus submits that such an approach would require forecasts for traffic over the entire lifetime of each asset, and that CRA sought to minimise the assumptions used to 'maximise' the Commission's acceptance of the Undertaking. That said, Optus submits that an economic depreciation approach would be 'likely to result in a higher estimated cost level for the years covered by the Undertaking'.[125] In support of this position, it cited evidence from the UK that Ofcom estimated that, for UK mobile networks, costs measured using economic depreciation would be £1,063 million in 2005-06 on average, while the average costs measured using accounting depreciation and historical costs would be £930 million.[126]

Submitters' views

With respect to the Undertaking submitted by Optus, submitters did not comment extensively on whether CRA's use of a tilted annuity formula in this context was appropriate, aside from Telstra which submitted that it is an appropriate approach to annualise capital costs.

The Commission's view

Based on the advice of Analysys, the Commission considers that the use of a tilted annuity formula by CRA to estimate Optus's annual network/capital costs is an appropriate approach, notwithstanding the Commission's previous concerns about some of the inputs used in this formula; and that the calculations made in this regard are correct.

The Commission also notes Optus's view (supported by Analysys) that, alternatively, the use of an economic depreciation approach would be likely to result in higher annual capital costs for the Undertaking period. In principle, the Commission considers that it is theoretically possible for the use of a tilted annuity approach to either *overstate* or *understate* annualised network costs compared to the use of an economic depreciation approach. Moreover, aside from a general assertion, Optus and its consultants have not provided adequate evidence to substantiate, or quantify, their claim that an economic depreciation approach would have yielded a higher cost

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123 In contrast to a 'straight-line' accounting depreciation method where an equal portion of the initial cost of the asset is allocated to each period of use, a tilted annuity approach takes into account future trends in the price of capital equipment, and hence in service prices. In an environment of declining equipment prices, a tilted annuity method results in relatively more depreciation being recognised in the early stages of an asset's life.

124 An economic depreciation approach determines cost recovery over the lifetime of the investment/asset on the basis of the extent to which the network is being utilised in each year.

125 Optus submission in response to draft decision, p. 23.

126 Optus submission in response to draft decision, p. 23.

estimate for the DGTAS. On this issue, while Optus has cited evidence from the UK that Ofcom determined that the use of economic depreciation would yield a cost estimate 14 per cent higher than if 'accounting depreciation and historical costs' were used. Such evidence would not appear to inform a comparison between a tilted annuity approach and an economic approach in this context.

Allocation of Optus's costs on a 'stand-alone' mobile basis

As noted in section 5.1.2, CRA elected to estimate Optus's 2003-04 costs on a 'stand-alone' mobile basis. In effect, this meant identifying those cost categories which are shared between Optus's fixed-line and mobile business, and adjusting (upwards) the proportion of those costs allocated to Optus's 'Mobile business' in the normal course of its RAF reporting. Optus has explained that these 'adjustment factors were selected with reference to a survey of cost drivers in the business and that 'input was provided by Optus' engineering and finance staff'.[127]

In a letter dated 8 August 2005, Optus broadly indicated that these were the '**c-i-c**', '**c-i-c**' and '**c-i-c**' cost categories. In a further letter dated 26 September 2005, Optus indicated that a **c-i-c** per cent upward revision was made to Optus's Mobile GBV (i.e. $**c-i-c** billion to $**c-i-c** billion) and that an **c-i-c** per cent upward revision (i.e. $**c-i-c** million to $**c-i-c** million) was made to particular operating cost categories.[128]

Optus has also indicated that the proportion of each ('stand-alone' mobile adjusted) OPEX category allocated to its 'Mobile business' formed the basis for the asset allocation percentages contained in CRA's model.[129] These allocation proportions are shown in Table 5.4 below.

[127] Optus, Letter to the Commission, 8 August 2005.
[128] In this letter, Optus indicated that adjustments were made to **c-i-c.**
[129] Optus, Letter to the Commission, 8 August 2005.

Table 5.4: Allocation of costs to Optus's 'stand-alone' mobile business

Asset category	Proportion allocated to Optus's Mobile business (per cent)
Mobile	**c-i-c**
Mobile satellite	**c-i-c**
Trunk transmission	**c-i-c**
Switching	**c-i-c**
International connectivity	**c-i-c**
Non-network assets (IT)	**c-i-c**
Corporate overheads	**c-i-c**
Land/buildings	**c-i-c**
International exchange	**c-i-c**

Submitters' views

Both AAPT and Hutchison consider that there is a lack of transparency as to how the proportions shown in Table 5.5 above were determined. Hutchison also notes that the results of these cost allocations would likely need to be adjusted to reflect the fact that Optus is minimising its overall costs rather than those of a 'stand-alone' mobile business. This point is also made by Hutchison's consultant, MJA, which submits that in the absence of CVRs it is difficult to see if some FCCs between Optus's fixed-line and mobile businesses have been allocated entirely to the mobile business.

The Commission's view

The Commission considers that to the extent that adjustments were made to Optus's 2003-04 costs to replicate a 'stand-alone' mobile operator, these should be transparent and justifiable. On the basis of the further information provided by Optus in a letter to the Commission dated 26 September 2005, the Commission notes that these 'stand-alone' adjustments appear to result in a **c-i-c** per cent increase in Optus's unadjusted GBV as at 30 June 2004, and a **c-i-c** per cent increase in Optus's operating costs. While the impact of these adjustments on the FL-LRIC of the DGTAS in isolation is not clear, the Commission notes Analysys's advice that the uplift to account for economies of scope is effectively around **c-i-c** per cent. The Commission also notes and accepts Analysys's advice that this uplift 'does not appear excessive, though only a detailed audit of Optus's financial accounts and operations would be able to confirm this'.[130]

Allocation of capital costs using 'routing factors'

Routing factors are applied to reflect that different mobile services use Optus's network elements with varying intensity.[131] The CRA model allocates Optus's capital costs (as well as 'network OPEX' costs) between 'inbound', 'on-net' and 'outbound' call services based on a set of 'routing factors' (shown in Table 5.5 below) which were determined by Optus's engineers and are based on Optus's GSM network architecture.

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[130] Analysys Report, p. 8.

[131] For example, if an 'inbound' call uses more elements within the Mobile Switching Centre (MSC) than an 'outbound' call, this would be reflected with a relatively higher 'routing factor'. In practice, 'routing factors' are implemented by adjusting the traffic volumes (i.e. in this case 'call minutes') associated with each call type to reflect these differences in usage intensity.

Table 5.5: Routing factors used in the CRA model[132]

Routing factor	Definition provided in CRA Report	Inbound	On-net	Outbound
BSS	Base Station Sub-system − includes Base Station Controller (BSC) and Base Transceiver Station BTS	**c-i-c**	**c-i-c**	**c-i-c**
NSS	Network Sub-system − includes the Mobile Switching Centre (MSC)	**c-i-c**	**c-i-c**	**c-i-c**
STP/MNP	Signal transfer point and mobile number portability	**c-i-c**	**c-i-c**	**c-i-c**
Gateway Switch	Confirmed in letter from Optus as its 'gateway switches'	**c-i-c**	**c-i-c**	**c-i-c**
Transmission	Relates to transmission on Optus's inter-exchange and intercapital transmission networks[133]	**c-i-c**	**c-i-c**	**c-i-c**
VMAIL	Voicemail	**c-i-c**	**c-i-c**	**c-i-c**

Source: CRA Model, Worksheet 'Routing'

As Table 5.5 shows, the routing factors attributed to 'inbound' calls are higher than those attributed to 'outbound' calls. Therefore, the application of the set of routing factors results in a significant skewing of Optus's capital and network OPEX costs towards the 'inbound' (**c-i-c** per cent of relevant costs) compared to 'outbound' (**c-i-c** per cent of relevant costs). As expected, 'on-net' calls have a relatively higher percentage allocation (**c-i-c** per cent) since these types of calls effectively replicate both an outbound and inbound function.

Submitters' views

No submitter to this inquiry appears to argue against the applicability of using routing factors in this context, and Telstra submits its view that the use of routing factors 'is a sensible and reasonable way in which to reflect network usage' of different mobile services. However, three submitters express concerns with the set of routing factors supplied by Optus, and used in the CRA model. In general terms, Hutchison, AAPT and the consultants engaged on behalf of the CCC (Cave and Chambers) submit that Optus did not provide information on how these routing factors were derived and considered there may be some doubt as to whether the Commission can properly assess their reasonableness. Further, Cave and Chambers submit that it would be helpful if the routing factors were benchmarked against other routing factor tables.

On the specific parameters chosen for certain cost categories, Hutchison submits that (assuming the routing factors are based on standard GSM network features) the routing factors for 'inbound' calls appear too high, which leads to an increased cost estimate for 'inbound' calls, and therefore, Optus's DGTAS. In reaching this view, Hutchison notes and adopts a number of comments from its consultant, GQ-AAS. The areas of contention are summarised below:

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[132] The underlying CRA model reveals that there were 12 routing categories identified. In addition to the six categories listed in Table 5.6, this included the **c-i-c**.

[133] Optus confirmed this in a letter to the Commission on 8 August 2005.

- *routing factor for Base Station System (BSS) 'inbound'* – could be lower than **c-i-c** (possibly **c-i-c**) to reflect that not all 'inbound' calls require the use of the BSS (i.e. those calls that are not answered).[134] This could reduce the cost estimate for the DGTAS substantially;
- *routing factor for BSS 'on-net'* – could be lower than **c-i-c** because many calls are diverted at the NSS and do not reach the BSS;
- *routing for NSS 'inbound'* – could be lower than **c-i-c** although though this would depend on the number of MSCs in the network and the proportion of incoming calls that are switched locally by the first switch;
- *routing factor for NSS 'on-net'* – would expect it to be much lower than **c-i-c** depending on the proportion of on-net calls that originate and terminate in the same NSS and diverted calls;
- *routing factor for Gateway Switch 'on-net'* – would expect this to be about zero as on-net calls do not go outside the NSS by definition; and
- *routing factor for Transmission 'on-net'* – would expect this to be zero as 'on-net' calls do not go outside the NSS by definition.[135]

Based on GQ-AAS's proposed routing factors, Hutchison estimates that Optus's overstatement of the cost of providing its DGTAS is in the order of **c-i-c** per cent.

Cave and Chambers submit that the NSS routing factor for 'inbound' calls (**c-i-c**) appears to be higher than that used in other LRIC models (e.g. UK), where the routing factor for the Mobile Switching Centre (MSC) has been broken down into details of the parts facing different network elements. Cave and Chambers submit that a routing factor of 1 would be more appropriate for the NSS.

AAPT submits that it does not understand the greater weighting for 'inbound' of NSS over BSS or the reduced loading (**c-i-c**) of the Gateway Switch for 'outbound' calls. To the extent that the latter represents a percentage of MTF calls being directed to the Optus fixed-line network, AAPT submits that this would violate Optus's/CRA's stated assumption of modelling Optus's GSM network on a 'stand alone' basis. Moreover, AAPT submits that it does not understand the weighting for the Transmission routing factor between 'inbound' and 'outbound' calls, and that while the interaction between Optus's fixed-line and mobile network may explain this weighting, again, this would violate the 'stand-alone' modelling assumption.[136]

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[134] In this regard, GQ-AAS submits that it would not be unreasonable to assume that more than 30 per cent of incoming calls are not answered, and that, therefore, the BSS routing factor for inbound could be reduced to around **c-i-c**. GQ-AAS also submits that a conservative estimate is that around **c-i-c** per cent of total costs of a mobile network can be attributed to the BTS and BSC (i.e. BSS) systems, and that a reduction in the BSS routing factor for 'inbound' would reduce Optus's estimated cost of the DGTAS substantially.

[135] This comment is based on GQ-AAS's assumption that 'Transmission' relates to transmission between the NSS (Mobile Switching Centre) and the Gateway Switch. The Commission sought clarification from Optus on this point in a letter on 27 July 2005. In a reply on 8 August 2005, Optus indicated that **c-i-c**.

[136] In this regard, AAPT understands that all 'inbound' calls are handed over by the originating carrier and that 'transmission' relates to inter-switch transmission, implying that only a portion of these calls would normally involve a transmission element. AAPT also submits that, at the same time, outbound MTM calls would be handed over at the nearest point of interconnection – in this case the remote mobile switch. Therefore, while it would be logical for Optus to hand off these calls to

Optus's updated set of routing factors

In light of the comments from submitters, and in response to a list of questions sent by the Commission (under section 152BT of the Act), Optus provided a revised set of routing factors on 26 September 2005. Notably, there are some differences between the original and the revised set. These are shown in Table 5.6 below.

Table 5.6: Comparison of Optus's 'original' and 'revised' routing factors[137]

Routing factor	Inbound	On-net	Outbound
BSS original *BSS revised*	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**
NSS original *NSS revised*	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**
STP/MNP original *STP/MNP revised*	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**
HLR original[138] *HLR revised*	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**
Gateway Switch original *Gateway Switch revised*	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**
Transmission original *Transmission revised*	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**	**c-i-c** **c-i-c**

Notwithstanding the differences with the original set of routing factors, Optus submits 'that the impact on the modelling on incremental costs does not … require a revision to the modelling or the undertaking prices'.[139]

Analysys's view

In general terms, Analysys considers that the routing factors used by Optus, although questioned extensively by submitters to this inquiry, are 'broadly consistent with factors used in other regulators' mobile LRIC models' and are 'not outside expected bounds'.[140] Analysys also sets out more specific comments, which are summarised below.

BSS (**c-i-c**): Analysys observes that, due to the significant and complex task of determining routing factors for this category, a simple **c-i-c** is often adopted.[141] In its view, this approach is 'entirely reasonable' in the context of regulatory price setting and consistent with regulators' cost models in the UK, Sweden and Malaysia. That said, Analysys notes that the allocation of costs to this category could be refined to attribute some 'mobile data' costs to BSS. Analysys also notes that the application of Optus's revised inbound and on-net routing factors would reduce the DGTAS

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the local voice switch, AAPT considers that it would violate its assumption of modelling its mobile operations on a stand-alone basis.

137 The revised set of routing factors provided by Optus did not include those relating to voicemail (VMAIL).

138 Not included in Table 5.7, but referred to in footnote above.

139 Letter from Optus to the Commission, 26 September 2005.

140 Analysys Report, p. 9.

141 Analysys also notes (p. 64) that 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.

estimate by **c-i-c** per cent (i.e. from **c-i-c** cpm to **c-i-c** cpm), and that 'an overall reduction in DGTAS incremental cost is expected'.[142]

NSS (**c-i-c**): Analysys notes that these have been determined approximately on the basis of counting the average number of switches calls of different types interact with, and that they 'appear consistent with our expectations of switch routeing factors'.[143]

STP/MNP (**c-i-c**): Analysys considers that these are 'broadly reasonable', although it notes that some signalling transit capacity could be allocated to SMS – which the CRA model does not allow for.[144]

VMAIL (**c-i-c**): Analysys notes that, by definition, voicemail cannot include any 'outbound' calls, so the routing factor must be higher for 'inbound' and 'on-net'. That said, Analysys notes that it is a policy decision as to who should pay for the cost of a voicemail service – the calling or receiving party, or both. Nonetheless, Analysys considers that the costs of voicemail should be included in the TSLRIC of the DGTAS because in the absence of the MTAS, the costs of providing voicemail would fall (to zero if there were also no on-net calls).

Optus's revised set of routing factors: Analysys notes that Optus's revised set of routing factors 'appear reasonable'.[145] Analysys also notes that applying the full set of Optus's revised routing factors (which apply ranges for particular parameters) would result in a +2 per cent to −4 per cent spread for the adjustment to the DGTAS estimate. On this issue, Analysys notes that the 2 per cent increase to the incremental cost of the DGTAS is only achieved with the most favourable choice of routing factors. Analysys also notes that Optus has not indicated whether routing factor ranges for inbound and outbound calls are linked, though if they are the effect of this revision will be a small percentage reduction in the incremental cost of the DGTAS.[146]

The Commission's view

The application of the original set of routing factors supplied by Optus results in significantly more network capital costs being allocated to the DGTAS than to the mobile 'outgoing' services. While not a concern *per se*, this highlights the importance of ascertaining whether the routing factors applied in the CRA model are likely to be appropriate.

On this issue, the Commission notes Analysys's view that the routing factors provided by Optus 'appear reasonable'. That said, the Commission agrees with submitters to this inquiry that, in some respects, the original set of routing factors utilised in the CRA model would tend to suggest that a greater than appropriate proportion of costs have been allocated towards the 'inbound' service – and therefore Optus's DGTAS estimate. More specifically, the Commission considers that there are two reasons which would tend to suggest that the application of Optus's original set of routing factors will overstate DGTAS costs.

Firstly, the Commission agrees with the proposition that an appropriate set of routing factors would take into account the fact that some proportion of incoming calls

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142 Analysys Report, p. 65.
143 Analysys Report, p. 63.
144 Analysys Report, p. 65.
145 Analysys Report, p. 65.
146 Analysys Report, p. 66.

(estimated at 30 per cent by GQ-AAS) would not be answered, and would therefore not use network elements associated with the BSS. Given that Optus's original set of routing factors do not take this into account, other things being equal, the BSS costs attributed to the DGTAS are likely to be overstated.

Secondly, Optus's original routing factors for 'Transmission' do not **c-i-c** portion of these costs being allocated to the 'outbound' service. This is despite confirmation from Optus that 'Transmission' in this context relates to its 'interexchange and intercapital transmission network'. In the Commission's view, given the likelihood that outbound mobile calls will use these network elements, the application of Optus's original 'outbound' Transmission routing factor (**c-i-c**) will overstate the amount of Transmission related costs attributed to the DGTAS.

The Commission notes that Optus's revised set of routing factors address these two issues, and therefore, appear to acknowledge flaws in the original set. However, in providing its revised set of routing factors, Optus has not only elected to adjust some of the other routing factors, but it has also proposed a 'range' for particular routing factors, where previously it provided 'point' estimates. In this regard, Analysys, is of the view that the net result of these revised set of routing factors on the allocation of costs is ambiguous (i.e. between +2 per cent and −4 per cent), although the upper bound 'is only achieved with the most favourable choice of routeing factors'.[147]

In the Commission's view, the decision by Optus to propose a range for certain 'revised' routing factors is highly problematic given than its original submission contained point estimates. Moreover, the Commission considers that it is not sufficiently clear from the information provided by Optus as to the basis for the adjustments to the 'inbound' and 'outbound' Gateway Switch routing factors, and the 'inbound' Transmission 'routing factors. The Commission notes that in the absence of these three adjustments, the proportion of costs allocated to 'inbound' – and therefore Optus's DGTAS – would, other things being equal, be less.

One issue not addressed by the revised set of routing factors provided by Optus are those relating to voicemail or VMAIL. The Commission agrees with Optus and Analysys that it is appropriate that the 'outbound' voicemail routing factor is **c-i-c** to reflect the fact that, by definition, voicemail cannot include any 'outbound' calls. In the Commission's view, though, the benefits derived from being able to leave a voicemail message are, to some extent, shared by the calling and receiving party. Moreover, the Commission understands that the cost of a voicemail message is shared to some extent by both the caller (who pays to leave the message) and the receiver (who, under certain mobile plans, will pay to receive the message). Based on this, the Commission considers that there may be a case for the 'on-net' voicemail routing factor being greater than that for 'inbound'. If this was the case then, other things equal, the costs allocated to Optus's DGTAS would be less.

Overall, the Commission is of the view that certain aspects of the original set of routing factors would tend to suggest that costs allocated to the DGTAS have been overstated. Moreover, although Optus's revised set of routing factors may not be outside the bounds considered 'reasonable' by Analysys, the basis for some of the proposed ranges remains unclear. For this reason, the Commission considers that it

[147] Analysys Report, p. 66.

cannot reach a view that the routing factors proposed by Optus are necessarily appropriate.

Allocation of costs to 'mobile data' services

In the CRA model, incremental (or FL-LRIC) costs are allocated to mobile data services in two ways:

1. Through the identification of certain mobile data specific costs – i.e. Short Message Service Centre (SMSC), Wireless Application Protocol (WAP), General Packet Radio Service (GPRS) and Data Processing Equipment. Combined, these amount to approximately $**c-i-c** million.
2. Via an assumption that **c-i-c** per cent of MSC costs are attributable to mobile data services. This amounts to $**c-i-c** million.

Based on these two assumptions, total incremental costs allocated to mobile data services amount to $**c-i-c**. This figure amounts to **c-i-c** per cent of the total incremental costs which are allocated in the CRA model. Moreover, it compares with Optus's reported revenue from mobile data services in 2003-04 of approximately $437 million.[148]

After the allocation of incremental costs to mobile data services, they are removed from the CRA model. In effect, this means that 'mobile data services' do not bear any of the FCCs allocated in the CRA model, except to the extent that they are attributed a portion (**c-i-c** per cent) of MSC costs.

In a submission in response to the draft decision, Optus submits that because the incremental costs of supplying SMS (cited as the 'only significant data service') is 'very small' the contribution of data services to FCCs would be expected to be 'miniscule' compared with the contribution to voice services. For example, under an EPMU approach, Optus submits that an SMS message would contribute only 0.14 per cent of the contribution of a voice minute.[149]

Submitters' views

Both AAPT and the consultants engaged on behalf of the CCC (Cave and Chambers) submit that the inclusion of mobile data services in the CRA model would, other things being equal, reduce the portion of FCCs that are attributed to the DGTAS. Moreover, AAPT submits that there is no justification for Optus only attributing $**c-i-c** million in mobile switching costs to mobile data services, given that they represented 14 per cent of Optus's total mobile services revenue ($437 million) in 2003-04.

Cave and Chambers recognise that the cost of the dedicated network element required to support SMS (the SMS Service Centre) is small in comparison to the revenue gained from this service. However, they submit that although SMS contributes little overhead to the radio network costs, it can impose a reasonable load on mobile switching infrastructure. For this reason, Cave and Chambers submit that it may therefore be appropriate that a portion of 'signalling and network switching load'

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[148] SingTel, *Management Discussion and Analysis of Financial Condition and Results of Operations for the 4th Quarter and Year Ended 31 March 2004*, p. 40.

[149] Optus submission in response to draft decision, p. 31.

costs also be attributed to mobile data services, and that this would have the effect of reducing the estimated DGTAS cost.

Analysys's view

Analysys notes that mobile data services are allocated clearly dedicated data costs such as SMS and WAP elements (approximately $**c-i-c** million). Analysys also notes that a proportion of MSC costs (**c-i-c** per cent of total MSC costs) is allocated to mobile data services which is 'reasonably consistent' with the level of data service processing carried out at the MSC layer – in particular SMS processing.[150]

Moreover, Analysys notes that this is evidence that Optus has considered, at least for one category, the interaction of data services with traditional network architecture. However, in Analysys's view, this highlights the omission of costs associated with other network elements such as the 'national switching and transmission network' or 'radio network resources'.

In response to a list of questions set by the Commission on 25 August 2005, Optus confirmed that it has not carried out a specific study to determine the interaction of data services with network elements, but believes that the marginal cost of SMS is very low. In Analysys's view, however:

> **c-i-c**.[151]

In Analysys's view, there are reasons to be concerned about the costs that have been allocated to SMS and GPRS services by CRA. In this regard, Analysys notes that the CRA model appears to have allocated almost all traffic-related costs to voice services (inbound, on-net and outbound). In Analysys's view:

> **c-i-c**.[152]

The Commission's view

The Commission considers that CRA's treatment of the costs associated with mobile services is likely to lead to the FL-LRIC of the DGTAS being overstated for three reasons.

First, on the advice of Analysys, the Commission considers that the **c-i-c** per cent of MSC costs allocated to mobile data services is likely to slightly understate an appropriate estimate of the switching load used by SMS messages. In this regard, the Commission notes Analysys's view that benchmarks available to it 'suggest **c-i-c**% to **c-i-c**% of MSC processor load is utilised in processing SMS messages'. The use of the mid-point of this suggested range suggests that approximately $**c-i-c** of MSC costs should have been allocated to 'mobile data services' rather than the $**c-i-c** actually allocated by CRA.

Second, in line with the view expressed by Cave and Chambers, the Commission considers that the incremental costs allocated to mobile data services are likely to be understated. This is because, as noted by Analysys, the incremental (FL-LRIC) costs allocated to mobile data services do not include any costs associated with STP switches, transmission or radio network resources, despite the fact that SMS services

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150 That said, Analysys notes that benchmarks available to it suggest a range of **c-i-c** – **c-i-c** per cent is appropriate for this allocation.

151 Analysys Report, p. 60.

152 Analysys Report, p. 18.

use these network components. This suggests that the incremental costs allocated to the DGTAS have been overstated, although it is difficult to quantify the magnitude of this overstatement without further information.

Third, the Commission is of the view that the exclusion of mobile data services prior to the allocation of Optus's FCCs suggests that CRA's estimate of Optus's cost of supplying its DGTAS is overstated. On this issue, the Commission disagrees with CRA's view that the allocation of FCCs to mobile data services would lead to a higher overall mark-up on Optus's cost of supplying its DGTAS. Rather, in the Commission's view, the allocation of some portion of FCCs to mobile data services would, other things being equal, unambiguously reduce CRA's estimate of costs attributed to the DGTAS. Moreover, the Commission notes Optus's view that the magnitude of FCCs allocated to mobile data services would be 'miniscule' due to the low incremental costs associated with this service. In this regard, Optus submits that, under an EPMU approach, an SMS message would contribute only **c-i-c** per cent of the contribution of a voice minute.[153]

The Commission finds it difficult to reconcile the apparent inconsistency between Optus's general rejection of an EPMU approach (in favour of a R-B approach) and its argument that using an EMPU approach would result in a 'miniscule' proportion of FCCs being allocated to mobile data services. Moreover, the Commission notes that under an R-B framework, which is strongly endorsed by Optus, the portion of FCCs allocated to mobile data services would depend on the relevant own and cross-price elasticities, rather than, as with an EPMU approach, the incremental costs of providing this service. This issue is discussed further in section 6.2.3 in the context of the allocation of Optus's FCCs based on R-B principles.

5.2.2. 'Fixed and common' costs (FCCs)

One critical aspect for the outputs of the CRA model is the composition and size of the FCCs which are identified and then allocated across relevant services. As noted above, these are allocated as a mark-up over the FL-LRIC of each relevant service (aside from mobile data services) according to R-B principles. Therefore, other things equal, the greater the size of FCCs, the greater the proportionate mark-up that is attributed to Optus's DGTAS.

CRA's approach

In defining the relevant components, CRA notes that *fixed costs* are those which do not vary with the level of output, while *common costs* are those incurred in the production of two or more products and that are not incremental to any one product. Further, CRA notes that where FCCs 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 costs to recover either type of cost is identical'.[154]

CRA submits that the supply of the DGTAS involves significant fixed costs, and as a result, implies the presence of significant economies of scale. CRA further notes that as many of the network elements are used in the supply of a range of services, economies of scale from greater traffic volumes also imply the existence of economies of scope in relation to the supply of the different types of services. CRA

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[153] Optus submission to the draft decision, p. 31.
[154] The CRA Report, p. 6.

identifies FCCS at the *network* (particularly arising from the provision of network coverage) and *non-network* level (such as administration and overheads). The FCCs included in the CRA model are:

- *Network level $***c-i-c** – comprising coverage ($**c-i-c**) and IT overhead costs ($**c-i-c**); and
- *Non-network level $***c-i-c** – comprising IT Opex ($**c-i-c**), Other Opex ($**c-i-c**) and Other expenses ($**c-i-c**)

As the table above shows, the total amount of FCCs allocated in the CRA model is $**c-i-c**, which comprises network and non-network costs.[155]

Network level FCCs

The figure for 'coverage' costs is based on the assumption that **c-i-c** per cent of Optus's BSS costs could be attributed to coverage. In explaining the basis for this assumption, Optus submits that its engineers reviewed Optus's network costs and identified that around **c-i-c** per cent of certain, mainly site-related, costs are attributable to the provision of network coverage rather than being capacity driven. Moreover, in further correspondence with the Commission, Optus has noted that the benchmark of this figure with international estimates suggests that it **c-i-c**.[156]

The derivation of the 'IT overheads' (depreciation/amortisation) figure was not clear from the original material supplied by Optus. That said, in a letter to the Commission on 26 September 2005, Optus indicated that:

> **c-i-c**.[157]

Non-network level FCCs

In relation to the 'IT Opex' costs, an analysis of the underlying CRA model reveals that approximately **c-i-c** per cent of cost items such as 'sales and marketing', 'general administration' and 'other staff costs' were allocated as FCCs. In a letter to the Commission dated 26 September 2005, Optus noted that in order to calculate these proportions it:

> **c-i-c**…[158]

In relation to 'Other Opex' costs of approximately $**c-i-c** million, the Commission notes that these comprise costs related to 'accommodation, property and other' (approximately $**c-i-c** million), 'administration' (approximately $**c-i-c** million), 'IT' (approximately $**c-i-c** million), 'network expenses' (approximately $**c-i-c** million) and 'spectrum licence' (approximately $**c-i-c** million).[159] These were allocated solely as 'fixed and common' costs in the CRA model.

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[155] Prior to these costs being allocated to the various services using the Rohlfs model, this figure was scaled up to 'market scale' using Optus's market share of subscribers (**c-i-c** per cent). The magnitude of industry FCCs allocated in the CRA model is therefore actually **c-i-c**.

[156] Letters to the Commission dated 8 August 2005 and 26 September 2005.

[157] Optus, Letter to the Commission, 26 September 2005, p. 12.

[158] Optus, Letter to the Commission, 26 September 2005, p. 12.

[159] Note that in its letter to the Commission dated 26 September 2005, Optus confirmed that the spectrum license cost of $**c-i-c** million which was used in the CRA model was in fact incorrect. Optus noted that the actual cost it incurred for the spectrum was $**c-i-c** million. Optus further notes that it ran another version of the CRA model correcting for this figure. This resulted in a change in

In relation to 'Other expenses' of approximately $**c-i-c** million, Optus confirmed that this item relates to the 'income tax expense'.[160]

Analysys's view

Analysys notes that Optus's assumption that **c-i-c** per cent of its BSS costs (i.e. $**c-i-c** million) relate to coverage, and should be included as FCCs is likely to be 'broadly reasonable'.[161] However, Analysys appears more circumspect on the allocation of $**c-i-c** million in IT network costs noting that although Optus's method for determining this percentage 'should therefore yield a reasonable allocation proportion', no background details are provided as supporting evidence'.[162]

Analysys also notes that FCCs have been allocated as a single mark up on the FL-LRIC of the relevant services according to R-B principles. It notes, however, that the use of an alternative EPMU approach, as advocated in the Commission's MTAS Pricing Principles Determination, yields an estimate for the DGTAS (i.e. FL-LRIC+) of **c-i-c** cpm, based on Optus's own 2003-04 data.

Analysys notes that this estimate was calculated using a 'two-stage' EPMU mark-up which is consistent with the EPMU approach used by Ofcom in the UK and PTS in Sweden. The first stage allocates *network* FCCs to network services (i.e. inbound, on-net and outbound). The second stage allocates *non-network* FCCs to all services (i.e. including subscription).

In commenting on the magnitude of these mark-ups, Analysys notes that the implied *network* common cost EPMU mark-up of **c-i-c** per cent is 'within the bounds anticipated from the approach Optus has taken to identifying coverage costs', and is broadly consistent with the one advocated in the UK, and less than the one advocated in Sweden. However, Analysys notes that the 'business overheads common cost mark up to both network and customer activities' of **c-i-c** per cent is 'at the high end of its expected range'. In this regard, Analysys notes that a mark-up of 10 per cent was applied in the UK, and a broadly equivalent mark-up in Sweden with respect to one MNO. On this issue, Analysys concludes that:

> **c-i-c**.[163]

In this regard, Analysys notes that the identification of 'mobile network rentals' from the overhead (non-network FCCs) category, and the allocation of income tax expenses on the basis of headcounts would reduce the level of FCCs and increase incremental costs.

WIK's view

WIK has noted that 'the main candidate for network common costs would be parts of coverage costs'.[164]

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the mark-ups over Optus's FL-LRIC of providing the DGTAS, but not to the underlying FL-LRIC estimate.

160 Letter to the Commission, 26 September 2005.

161 Analysys Report, p. 61.

162 Analysys Report, p. 62.

163 Analysys Report, p. 76.

164 WIK Report, *Mobile Terminating Access Service: Network Externality and Ramsey Pricing Issues*, A Consultancy Report for the ACCC, p. 11.

In relation to 'organisational-level' common costs, WIK notes that it is possible to, in principle, determine whether these costs are 'common' or incremental to a particular service by varying the outputs individually and together and measuring the associated cost variations'. WIK considers that:

> As long as this has not been done, it is somewhat naïve to accept certain costs, for example for accounting and management, as common.[165]

WIK also cites another category of 'common' costs as 'other non-network common costs'. It identifies these as 'customer acquisition' and 'customer care' costs. In its view, these costs are 'direct costs' of mobile subscription and therefore 'not common costs at all'. More generally, WIK notes that:

> We have repeatedly raised doubts about the claimed size of fixed and common costs in the mobile sector … a large fraction of what are usually termed "fixed and common" costs are likely to vary proportionately with individual outputs …[166] .

Submitters' views

Submitters did not comment extensively on the appropriateness of the magnitude and/or the composition of the actual FCCs allocated in the CRA model. This might have been due to the fact that the original CRA model supplied to submitters contained errors which made it difficult to explicitly trace the FCCs.

Optus's view on Analysys's c-i-c cpm estimate

In its submission to the draft decision, Optus disagrees with Analysys's assumption that the externality mark-up can be removed and FCCs allocated on an EPMU basis to provide a reasonable cost based estimate of **c-i-c** cpm. In Optus's view, it is not valid to adjust one component of the CRA model to fit TSLRIC+ methodology without making adjustments to other aspects of the model, including the 'choice of operator' and the magnitude of coverage related FCCs and that to do otherwise would 'lead to significant adverse welfare consequences and would mean that the Commission has diverged considerably from efficient pricing principles'.[167]

On the choice of operator, Optus submits that in the event that a TSLRIC+ approach was used in this context, the 'marginal' operator's costs should be used.[168]

On coverage costs, Optus submits that in the event that a TSLRIC+ approach was used in this context, minimum network coverage costs should be increased from $**c-i-c** to $**c-i-c** million. In support of this, Optus notes that its original estimate 'was based on a bare minimum mobile network and such a network would not be viable in a commercial sense'.[169]

Optus also submits that there appear to be errors in Analysys's transformation of its costs in this regard and that a reasonable estimate is more likely to be in the order of **c-i-c** cpm based on the most conservative estimation.[170]

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165 WIK Report, p. 11.
166 WIK Report, pp. 38-39.
167 Optus submission in response to draft decision, p. 2.
168 Optus submission in response to draft decision, p. 15.
169 Optus submission in response to draft decision, p. 19.
170 Optus submission in response to draft decision, p. 17.

The Commission's view

Having regard to the advice of Analysys and WIK, the Commission has concerns with the magnitude of FCCs attributed both at the network and non-network level. With respect to the network level FCCs, the Commission considers while, on the advice of its consultants, the $**c-i-c** million allocated as 'coverage-related costs' appears appropriate, there is still some residual uncertainty as to the appropriateness of the $**c-i-c** million in 'IT network' costs that have been allocated as FCCs. Moreover, with respect to the non-network FCCs, the Commission notes that Analysys has concluded that the 'business overheads common cost mark-up to both network and customers activities' is at the high end of its expected range, and is higher than mark-ups that have been applied in the UK and Sweden.

The Commission notes that, to the extent that overall FCCs in the CRA model have been overstated beyond an appropriate level, this will have significant ramifications for the mark-ups attributed to Optus's DGTAS. This is because the recovery of FCCs is facilitated in a R-B framework that assumes that the DGTAS is relatively more inelastic than all other mobile services. In turn, this means the DGTAS is attributed a relatively higher mark-up on its FL-LRIC in the CRA model than that which would arise under an EPMU approach.

The Commission also notes Analysys's advice that the CRA model can be used to generate an estimate for the cost of the DGTAS of **c-i-c** cpm based on the recovery of FCCs using an EPMU approach (and the removal of the NES) and Optus's objections in this regard.

The Commission disagrees, however, with Optus's view that CRA's cost estimates cannot be used to generate a FL-LRIC plus EPMU estimate for the DGTAS. As previously noted, the Commission considers that FL-LRIC and TSLRIC are broadly analogous cost concepts. Further, the Commission notes that Analysys's **c-i-c** cpm estimate is based purely on Optus's data, which has been presented by Optus as its view on the relevant costs associated with supplying the DGTAS. In this context, therefore, it is not clear to the Commission why these cost inputs – or the delineation between incremental and common costs – and the underlying assumptions which give rise to them should change simply because a different allocation method is applied to one category of costs (i.e. FCCs).

In the Commission's view, Optus mounts a confusing argument as to why the appropriate model benchmark would be the 'marginal' mobile operator in the Australian market if an EPMU approach was used instead for the recovery of FCCs and the NES was removed. Further, while Optus has provided further information in support of its view that minimum network coverage costs should be increased to $**c-i-c** million if an EPMU approach was used, it is not clear to the Commission that this revision is appropriate. At issue here is not the magnitude of total coverage costs, but the most appropriate way in which to divide these costs between 'incremental' and 'FCCs' for the purpose of determining a regulated price for the DGTAS. In the Commission's view, only those costs which are required to establish a minimum network coverage presence should be included as FCCs, while all other costs associated with coverage should be treated as being 'incremental' to traffic. Based on this approach, the Commission's expectation is that those coverage costs defined as FCCs would be relatively small and somewhere in the order of Optus's original estimate. Notably, this is also consistent with the approach adopted by Ofcom in the

UK which estimated that 'coverage driven costs' would represent around 3.3 per cent of overall coverage costs in 2005-06.[171]

Finally, the Commission notes Optus's comment that there appear to be 'errors' in Analysys's transformation of Optus's costs to derive the **c-i-c** cpm estimate and 'a reasonable estimate is more likely to be in the order of **c-i-c** cpm based on the most conservative estimation'. However, Optus has not explained adequately what these apparent 'errors' are. Indeed, elsewhere in its submission, Optus appears to reveal that the basis for this **c-i-c** cpm is its alternative assumption about the magnitude of 'coverage' costs that should be included as FCC. This would suggest that the basis for the difference between Optus's and Analysys's estimates relates to a different assumption, rather than an error by Analysys.

5.2.3. Volumes

The volumes used in the CRA model are largely based on Optus's own volumes for 2003-04. The estimated volumes which have been used by CRA in the Rohlfs model are shown in Table 5.7 below.

Table 5.7: Traffic volumes used in the CRA model

	2003-04	2004-05	2005-06	2006-07	2007-08
Subscribers	15,118,702	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
Mobile outbound (mins)	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
Fixed to mobile (mins)	6,501,538,462	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
Off-net MTM (mins)	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
Subscriber growth	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
Minutes growth	**c-i-c**	**c-i-c**	**c-i-c** %	**c-i-c**	**c-i-c**

The initial 2003-04 volumes, which are presented on an 'industry-wide' scale to suit the specification of the Rohlfs model, were calculated using the following methodology:

- *Subscribers* – actual average number of subscribers for the year ended June 2004 sourced from Telstra, SingTel, Vodafone and Hutchison data;
- *Mobile outbound minutes (MTM on-net, MTM off-net and MTF)* – actual figures for Telstra and Optus were used, and subsequently inflated to 'industry scale' by a combined market share of 80 per cent;
- *Off-net MTM minutes* – it is noted that public estimates of the share of mobile originated calls that are 'off-net' are not available. Therefore, this parameter was calculated by applying the Optus share of mobile outbound minutes that are 'off-net'; and
- *FTM minutes* – estimated from Telstra's publicly available figure for year ending June 2004, and dividing by its market share.

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[171] See Oftel document (now located on Ofcom website), *Different Views of Oftel and MNOs on Network Common Costs*, p. 2.

As can be seen from Table 5.7, the initial traffic volumes for each parameter have then been inflated for subsequent years, according to an expected annual growth rate of approximately 2 per cent per annum. This was calculated based on IDC forecasts for subscriber growth over the period 2005-2007. It was subsequently applied to all traffic volumes in the CRA model. In this sense, the CRA model is based on the assumption that 'minutes per subscriber' remain constant over the relevant period.

Importantly, however, Analysys has noted that these future traffic volumes are only applied in relation to the estimated 'welfare-maximising' prices calculated by the Rohlfs model. In other words, Optus's incremental (FL-LRIC) costs of supplying the DGTAS in all periods of the model are based on 2003-04 traffic volumes, and the costs incurred in servicing those traffic volumes.

The Commission's view

The Commission notes Analysys's view that CRA's estimate of the FL-LRIC of the DGTAS for subsequent years appears to be anchored on the basis of 2003-04 volumes. This would tend to suggest that the CRA model is based on the implicit assumption that Optus's FL-LRIC estimates will not be subject to economies of scale over the period 2004-05 to 2007-08. The Commission considers that, based on the available evidence, there remains some uncertainty as to whether this is an appropriate assumption. This is particularly so given CRA observation that 'the supply of mobile termination services involves significant fixed costs, and as a result implies the presence of significant economies of scale'.[172] To the extent that Optus could be expected to enjoy economies of scale over the Undertaking period, this would (all other things equal) imply a lower per unit cost for the DGTAS.

In relation to the traffic volumes estimated for future years in CRA's application of the Rohlfs model, the Commission notes that Optus has assumed that minutes per subscriber will remain constant over the Undertaking period. In other words, both the number of subscribers and relevant traffic volumes are assumed to grow at around 2 per cent per annum over the period 2003-04 to 2007-08.

The Commission has some concerns as to the validity of this assumption. Optus's own RAF accounts indicate that its mobile subscriber base increased by +**c-i-c** per cent from 31 March 2004 to 31 March 2005, while the number of mobile originated minutes (GSM) increased by **c-i-c** per cent over the same period. This evidence would tend to indicate that traffic volumes (i.e. call minutes) may grow at a faster rate that the number of subscribers over the period 2003-04 to 2004-05. A continuation of this trend could be even more likely given the introduction and apparent popularity of mobile 'bucket' plans. Therefore, Optus's assumption that call minutes per subscriber will remain constant over the Undertaking period may be conservative. The Commission notes that CRA model cannot be adjusted to test the sensitivity of this assumption on the model outputs. That said, other things equal, the Commission would expect that an increase across all traffic volumes greater than an increase in mobile subscribers would tend to imply lower per unit costs in future years.

5.2.4. Conclusion on empirical cost inputs

The Commission notes that certain aspects of the model, including the failure by CRA to make an inflation adjustment to value Optus's operating costs in 2004-05 terms,

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[172] The CRA Report, p. 10.

could suggest that the FL-LRIC of the DGTAS may have been understated from its 'efficient' level. However, the Commission is of the view that, on balance, many of the assumptions employed to calculate the CRA model inputs would tend to suggest that the estimated FL-LRIC of the DGTAS has been overstated from its 'efficient' level. These include that:

- on the advice of its consultant, Analysys, the Commission considers that the 'current cost' adjustments made to Optus's network assets are likely to understate the extent to which GSM equipment prices, in particular, are likely to fall over the Undertaking period. Analysys suggests that this would tend to suggest that the FL-LRIC of the DGTAS has been overstated in the order of +2 to +6 per cent;
- Optus has confirmed that the original GBV values for Optus's asset base (to which the current cost adjustments were applied) were for the year ending 30 June 2004, while the rest of the CRA model is specified on the year ending 31 March 2004. Optus has indicated that correcting for this factor (i.e. basing the entire model and the GBV on the year ending 31 March 2004) would result in the FL-LRIC of the DGTAS falling by **c-i-c** cpm;
- the original routing factors used in the CRA model would tend to suggest that a greater than appropriate proportion of particular cost categories may have been allocated to the 'inbound' call service – and therefore Optus's FL-LRIC of the DGTAS. The application of the revised set of routing factors provided by Optus has an ambiguous result in the FL-LRIC of each modelled service due to the use of a 'range of values' rather than point estimates which were previously used by Optus;
- the failure to allocate any of Optus's network costs associated with its 'STP switches', 'transmission' and 'radio' network resources to mobile data services would tend to suggest that the costs allocated to the modelled services (including the FL-LRIC of the DGTAS) are overstated. That said, it is difficult to quantify this effect on the available information. In a related point, the failure to allocate any of Optus's FCCs to mobile data services (aside from a separate allocation of MSC costs) tends to suggest that the mark-up on the FL-LRIC of the DGTAS for FCCs has been overstated; and
- on the advice of its consultant, Analysys, the FL-LRIC estimates for the DGTAS in years 2004-05, 2005-06, 2006-07, 2007-08 are 'grounded' in 2003-04 costs and volumes. To the extent that Optus experiences any economies of scale over this period, the FL-LRIC estimates for these years would, other things equal, tend to overstate 'efficient costs'.

5.3. Overall conclusion on Optus's empirical cost estimates

The Commission is of the view that the conceptual approach adopted by CRA to model the FL-LRIC of Optus providing its DGTAS will, at the very best, tend towards generating an upper bound estimate of the forward-looking efficient costs of supplying the MTAS in Australia. In this sense then, before even examining the derivation of the model inputs, the Commission considers that Optus's own FL-LRIC of **c-i-c** cpm for the FL-LRIC of Optus supplying its DGTAS (i.e. without consideration of the FCCs) should more appropriately be considered as tending

toward an upper bound estimate of the efficient costs of providing the MTAS in Australia.[173]

Further, the Commission has certain concerns with the methodology and assumptions used to calculate a number of the CRA model inputs, which have both a direct and indirect impact on the derivation of the FL-LRIC estimate of Optus supplying its DGTAS. For this reason, and notwithstanding the Commission's views about the conceptual approach used by CRA to generate the estimate, the Commission considers the derivation and allocation of particular model inputs would suggest that CRA's estimate of the FL-LRIC of Optus providing the DGTAS will tend towards overstating its efficient costs of supplying this service.

[173] Moreover, the Commission notes that in a letter to the Commission on 26 September 2005, Optus revised its estimate to **c-i-c** cpm.

6. Ramsey-Boiteux mark-up

As noted previously, CRA's estimate of the 'welfare maximising' DGTAS price includes two mark-ups over FL-LRIC; one to account for the recovery of 'fixed and common costs' (FCCs) based on Ramsey-Boiteux (R-B) principles and one for the inclusion of a 'network externality surcharge' (NES).

This Chapter assesses the merits of Optus's inclusion of an R-B mark-up on the DGTAS in its Undertaking price terms. The NES mark-up is considered in Chapter 7. This chapter is divided into two main sections.

- Section 6.1 assesses Optus's 'case for' including a 'R-B' mark-up on the FL-LRIC cost of it providing its DGTAS; and
- Section 6.2 considers whether the form of R-B pricing advocated by Optus will necessarily result in a more socially optimal outcome compared to the EPMU approach adopted in the MTAS Pricing Principles Determination.

Again, it is important to point out that this chapter is not an assessment of the 'reasonableness' of Optus's proposed price terms against the relevant statutory criteria, which is included at Chapter 10. Rather, this chapter assesses the merits of the proposed R-B mark-up in the Optus price terms and conditions with a view to assisting/informing the overall assessment of the 'reasonableness' of the Optus price terms and conditions in totality against the relevant statutory criteria in section 152AH of the Act.

6.1. Assessment of Optus's R-B framework

In its original submission, Optus notes that this version of the Rohlfs model:

> … reflects the main intuition of Ramsey Boiteux pricing that welfare can be maximised by recovering fixed and common costs in a manner that minimises distortions to demand. The model goes beyond 'simple' Ramsey-Boituex pricing to capture the complexity of the structure of demand for mobile services, including cross-elasticities of demand that take the form of externalities.[174]

As a result of applying the Rohlfs model, CRA calculates a R-B mark up on the FL-LRIC of the DGTAS of **c-i-c** cpm for 2004-05.[175] A summary of R-B principles and the conditions required for it to necessarily result in a socially optimal configuration of prices is set out in Appendix 3 to this report. In order to assess the appropriateness of the R-B framework proposed by Optus, the Commission will examine each of the following issues in turn:

- whether Optus's assumption of a 'normal-profit constraint' across the relevant markets is appropriate;
- whether the model used by Optus/CRA is based on the appropriate conceptual starting point;
- whether the R-B framework is specified to cover all the relevant services;

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[174] Optus submission, p. 37.

[175] Notably, this is greater than the per-unit 'FL-LRIC' estimate of the DGTAS of **c-i-c** cpm in 2004-05.

- whether the *own* and *cross*-price elasticity of demand estimates used are likely to be credible;
- whether the assumption of imposing 'single part' linear prices is appropriate in mobile markets; and
- whether the prices that result from Optus's R-B framework satisfy a basic reality test.

6.1.1. Normal-profit constraint

The CRA model is based on the assumption that Optus is earning 'normal economic profits' over the relevant markets. This is based on Optus's view that there is effective competition in the retail mobile services market, and that any above-cost revenues earned from the MTAS are competed away at the retail level.[176]

Submitters' views

Telstra submits that, while it has not examined the implementation of Optus's R-B pricing approach in detail, it believes that it is appropriate for the DGTAS prices to reflect the R-B principle for the recovery of common costs.

In contrast, submitters such as the CCC, Hutchison and AAPT expressed caution over the use of R-B pricing in this context. For example, the consultants engaged on behalf of the CCC (Martin Cave and Charles Chambers)[177] submit that the use of R-B pricing in this context is predicated on there being no 'excess profits' in mobile markets. On this issue, Cave and Chambers note the Commission's analysis in the MTAS Final Report that the Australian retail mobile services market is not effectively competitive, and consider that it should not be assumed that an MNO will set prices for retail mobile services at their R-B efficient level.

Hutchison submits that the Undertaking price terms should include a mark-up for common costs, but that these should not be calculated by reference to R-B principles. In support of its view, Hutchison notes the views of its consultant (MJA) that, in circumstances where the mobile market is not effectively competitive, there are insufficient competitive pressures to ensure that firms have an incentive to implement the correct R-B pricing themselves.

AAPT has cited analysis by Goldman Sachs JBWere which concludes that:

> … the Australian mobiles market is currently a highly profitable industry with improving returns and an attractive payback. Optus Mobile is an excellent example. In the period FY00-

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[176] On this issue, Optus has submitted that while some submitters to this inquiry (AAPT, the CCC's consultants and Hutchison) have expressed concern about the extent of competition at the retail level, these concerns should be now be laid to rest given evidence of 'intense' competition in this market over the last 12 months. Over this period, Optus submits that Hutchison and Vodafone have continued to grow strongly, while the presence of MVNOs and resellers has exerted additional competitive constraints. In addition, Optus notes (submission, 16 August 2005, paragraph 2.7 and 2.8, p. 5.) Commissioner Willett's recent observation that 'there is quite vigorous competition in the retail mobile market' and a CSFB analyst report which suggests that there are 'significant pricing pressures at the retail level as capped plans gain momentum'.

[177] Martin Cave and Charles Chambers, *Commentary on the Optus and Vodafone Undertakings in relation to Domestic Digital Mobile Terminating Access Service*, 3 June 2005, p. 14.

> 05 Optus Mobile grew EBITDA at a CAGR of 21.0%, while its EBITDA margin improved from 33.8% to 40.1%.[178]

AAPT further submits that the conclusions of the Goldman Sachs JBWere report appear to accord with the results of the CRA model itself which indicates that, even if SMS and data revenues and costs are excluded, the industry generates a profit of $**c-i-c** million.

In response to AAPT's submission, Optus submits that AAPT's view is based on a single analyst's report that takes a short-term perspective of measuring profitability at a single point in time. Optus also submits that this report does not appear to assess the return over the lifetime of the 2G investment, despite the fact that higher returns later in the investment cycle are necessary to offset initial losses. Optus further submits that AAPT's decision to acquire $125 million in CDMA spectrum and subsequently to abandon the project in 2001, is further evidence that the Australian mobiles market is not capable of generating above-normal profits.

The Commission's view

In the Commission's view, the 'normal-profit constraint assumption', upon which the CRA model is explicitly based, is unlikely to be satisfied across the relevant markets in which Optus operates. Rather, the Commission is of the view that Optus is likely to be making some level of 'above-normal' economic profits over the services to which the CRA-specified R-B framework applies.

This is principally because, in the Commission's view, Optus retains market power over the calls that terminate on both its mobile networks (i.e. GSM mobile network and emerging 3G network). Despite declaration of this service, the Commission believes that the price set for this service is well in excess of its TSLRIC+ of production. This would continue to be the case during 2005 and 2006 (and likely 2007) even if the price of the MTAS reflected those prices in Annexure 2 of the Commission's MTAS Pricing Principles Determination. Moreover, the Commission maintains its view, expressed in the MTAS Final Report, that there is not effective competition in the retail mobile services market. The reasons for it continuing to hold this view are outlined in section 10.1.3 below. This means that, in the Commission's view, profits made by Optus in the supply of the MTAS are not all competed away in the retail market, leaving Optus with above-normal economic profits overall. For a further explanation of the Commission's view in this regard, including the impact of regulating MTAS rates on other mobile prices, see Appendix 5 on the so-called 'waterbed effect'.

The Commission notes that if the 'normal-profit constraint' assumption is not satisfied, the *a priori* case for implementing a R-B framework is seriously weakened. This is because, as noted by AAPT and WIK, the resulting configuration of prices would be set to recover both legitimate costs (including opportunity costs) and above-normal profits, so that the entire pricing structure is too high. Moreover, although the same type of pricing structure might emerge as in a normal-profit framework (i.e. higher proportionate mark-ups on services with a relatively lower own-price elasticity of demand) the actual prices would not necessarily be R-B efficient from a social

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[178] Christian Guerra, 'Australian Mobiles Market Competitive? You Must be Kidding', *Telecommunications Sector Commentary*, Goldman Sachs JBWere, 19 May 2005, p. 4.

welfare perspective, and would likely be higher. Indeed, this was the basis for the Commission's statement in the MTAS Final Report that:

> Ramsey prices can be set at any level ranging from cost recovery to full monopoly exploitation.[179]

On the issue of whether the Australian mobiles market is 'capable' of generating 'excess' profits, while AAPT has cited a single analysts report, in AAPT's view, certain conclusions in this report are consistent with the results of the CRA model. An analysis of the initial CRA model inputs reveals that total costs outweighed total revenues by approximately $**c-i-c** million in 2003-04.[180] However, the inclusion of mobile data services in this calculation would appear to imply a relatively significant industry-wide profit of approximately in 2003-04.[181]

The Commission notes CRA's view that its modelling exercise is 'not capable of identifying the presence of economic profits' and that there are 'well-recognised' problems with using accounting data to identify economic profits.[182] The Commission agrees that the use of historical data to infer economic profitability has limitations and, where possible, should be used in conjunction with other supporting information, particularly that relating to the life-cycle of investments.

That said, the Commission notes that elsewhere in its report CRA highlights that its model is a FL-LRIC model, and not simply based on historical data. Moreover, this model is used by CRA to estimate the 'welfare maximising' level for the DGTAS, which is then included as the 'target' price in the Undertaking. Given this, it would seem inconsistent for CRA to use the model inputs as a basis for its 'welfare-maximising' estimate of the DGTAS, but to then claim that the same data cannot be used to give any indication of the profitability of the modelled mobile services, and by proxy, the mobile industry more generally. In the Commission's view, if Optus's data cannot give at least some representation of the extent of profitability, then there is at least some question as to whether it should be used to justify prices to generate it.

That said, the Commission agrees with Optus that it is important to put these figures into an appropriate historical context, and to recognise that the installation of Optus's GSM network involved significant investment costs. To the extent that these expenditures were incurred efficiently, the Commission agrees that these costs can be legitimately recovered over a period of time, and that this needs to be factored into any analysis seeking to determine overall profitability levels. In this regard, however, the Commission's own analysis, (included in section 10.2 of this report) which is

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179 MTAS Final Report, p. 170.

180 Moreover, on the profitability of the set of 'welfare-maximising' prices calculated by the CRA model, Analysys has noted that these prices imply an 'over-recovery' of Optus's costs. In this regard, Analysys notes that the actual costs incurred by Optus in the CRA model for 2004-05 was $**c-i-c** million, while CRA's proposed welfare-maximising' prices imply a recovery of approximately $**c-i-c** million.

181 In this regard, the Commission notes SingTel Optus's 2003-04 financial results indicate that 'data revenue' (i.e. from SMS and GPRS services) accounted for 14 per cent of Optus's total mobile services revenue. Using this percentage to adjust 'total industry revenues' in the CRA model results in an increase from $**c-i-c** billion to $**c-i-c** billion. Re-including 'total incremental costs' attributed to mobile data services ($**c-i-c** million multiplied by **c-i-c** = $**c-i-c**) implies an industry-wide profit of approximately $**c-i-c** billion in 2003-04.

182 In this context, CRA refers to factors such as returns for ex ante investment risks, intangible assets such as those from R&D and advertising and returns to superior factors of production such as superior management.

based on Optus's publicly available financial information, suggests that a substantial proportion of Optus's GSM investment is likely to have been recovered.

Optus has also argued that AAPT's decision to abandon its CDMA network is evidence that the Australian mobile market is not capable of generating excess profits. In the Commission's view, however, the fact that AAPT opted to exit this market could equally be taken as evidence that potential new entrants face significant barriers to entry, or that the existence of above-cost MTAS rates makes it difficult for a new entrant with low market share to maintain a tenable business case. The Commission believes that to draw robust conclusions from AAPT's decision would require more intimate knowledge of the particular business case and the strategic objectives of its parent company. Optus has not provided any such analysis or supporting information.

6.1.2. The conceptual applicability of the model used to derive the R-B prices

The version of the Rohlfs model employed by CRA estimates a set of 'welfare-maximising' prices for 'mobile subscription', 'MTM on-net', 'MTM off-net' and FTM services.[183] Implicitly, the CRA model assumes that Optus will have the necessary incentives to set the estimated 'welfare-maximising' prices for the specified services based on their relevant super-elasticities.

As pointed out by Optus in its submission to the draft decision, CRA has noted that Rohlfs's original paper also refers to a 'principal-agent model' that examines the impact of assuming particular behaviour by MNOs and of setting the MTAS for MTM off-net calls below cost. However, CRA considers that this model is 'unusual' in a number of respects and therefore, not 'relevant' to Optus's proposed Undertaking.

Further, in this submission, Optus considers that 'it is unreasonable that the Commission would put on evidence that a principal-agent model may be more conceptually correct, but not then provide any evidence as to what pricing structure such an approach would yield'.[184]

Submitters' views

The consultant engaged on behalf of Hutchison (MJA) submits that R-B pricing will not necessarily increase welfare when the regulator only sets a subset of prices at the optimal level, yet notes that setting wholesale and retail prices (for both fixed and mobile operators) is both impractical and undesirable.

MJA also expresses concern that the R-B mark-ups determined by an MNO would be based on firm-specific elasticities, and would not coincide with the industry or market elasticities that should be used to set R-B prices.

WIK's view

WIK notes that, typically, although the regulator has some control over the MTAS price, it does not control the prices for other mobile services. In this regard, WIK notes that the version of the Rohlfs model employed by CRA makes no attempt to correct for the existence of imperfect competition in the markets within which the other services (i.e. mobile subscription, MTM on-net and MTM off-net) are provided. WIK also notes that an attempt has been made to address this issue in the relevant

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[183] The 'welfare-maximising' price for the DGTAS is then calculated by subtracting a 'fixed retention rate' from the FTM price.

[184] Optus submission in response to draft decision, p. 29.

economic literature. For example, WIK notes that Rohlfs (2002) and Houpis and Valletti (2004) have developed 'principal-agent' models in this context. In simple terms, these 'principal-agent' models attempt to solve for a situation in which the regulator has to set the MTAS price that maximises social welfare taking account of the retail prices which will be set by MNOs, which themselves will depend on the price of the MTAS. These models are premised on a situation where the regulator can only directly influence the MTAS price, and leaves all other prices to be determined by the market. As WIK notes:

> The principal-agent approach to optimal MTAS pricing assumes that the regulator maximises welfare with respect to the MTAS price subject to a break-even constraint for all firms (assumed to be symmetric and subject to a market equilibrium in the unregulated mobile markets). That is, rather than setting B-R prices for their unregulated services the mobile operators are assumed to maximise their profits.[185]

These models, therefore, attempt to account for the existence of 'imperfect competition' in the markets for which the regulator does not determine price.

Ofcom notes that Dr Rohlfs 'reached the conclusion that the mark-up on the MTAS should be reduced when this is taken into account'. In addition, WIK notes that Houpis and Valletti's main result is that MTAS charges should be higher the less competition there is for the other (i.e. retail mobile) services.[186]

WIK considers that while the Rohlfs principal-agent model is not fully developed, it, and the more fully developed Houpis and Valletti approach, appear to be on the correct 'theoretical track' compared to the 'simple' Ramsey model that CRA has used to optimise over all prices. Therefore, WIK, concludes that:

> Only the principal-agent approach deals with this issue. In that sense, it is the only *conceptually* correct approach to the MTAS problem discussed so far. However, it also faces the biggest empirical problems with its implementability. These go beyond problems faced by all the other models, for example, with respect to the measurement of elasticities and additionally includes assessments of the firms' price responses and their feedback to finding the optimal MTAS charges.[187]

The Commission's view

The Commission notes that it is required to assess Optus's proposed Undertaking price for its DGTAS. The Commission also notes that it does not regulate the other services which CRA estimates 'welfare-maximising' prices for (i.e. those services provided in the retail mobile services markets). That said, the Commission notes that the claimed 'optimality' of the CRA model results – and therefore the 'welfare-maximising' price for the DGTAS – appears to hinge on 'welfare-maximising' prices being set across *all* the relevant services simultaneously.

As noted by WIK, however, although the CRA model calculates 'welfare-maximising' prices for retail mobile services (i.e. off-net MTM, off-net MTM and mobile subscription), it does not account for the extent to which these prices will actually emerge.

As discussed in section 6.1.3 above, traditional R-B pricing analysis tends to implicitly assume the existence of one monopoly producer. Under this approach, the monopolist's firm-specific demand equates with that of the market, and the

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185 WIK Report, p. 19.
186 WIK Report, p. 39.
187 WIK Report, p. 21.

monopolist is able (and has an incentive to) structure its prices across a range of services in a fashion consistent with R-B pricing principles.

However, in the Commission's view, this assumption is unlikely to hold in the mobiles sector. This is due to the Commission's belief that although MNOs have monopoly power over the provision of the MTAS, there is likely to be a greater degree of competition in the downstream retail mobiles market; although this market is unlikely to be effectively competitive.

For this reason, the Commission considers that, to the extent that there is competition in the retail mobiles market, MNOs will be forced to set prices according to their carrier-specific demands, rather than according to their market demands – and that, firm specific demands are likely to be more elastic than market demands. Moreover, the Commission notes WIK's view that carrier-specific and market demands will only coincide in the case where a MNO has monopoly power in the provision of each of the relevant services.

On this issue, Optus stated its view that 'it is not clear that the ratio of firm level super-elasticities will differ from the ratio of market level super-elasticities if the services are subject to the same competitive conditions'. In any case, and in response to MJA's submission, Optus submits that the elasticity estimates used in CRA's model were market elasticities and were not firm-specific it 'understands that' the elasticity estimates used in CRA's model were market elasticities and were not firm-specific.[188]

In the Commission's view, the likelihood that the retail mobile services market exhibits some degree of competition (and indeed, Optus's view that this market is 'effectively competitive') suggests that the carrier-specific own-price elasticity of demand for these services are more elastic than the overall market own-price elasticities. Moreover, aside from an assertion, the Commission is unclear as to the basis for Optus's claim that the elasticity estimates used in its model were market elasticities and not carrier-specific.

Therefore, although the CRA model calculates so-called 'welfare-maximising' prices for services in the 'retail mobile services market' it does not take into account the extent of competition in these other markets and, indeed, whether or not its estimated 'welfare-maximising' prices are likely to be set by Optus for these other services.

On this issue, the Commission notes WIK's view that a more conceptually correct approach for deriving R-B prices in the mobiles sector would be to use a 'principal-agent' type model akin to those developed by Rohlfs and Houpis and Valletti. That said, the Commission also notes WIK's view that these models are not yet 'fully developed' and face greater implementation challenges than the 'simple' Ramsey model used by CRA to derive its 'welfare-maximising' prices.

In the Commission's view, the fact that the model used by CRA does not account for the extent to which all the 'welfare-maximising' prices will be set by Optus means that the Commission does not have confidence that the R-B framework proposed by Optus will result in a socially-optimal configuration of prices. Further, the Commission considers that if it were appropriate to perform any form of R-B pricing, a more *conceptually* appropriate approach would most likely be a principal-agent type

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[188] Optus submission, 16 August 2005, p. 8.

model. However, given WIK's view that these models face even greater implementation challenges than the R-B model used by CRA, the Commission considers that it remains uncertain as to whether a principal-agent type model could adequately be developed to generate a socially-optimal configuration of R-B prices.

The Commission also notes Optus's view that it is unreasonable for the Commission to put on evidence that a principal-agent model may be more conceptually correct, but then not provide any evidence as to what pricing structure such an approach would yield. The Commission disagrees with this view for two main reasons. First, in the draft decision the Commission indicated that principal-agent models developed by Rohlfs and Houpis and Valletti generated different prices for the MTAS. Second, the Commission is not suggesting here that Optus should have used a principal-agent model in considering R-B pricing, but rather that it is a more conceptually correct approach. This point serves to highlight the conceptual limitations of the R-B framework actually used by CRA.

6.1.3. Specification of the R-B framework – services included

As noted in the section above, CRA's R-B framework is specified to include four services. It does not include 'mobile data services', which are removed from the model prior to the allocation of Optus's FCCs. Optus submits that this is reasonable on the basis that:

- the only significant data service, SMS, has a relatively (very) low marginal cost and hence the proportion of common costs that are shared by SMS (such as switching) that should be allocated to SMS under a Ramsey approach would be expected to be very low;
- determining the exact share to be allocated to SMS would require estimating Optus's overall common costs, including recognising returns on factors such as *ex ante* risks and returns on intangible assets that are not captured in Optus's accounts; and
- in the absence of such an exercise, Optus does not believe that it is unreasonable to regulate on the basis that SMS continues to cover the common costs that it currently covers and that it is more likely to result in termination charges making *too low* rather than *too high* a contribution to common costs.[189]

Submitters' views

AAPT submits that CRA has failed to adequately justify the exclusion of SMS and data services prior to the allocation of FCCs to the respective mobile services based on R-B pricing. Moreover, AAPT submits that CRA's claim that removing SMS and data services from the model is 'likely to increase the optimal termination price calculated' is not only incorrect but represents an inability by CRA to understand the theory underlying R-B pricing.[190] AAPT submits that by not including this extra service, CRA is artificially inflating the MTAS price.

The Commission's view

The Commission considers that the specification of the R-B framework to exclude mobile data services is likely to, other things being equal, lead to the R-B mark-up on Optus's DGTAS being overstated. In this regard, the Commission notes that the exclusion of these services from CRA's R-B framework means that they effectively

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189 Optus, letter to the Commission, 8 August 2005.
190 AAPT, *Critique of the CRA Model*, p. 5.

do not bear any portion of Optus's FCCs, even though, to some extent, they contribute to these costs.

On this particular issue, CRA states that:

> In relation to the Rohlfs model, the costs and revenues associated with SMS and data services are excluded. This implies that SMS and data services (and indeed other excluded services) are assumed to continue to contribute at least as much as they currently do. Further, the marginal cost of SMS (the most significant product) is very low, implying that within a Ramsey framework the optimal level of cost recovery from SMS would also be very low if modelled within the system, which would, if anything, increase the optimal level of cost recovery from termination. In other words, we believe its exclusion is more likely to reduce that increase the optimal termination charge.[191]

Also, and as noted above in section 5.1, in a further submission in response to the draft decision, Optus indicated that even if some portion of FCCs were allocated to mobile data services, this contribution would be 'miniscule'. It is the portion of FCCs allocated to mobile data services would be somewhere in the order of **c-i-c** per cent of the contribution of a voice minute, if estimated on an EPMU basis.[192]

The Commission has a number of concerns with CRA's original reasoning, and is not convinced of Optus's further view that the contribution to mobile data services would necessarily be 'miniscule'. First, the Commission disagrees that the inclusion of mobile data services in Optus's R-B framework could lead to a relatively greater mark-up being attributed to Optus's DGTAS. In this regard, the Commission notes that, because the new service will bear some of the burden previously borne by the existing services, it will reduce the burden on all existing services in aggregate and – because of the proportionality nature of the R-B configuration – individually. Hence, in these circumstances, the Commission believes the appropriate allocation of FCCs costs to the DGTAS *must* fall. Therefore, the Commission considers that the exclusion of mobile data services means that CRA's R-B mark-up on the DGTAS is inefficiently high.[193]

Second, CRA's view that the 'marginal cost' of SMS is low and that therefore the R-B mark-up on this service would also be low, ignores that R-B mark-ups are calculated on the basis of inverse-elasticity relationships, rather than on marginal (or directly attributable) costs. Indeed, it is possible that even if SMS has a very low marginal cost, the R-B mark-up on this service could be relatively significant if super-elasticity of this service was determined to be relatively inelastic.

On Optus's claim that any allocation of FCCs to mobile data services would be 'miniscule' compared with the contribution to voice services, the Commission reiterates its view (as stated in 5.2.1) that it finds it difficult to reconcile the apparent inconsistency between Optus's general rejection of an EPMU approach (in favour of a R-B approach) and its argument that using an EMPU approach would result in a 'miniscule' proportion of FCCs being allocated to mobile data services.

Third, it is not clear to the Commission why the inclusion of mobile data services in Optus's R-B framework would require Optus to re-estimate its FCCs in the manner it

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191 The CRA Report, p. 47.

192 Optus submission in response to draft decision, p. 31.

193 As noted by AAPT, the only way for Optus to argue otherwise is to make the case that there is some kind of externality attached to mobile data services, although it does not appear to make this argument.

describes, particularly given anecdotal evidence which suggests that SMS/mobile data services were a relatively unexpected mass-market service stream for MNOs when the GSM networks were first built.[194]

6.1.4. The elasticity estimates used in the CRA model

In order to calculate the R-B mark-up using the Rohlfs model, CRA determined *own* and *cross*-price elasticity values for each service based on publicly-available studies. Together, these elasticities are combined to create 'super-elasticities' which are relevant for determining R-B mark-ups. Super-elasticities comprise consideration of both the own-price elasticity of demand for each service, and any cross-price effects that operate between services.

Own-price

CRA calculated the following elasticities by taking the 'average' of various econometric studies: −0.43: subscription *own*-price elasticity of demand (7 studies); −0.59: mobile outgoing *own*-price elasticity of demand (2 studies); −0.31: FTM *own*-price elasticity of demand (2 studies). In addition, CRA assumed that the own-price elasticities of demand for 'off-net MTM calls' and 'on-net MTM calls' equated to the −0.59 estimate listed above.

Optus and its consultant, CRA, submit that, while these estimates display a degree of uncertainty, this uncertainty appears well within the range that economic regulators accept as a reasonable basis for informing regulatory analyses and decisions. In this regard, Optus submits that the Commission's estimated range for the MTAS of 5 – 12 cpm contained a 'considerable degree of uncertainty'. Moreover, CRA submits that there are bounds for elasticity estimates that are commonly accepted. As an example, CRA states that it is not aware of anyone suggesting that 'termination' services are more elastic than 'outgoing' services. Further, it considers that it is commonly accepted that the cross-price elasticity between 'outbound calling' and 'subscription' is higher than the cross-price elasticity between 'inbound calling' and 'subscription'.

Cross-price

In the first instance, CRA assumes that the *cross*-price elasticity of demand between the subscription price and FTM demand is −0.18 (based on two studies). CRA indicates that the remaining cross-price elasticities were determined endogenously within the Rohlfs model and based on the assumption of particular demand relationships. Importantly, however, the CRA model assumes that cross-price elasticities of demand between FTM and other mobile services (i.e. 'subscription', 'mobile outbound' and 'mobile off-net') are zero. In effect, this means that price changes in the FTM market are not expected to impact, at all, on the demand for these mobile services. The complete set of elasticities used by CRA is set out in Table 6.1 below.

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[194] SMS was initially developed as a means of notifying subscribers of receipt of a voice mail. The first experimental SMS was sent in 1992, and the service was only introduced on a commercial basis in the late 1990s, long after GSM voice services were introduced. See 'Short Message Service', Wikipedia at http://en.wikipedia.org/wiki/short_message_service.

Table 6.1: The own and cross-price elasticities used in the CRA model

	Subscription	Mobile outgoing	FTM	Off-net
Subscription	–0.44	–0.29	0.00	–0.21
Mobile outgoing	–0.18	–0.59	0.00	–0.09
FTM	–0.18	–0.09	–0.31	–0.09
Off-net	–0.20	–0.13	0.00	–0.59

Submitters' views

Telstra submits that CRA's approach of relying on averages of estimates of own-price elasticities from available econometric studies is reasonable given the lack of detailed industry information that would be available.

The CCC, AAPT and Hutchison express caution over the use of R-B pricing given uncertainties surrounding the elasticity estimates. For example, the consultants engaged on behalf of the CCC (Cave and Chambers) note that, in the UK, four consultants produced largely divergent estimates of relevant own/cross-price elasticities for different mobile services, and that such divergences present regulators with practical obstacles to implementing R-B pricing.

AAPT submits that uncertainty around the necessary elasticity estimates has led many regulators and consulting economists to reject the use of R-B pricing. AAPT also notes the possibility that the introduction of cost-based regulation for the MTAS itself may have an impact upon the estimated demand elasticities that should be used. Moreover, AAPT questions whether it is appropriate for CRA to have used econometric studies, which are typically based on some form of log-linear demand, when its application of the Rohlfs model uses linear demand.[195]

Hutchison submits that the elasticity values are uncertain; econometric studies to estimate them are unreliable; and that they are likely to change over time. Hutchison's consultant, MJA, submits that CRA's use of 'relatively few estimates' is surprising and that its decision to exclude non-econometric estimates, while correct in a 'purist' sense, is misconceived given the limited sample size. Moreover, MJA submits that a MNO is unlikely to set socially-optimal R-B prices since the firm-specific elasticities it faces will likely differ from market elasticities, and that CRA has presented no evidence that the elasticities it used were 'market' rather than 'firm' specific. MJA provides its preferred set of elasticity estimates (Table 6.2).

Table 6.2: Comparison of CRA and MJA elasticity estimates

Service	CRA Estimate	MJA Estimate
Subscription own price	–0.43	Agree
Mobile outgoing own price	–0.59	–0.5
FTM own price	–0.31	–0.4
Subscription and FTM cross-price	–0.18	–0.2

[195] AAPT submits that, therefore, unlike the econometrically-estimated constant elasticities, the elasticities in the Rohlfs model must be changing as the prices move from the initial to the socially-optimal prices.

In the context of the assumption that there is a 'zero' cross-price elasticity between FTM prices and mobile subscription demand, Hutchison notes Professor Hausman's reference to a 'very high value' placed by mobile subscribers on incoming calls.[196]

Slimtel submits that if Optus genuinely believes that the price of FTM is relatively more inelastic than mobile services, then Optus Mobile would be expected to give incentives to dealers, MVNOs and resellers for generating extra inbound mobile traffic. Slimtel submits that this is not mentioned in the Optus submission, and the Commission should question whether in fact any such incentives are offered.

The Commission's view

As has been noted by Optus, submitters and both WIK and Analysys, one of the key practical issues in relation to the implementation of an R-B framework is the accurate estimation of the relevant own and cross-price elasticities. In fact, this appears to be one of the main reasons why R-B pricing has not been implemented or advocated by any other regulator around the world with respect to the MTAS.[197]

Own-price elasticities

In the Commission's view, there remains a significant degree of uncertainty as to the reliability of the 'point estimate' own-price elasticity parameters used in the CRA model. In reaching this view, the Commission notes that it has a number of concerns with the methodology used to estimate these, as well as the application of these estimates to particular services.

First, the sample sizes used by CRA to calculate the 'average' of elasticity estimates are relatively small, and in some cases indicate a significant range between the lower and upper bound estimates. In particular, the Commission notes that the estimates for the 'mobile outgoing own-price elasticity' and the 'FTM own-price elasticity' are based only on two studies. The Commission considers that this places some doubt as to whether the 'simple average' of each sample could be considered a robust measure of these elasticities. Moreover, most of the studies cited by CRA are not at all based on Australian data, and therefore, there is no certainty that these estimates are appropriate in an Australian context.[198]

Second, some of the econometric studies identified by CRA incorporate data from the mid to late 1990s.[199] While the Commission concedes that it is difficult to find studies based on more recent data, this serves to highlight an important limitation on the implementation of R-B pricing. That is, elasticity estimates are often, unavoidably,

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196 *Submission by Hutchison Telecommunications (Australia) Limited and Hutchison 3G Australia Pty Limited*, May 2005, p. 10.

197 This was corroborated by WIK in its report (p. 16) where it noted that 'As far as we know, B-R pricing principles have not been applied to the regulation of MTAS in any other country'.

198 The Commission understands that of the eight econometric studies cited by CRA, only two appear to be based, to a very limited extent, on Australian data. In this regard, the Commission notes that the Ahn and Lee study utilises data taken from the ITU-World Telecommunications Report for 1998 which contains information on 206 countries, including Australia. Similarly, the study by Madden, Coble-Neal and Dalziel uses annual data for 56 countries, including Australia, taken from the ITU, *World Telecommunications Indicators Database*, 2002.

199 For example, the study conducted by Frontier Economics in 2002 uses quarterly data for the four UK mobile operators for the period 1994 to 2001, the study conducted by Madden, Coble-Neal and Dalziel uses annual data from 56 International Telecommunications Union (ITU) countries for the period 1995-2000 and the study conducted by DotEcon in 2002 used quarterly data from the period January 1996 to September 2001.

based on relatively dated historical data sets, notwithstanding that, as pointed out by Hutchison, the relevant elasticities are likely to be changing over time. This factor is likely to be particularly relevant in telecommunications markets, where rapid technological change, continuing fixed-to-mobile substitution and convergence between different platforms is likely to have an impact on the demand characteristics for particular services.

Third, in the Commission's view, CRA's use of a 'single point' estimate derived from an identified range of econometric studies is inferior approach to one, as adopted by Frontier on Vodafone's behalf, that uses a 'range' of possible elasticity estimates, and performs a sensitivity analysis on the impact of using different elasticity combinations.

Fourth, the Commission notes that the own-price elasticity estimates presented by CRA exhibit differences from those presented by other submitters to this inquiry, and those used in the Commission's June 2004 MTAS Final Report. For example, MJA recommends an 'own-price FTM elasticity' of −0.4 rather than the −0.31 used by CRA. In contrast, the Commission used −0.6 in the MTAS Final Report, while Optus had previously used a very inelastic estimate of –0.08 in its submissions to the Mobile Services Review in 2003 and 2004.[200] There are also differences in the 'subscription own-price elasticity' estimates submitted by Optus's consultants and other sources. While Optus has previously used –1.00,[201] CRA applies an estimate of −0.43 for the purposes of its Undertaking, although some econometric studies cite this elasticity as low as –0.3.[202] While, in absolute terms, the differences between these estimates may not appear overly significant, the Commission notes that the use of alternative estimates in the Rohlfs model can have an important impact on the 'welfare-maximising' price for each service.

Fifth, Optus's conclusion that demand for FTM calls is more inelastic (−0.31) than the demand for MTM calls (−0.59) would appear to be inconsistent with Professor Hausman's conclusion that FTM and MTM are sufficiently substitutable that 'a product market comprising both FTM and MTM should be used'.[203] Were Professor Hausman's position to be accurate, the implications of it for own-price elasticities (and 'nested' super-elasticities[204]) is that they should be quite similar to one another. Were they not, then the price of one could be moved independently of the other with only small consequence for demand, a possibility inconsistent with the SSNIP test applied by Professor Hausman.

Finally, as noted by WIK, CRA has assumed linear demand functions in its modelling, while its elasticity estimates appear to be based on constant elasticity of demand curves. In commenting on the decision to assume linear demand functions, WIK, notes that:

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200 The Commission's sources and reasoning are detailed in the June 2004 MTAS Final Report at footnote 109, p. 154.

201 See Optus, *Optus Submission to Australian Competition and Consumer Commission on Mobile Services*, June 2003, paragraph 4.11, for its position that 'demand for mobile subscription is highly price elastic and probably greater than one' but where it is 'conservatively' set at one.

202 Lukasz Grzybowski, 'The Competitiveness of Mobile Telecommunications Industry across the European Union', Mimeo, Munich Graduate School of Economics, April 2004, p. 34.

203 Professor Hausman, paragraph 14. See also paragraphs 8 through 23.

204 That is, treating the super-elasticities for each of these services as though there were no other services; essentially putting them together in a 'nest'.

> This choice implies that elasticity values along any of the demand curves vary depending on the particular point at which the demand is realised. This has serious implications for the relevance of the calculated prices.[205]

WIK notes that the values of the own-price elasticities will change as they move farther away from the initial point on the assumed demand curve in the model (i.e. based on the initial price selected); becoming more elastic for higher prices and less elastic for lower prices. Accordingly, prices are determined in the model for which the elasticities associated with the model prices and quantities are different from the inputted ones at the initial prices and quantities, and therefore for which the estimated mark-ups do not correspond to those initial inputted elasticities.[206] In WIK's view, the use of linear demand functions by CRA biases the results towards higher FTM prices, and that 'they diverge the more so the more the initial values diverge from the solution values'.[207] For this reason, WIK recommends that the constant elasticity form of the demand functions should have been used by CRA to guarantee that the postulated effects that work though the price elasticities apply also at the model solution points.

Cross-price elasticities

In the Commission's view, there is an asymmetry in the CRA model in relation to the interaction between the FTM and subscription markets, which is not adequately explained by Optus or its consultants. While, on the one hand, CRA has assumed that price changes in the 'mobile subscription' market will impact on the demand for FTM calls (captured by a cross-price elasticity of demand of −0.18[208]), on the other hand CRA has assumed that price changes in the FTM market will have no impact at all on the demand for mobile subscriptions, or on the demand for mobile call services. Indeed, in this regard, the CRA model is based on the further assumption that the price of FTM is constant throughout the modelled period.[209]

In the Commission's view, however, mobile subscribers are likely to place at least some valuation on the volume of incoming calls received. This includes the volume of FTM calls. This view would appear to be consistent with that of Optus's consultant, Professor Hausman. Moreover, the Commission is of the view that a change in the price of the MTAS would, to some extent, be passed through in a way that resulted in a change in retail prices for FTM calls. This is because the MTAS is a direct wholesale cost input in the provision of a FTM call. Therefore, even to the extent there was a monopoly provider of FTM services, some pass through of changed input costs would be expected. From another perspective, this suggests that price reductions in the MTAS are likely, to some extent, to result in lower retail FTM prices. For this reason, the Commission considers that CRA's assumption that the retail price of FTM calls remains constant throughout the modelled period, while the price for its DGTAS is changing, appears unrealistic.

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205 WIK Report, p. 51.

206 WIK also notes that this is not the case with constant elasticity demand functions where, by construction, the values of the elasticities remain constant from one point to another on the relevant demand curves, and for the mark-ups.

207 WIK Report, p. 79.

208 This implies that if the price of 'mobile subscription' is reduced by 10 per cent, other things equal, this will result in a 1.8 per cent increase in the volume of FTM calls.

209 This is shown on the '*Inputs*' worksheet in the CRA model.

In the Commission's view, the price of the MTAS, and the impact that this has on the retail price of FTM calls, is likely to have an impact on the volume of FTM calls. Therefore, to the extent that mobile subscribers value incoming FTM calls, an increase in the price of the MTAS is likely to reduce the demand for mobile subscriptions at any given subscription price.

Based on this reasoning, the Commission is of the view that CRA's assumption that price changes in the FTM market will not impact at all on the retail mobile services market is implausible. Moreover, CRA's assumption in this regard will, all other things being equal, bias the relative super-elasticity of FTM services (relative to other services in the model) downwards. In turn, this suggests that the R-B mark-up attributed to FTM services (and therefore the DGTAS), based on the inverse super-elasticity of demand, has been overstated.

6.1.5. The assumption of 'single-part' prices

The CRA model is based on determining 'welfare-maximising' prices – and therefore 'efficient' R-B mark-ups – for four services. As discussed in the previous section, the determination of each R-B mark-up is based on an estimate of the own and cross-price elasticity effects between these four services. Implicitly, therefore, the recovery of FCCs in the CRA model falls on determining 'single-part' prices for these particular services.

This issue has not been directly discussed by Optus, its consultants, or submitters to this inquiry.

The Commission's view

In the Commission's view, there is some question as to whether CRA's 'single-part' price framework is appropriate in relation to mobile telecommunications markets where sophisticated multi-part prices are often set, and are seemingly unrelated to usage (i.e. capped charging).

In the first instance, the Commission considers that the elasticity estimates used by CRA represent 'highly aggregated' or 'simplified' service types in the sense that the services modelled are likely to include a wide variety of sub-services. The analysis also fails to take into account the fact that MNOs typically are able to set relatively sophisticated non-linear and multi-part pricing strategies for different consumers. For example, CRA uses a 'mobile outgoing own-price elasticity of −0.59, and notes that this estimate was applied to both off-net and on-net MTM calls. However, in reality, it is possible that there will be differences in the own-price elasticities of demand for these two services. Moreover, it is possible that the own-price elasticity of demand for an off-net *prepaid* MTM call is different from the own-price elasticity of demand for a *postpaid* MTM call.

The point here is not to make definitive statements about the potential different elasticities associated with different service types. Rather, it is to note that, by using a single elasticity estimate to capture, potentially, a myriad of different service types, the CRA model may not account for the level of complexity that exists in relation to the demand for particular mobile services.

The Commission also notes that the assumption of 'single-part' linear prices may not be appropriate in relation to the Australian mobiles market. Indeed, the Commission notes that there is evidence that MNOs are able to determine a relatively sophisticated suite of non-linear pricing plans for retail consumers of its mobile services. For

example, the emergence of 'capped' or 'bucket' type plans involve the regular payment of a 'fixed' monthly charge which is unrelated to usage, up to a capped amount. In many ways, therefore, these plans might be thought of as a form of 'multi-part' pricing in that the variable cost faced by subscribers for using particular services is at or near zero, below some overall level of usage. The Commission notes that, everything else being equal, the presence of multi-part pricing would tend to reduce the size of the mark-ups necessary for the recovery of common costs. This view accords with that of WIK, which notes in relation to non-linear pricing that:

> … the mark-ups are on average smaller than without the more sophisticated pricing. Since optional pricing is a common practice in mobile markets in Australia, Ramsey mark-ups would have to be smaller accordingly.[210]

At the very least, the Commission considers that the existence and continued emergence of sophisticated non-linear pricing strategies by MNOs makes it less clear that the elasticity estimates proposed by CRA, which are for discreet 'high level' services, are a credible representation of the services available to retail mobile consumers.

6.1.6. Basic reality test

As noted previously in this chapter, the CRA model takes a set of *initial* prices for 'mobile subscription', 'FTM' 'MTM on-net' and 'MTM off-net' services and transforms these into a set of 'welfare-maximising' prices for these services. By implication, CRA and Optus are of the view that these prices would best promote the welfare of end-users.

A comparison of the initial prices with the proposed set of 'welfare-maximising' prices reveals that the proposed price movements, and therefore the implied quantity movements, are quite substantial. Moreover, by far the largest influence on these price transformations are the proposed R-B mark-ups on each particular service in the model. The price and implied quantity transformations between the initial and welfare-maximising set of prices are summarised in Table 6.3 below.

Table 6.3: Price and Quantity Changes in the Optus Model, 2004-05

	Initial price	'welfare-maximising' price	Implied price change (%)	Initial quantity	'welfare-maximising' quantity	Implied change in quantity
Subscription	$**c-i-c**	**c-i-c**	**c-i-c**	15.44	**c-i-c**	**c-i-c**
MTM on-net	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
MTM off-net	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**	**c-i-c**
FTM	40.8 cpm	**c-i-c**	**c-i-c**	6640	**c-i-c**	**c-i-c**

The Commission's view

In terms of price changes, the most significant result appears to be the increase in the price of mobile subscription, by **c-i-c** per cent, from $**c-i-c** to $**c-i-c**. The CRA model outputs indicate that all other prices would fall from their current levels, by amounts averaging around **c-i-c** per cent for retail prices. The biggest price decrease is for off-

[210] WIK Report, p. 37.

net MTM calling (falling by **c-i-c** per cent), followed by FTM calling, which decreases from **c-i-c** cpm (albeit above its actual current level) to just **c-i-c** cpm, a fall of **c-i-c** per cent. Most of the decrease in the FTM price appears to be generated by the reduction in the 'retail margin' (everything else above termination) rather than from the decrease in the termination price itself.

The combination of such large direct price changes with some complex cross-price and cross-quantity effects, results in some substantial changes in implied quantities for each of these services.

Firstly, perhaps the most noticeable effect is on the number of subscriptions, which falls by around **c-i-c** per cent from 15.44 million to **c-i-c** million. This results primarily from the big increase in the direct price of subscription, although this direct effect is mitigated a little by the effects of decreases in off-net and on-net MTM prices. Because of the previously-mentioned asymmetry in the complementarity between FTM calling and the number of mobile subscriptions, the volume of subscription is not affected by the decrease in the price of FTM. To be clear, the end result of the model is that it is 'optimal' to have a set of prices that **c-i-c**.

The second most noteworthy effect is that the number of FTM minutes decreases; albeit only by a small percentage. This reduction in volume occurs in spite of the very large fall in the price of FTM calling which would, on its own, result in a substantial increase in FTM volume. However, in Optus's model this direct own-price effect is more than counterbalanced by other impacts, particularly the large reduction in the number of destination mobiles to call. Again, on the surface, this appears to be a concerning result, especially viewed in the light of the large increases in FTM calling in recent years.

Third, and related to the reduction in FTM calling, is a substantial increase in the amount of MTM calling. This substitution is of some concern because it represents a move away from the low-cost fixed-line network to the relatively high-cost mobile network. This substitution would be expected to have adverse efficiency effects that would be evident in a properly-specified model. The fact that these inefficiencies do not seem to arise in Optus's model is another indicator of its unsuitability for the task at hand.

In short, the establishment of Optus's prices would result in a substantial down-sizing of the mobile subscriber base, and reductions in all call volumes except MTM off-net. The Commission tends to believe the configuration of prices proposed by Optus and CRA fails a basic 'reality test'. In particular, the Commission considers it is highly unlikely that Optus would set prices for mobile subscription and MTM calls in line with the results of the CRA model if it also set a price for its DGTAS equal to 17 cpm.[211] The Commission believes this seriously questions the appropriateness of the R-B price modelling prepared by Optus in support of its Undertaking.

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[211] In this regard, the Commission notes that Rohlfs himself (A Model of Prices and Costs of Mobile Network Operators, 22 May 2002, p. 10) noted that '…the most efficient result may not be achieved if Oftel sets mobile-termination prices at the Ramsey level. The problem is that even if Oftel does its part by setting mobile-termination prices at that level, MNOs may not do their part by setting the prices for subscription and MO usage at the Ramsey levels. Indeed, for reasons discussed in detail below, one would expect that they would not set those prices at the Ramsey levels'.

6.1.7. Optus's R-B framework v EPMU

Optus's view

In support of its application of an R-B framework, Optus submits that that there is no economic rationale for preferring an 'entirely arbitrary' approach, such as the EPMU approach advocated by the Commission in the MTAS Pricing Principles Determination. In this context, Optus considers that 'it is essential to put the EPMU approach under the same level of scrutiny that submitters apply to the Ramsey approach'.[212]

Optus notes that EPMU would only be 'welfare-maximising' if the super-elasticities were equal across the services – providing for equi-proportionate mark-ups. In its view, however, there are strong theoretical reasons and empirical evidence to suggest that the super-elasticities for the relevant services are likely to differ. While Optus concedes that there are uncertainties over particular parameter values, it believes the evidence indicates that its R-B approach is more likely to promote overall consumer welfare than an EPMU approach. Moreover, CRA submits that if:

> … the ACCC considers it cannot form a reliable view of market elasticities, then we do not believe the ACCC has any basis to conclude that current prices are inefficient.[213]

In terms of their relative merits, Optus notes that Jonathan Sandbach[214] models the welfare consequences of regulating a component price using a R-B approach (using market elasticities) or an EPMU approach when the remaining components of the firm's services are provided in a competitive market. Optus further notes that Sandbach demonstrates that, to the extent that relative firm and market super-elasticities differ, both approaches – the EPMU and the Partial Ramsey (where the firm can set unregulated prices but the regulated prices is set based on a pure Ramsey approach) – will not perfectly accord with a pure R-B approach. Sandbach notes, however, that:

> There is strong reason to believe … that the EPMU prices will deviate further from welfare maximising Ramsey prices than with the Partial Ramsey Prices.

In addition, Optus notes that Sandbach provides an empirical analysis on the mobile industry using market elasticities 'broadly consistent with those reported in a number of studies submitted to the UK's Competition Commission in connection to the Mobile Phone Inquiry of 2003'. Optus notes that Sandbach found that, on reasonable assumptions, the EPMU leads to lower welfare outcomes than the 'partial' R-B approach.

WIK's view

WIK notes that the practical inadequacies of R-B pricing have led many regulators to adopt the alternative EPMU approach. On this point, WIK also notes that it is not aware of any other regulator around the world advocating or implementing R-B prices with respect to the MTAS.

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212 Optus submission in response to draft decision, p. 31.

213 The CRA Report, p. 47.

214 J. Sandbach, 'Ramsey Pricing – vs. – EPMU for Regulation of Firms Operating in Competitive and Non-Competitive Markets', presented at Conference on The Economics of Electronic Communications Markets, Toulouse, 15-16 October 2004.

That said, WIK considers that, before one can follow this approach, it has to be established that an EPMU approach is likely to be superior to imperfectly implemented R-B pricing. In order to establish this, WIK considers that an evaluation of the EPMU approach needs to be considered against the following problems associated with the implementation of R-B pricing:

- deviations of the unregulated prices from their R-B efficient levels once the price of the MTAS is set at its R-B efficient level;
- uncertainty about the size of the elasticities; and
- mis-specification of the FCCs.

On the first issue, WIK notes that Sandbach appears to be the first one to compare the relative merits of R-B and EPMU pricing in the context of the MTAS. That said, WIK notes that Sandbach makes some crucial assumptions, including that mobile industry profits tend to normal over time, and that all mobile outputs (besides mobile termination) are produced under similar competitive conditions. In WIK's view, these are 'questionable' assumptions which do not seem to characterise the Australian mobiles sector and, therefore, 'cast some doubt on Sandbach's results'.[215]

On the second issue, WIK notes that Optus has correctly observed that EPMU can only be strictly welfare-maximising if there were equal super-elasticities across services. However, WIK also notes that that the range of elasticity estimates is so large that R-B prices based on biased estimates could be worse in terms of welfare implications than an EPMU approach. Therefore, WIK notes that:

> Provided that the elasticity range is wide and provided elasticities that are implied by EPMU do not fall significantly outside this range, EPMU can substantially facilitate the decision-making process, reduce regulatory gaming and save legal troubles without being too far off B-R pricing.[216]

On the third issue, and as noted in section 5.2, WIK notes that it has 'repeatedly raised doubts' about the claimed size of FCCs in the mobile sector. In summary, these doubts lead WIK to the view that:

> … a large fraction of what are usually termed "fixed and common" costs are likely to vary proportionately with individual outputs so that the cost allocation problem that requires the use of B-R principles would be quite small. Under these circumstances EPMU and correct B-R principles are likely to lead to very similar results.[217]

Submitters' views

Hutchison submits that the uncertainty surrounding the relevant elasticity estimates means that any attempt to implement R-B pricing may actually reduce welfare, which is not in the LTIE. Moreover, Hutchison's consultant, MJA, submits that no other regulator has implemented R-B pricing in relation to the MTAS, and that the benefits of doing so, as opposed to an EPMU approach, are questionable given that the magnitude of FCCs is likely to be small.

In response to the draft decision, Vodafone submits that the Commission is in 'error' in its belief that applying the R-B rule to termination would not result in the socially-

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[215] WIK Report, p. 38.
[216] WIK Report, p. 38.
[217] WIK Report, p. 39.

optimal level of retail prices.[218] It provides a simplified example of where 'competition … will ensure that the origination price also corresponds to an R-B price configuration' and a more complex case 'where it will more closely resemble that of a competitive market'. Vodafone submits that the 'whole issue is more formally explored in Sandbach (2004)'.[219]

The Commission's view

In the Commission's view, there are several reasons why an EPMU approach is likely to be superior to the R-B framework specified and implemented by Optus's consultant, CRA.

The Commission notes WIK's view that EPMU prices are likely to be superior to R-B prices if the unregulated prices (i.e. mobile subscription, MTM on-net and MTM off-net) would in practice deviate substantially from their proposed R-B 'welfare-maximising' levels. In this regard, and as noted in section 6.1.6, the Commission notes that the proposed 'welfare-maximising' prices calculated by CRA appear to fail a basic 'reality test' in that it is unlikely that the estimated prices, and therefore the R-B mark-ups, for mobile subscription and mobile outgoing calls (on-net and off-net) would actually emerge if the DGTAS price was set at 17.0 cpm in accordance with the CRA model. Therefore, the Commission does not accept Vodafone's suggestion that it is in error regarding what would happen to other prices.

That said, it is also true that the establishment of the DGTAS price at its EPMU level would not ensure that the other prices fell into line with equi-proportionate mark-ups across all services.

However, it is not the pursuit of this desideratum that has led the Commission to believe that an EPMU approach is more appropriate for determining a regulated price for the DGTAS. Rather, this view is based on the Commission's belief that a price for the DGTAS that is above its underlying cost of production (determined by the Commission to be the TSLRIC+ of supplying the service), and corresponding prices for retail mobile services that are below their underlying cost of production represents an inefficient pricing structure that will have adverse efficiency implications.

Now consider the application of an R-B pricing structure to these services to recover relevant FCCs. Conceptually, as a price for the DGTAS is increased above its attributable cost towards its R-B level, it will – conditional on the cost-recovery imperative – initially result in efficiency gains. However, once the optimal R-B price for the DGTAS is reached, further increase beyond this level will result in efficiency losses, and these efficiency losses will tend to increase at an increasing rate as the price is increased. Ultimately, a point will be reached where the efficiency losses from increasing the DGTAS price beyond its optimal R-B level completely cancel out the efficiency gains from moving to the R-B price, and then overall efficiency will begin to decrease at an accelerating rate. The potential damage is greater the greater is the super-elasticity of demand. In the absence of considering 'externality effects' (which are the subject of the next chapter) the converse is true for services which are priced below their underlying cost of production.

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[218] Vodafone, 'Mobile Terminating Access Service (MTAS) – Optus Access Undertaking Draft Decision', letter to the Commission 25 November 2005, p. 2.

[219] Vodafone submission to the draft decision, p. 3.

This suggests that determining accurate 'super-elasticities' of demand for all of the relevant services in the CRA model is absolutely critical to ensuring that the R-B mark-ups determined for each service is accurate.

Notably, CRA appears to determine that the 'super-elasticity' of FTM is significantly more inelastic than the super-elasticity for the other services in its model. This is based on the estimated own-price elasticity for FTM services (−0.31) being almost twice as inelastic as that of mobile outgoing calls (−0.59) and above that of mobile subscription services (−0.43), as well as the specification of cross-price effects. In Optus's R-B framework, this means that a significantly greater mark-up (**c-i-c** cpm) is attributed to FTM services (and therefore the DGTAS) than the other modelled services. This compares with a mark up of **c-i-c** cpm on the DGTAS if an EPMU approach is used.

However, the Commission notes its view, based on the reasons outlined in detail in section 6.1.4, that there is significant uncertainty as to the robustness of the elasticity parameters used in the CRA model. In summary, this includes concerns about the methodology used by CRA to determine the own and cross-price elasticity estimates, the failure to consider cross-price effects between FTM prices and the demand for mobile subscription services (despite considering the effect in the opposite direction), the 'highly aggregated' nature of the specified services and the failure to consider the sensitivity of using alternative elasticity combinations. Moreover, it was noted that CRA's use of an own-price elasticity of demand for mobile outgoing services that is twice that for FTM services did not sit easily with Professor Hausman's view that these two services are highly substitutable.

Once all of these factors are taken into consideration, it is no longer certain that the super-elasticity of FTM calls would necessarily dictate a higher mark-up as compared to the other services in the CRA model. Moreover, it is no longer certain that the super-elasticity of FTM calls must be so low as to ensure that that appropriate price for the service must, in an appropriately specified R-B framework, be higher than one calculated according to EPMU principles.

The Commission also notes WIK's view that if FCCs were specified correctly by MNOs, then the use of a R-B approach is likely to generate similar results to the use of an EPMU approach. On this issue, the Commission notes that Analysys and WIK appear to have drawn the conclusion that the FCCs identified by Optus are, at best, at high end of a reasonable range of estimates, or, at worst, are likely to overstate the magnitude of FCCs that would be incurred by an Australian MNO. To the extent that Analysys, and more particularly, WIK, are correct in their view, there is a strong possibility that the CRA model is likely to lead to a greater than appropriate pool of FCCs which are allocated according to R-B principles. In turn, this would lead to substantially greater (and inappropriate) mark-ups above TSLRIC for the DGTAS.

With respect to Sandbach's results in relation to the relative merits of EPMU versus R-B in the 'Partial Ramsey' context, which has also been highlighted in Vodafone's further submission to the draft, the Commission notes that this analysis is based on at least one assumption which, in its view, is unlikely to hold in Australia. This is the assumption that mobile industry profits will tend to normal over time. As noted previously (section 6.1.1) and prospectively in this report (see Appendix 5 on the 'waterbed effect'), the Commission considers that the assumption of a normal-profit constraint is unlikely to be appropriate across the markets in which Optus operates.

For all these conceptual and empirical reasons, the Commission agrees with Oftel that the R-B framework proposed by Optus, which includes a comparatively greater mark-up on the DGTAS, should be treated with caution:

> Analyses that suggest large mark-ups on termination charges should be treated with great caution. In Oftel's view it would be unsafe to have a large mark-up because there would be excessive weight placed upon evidence and analysis that is insufficiently robust to support such a conclusion.[220]

The Commission notes that apparently no regulator around the world has advocated or implemented the use of R-B principles in relation to the MTAS. Rather, telecommunications regulators such as those in the UK, Sweden and Malaysia have all advocated the use of the EPMU approach.

6.1.8. Conclusion on Optus's R-B framework

The Commission notes that the theoretical efficiency properties of R-B pricing for the recovery of common costs have been well recognised in the literature and by other regulators of the MTAS. That said, the Commission considers that the main issue in this context is whether the R-B framework specified by Optus, and therefore, the R-B mark-up on the DGTAS, is likely to be appropriate and accurate.

In the Commission's view, Optus's proposed R-B framework does not satisfy *any* of the conditions which are necessarily required to ensure that the application of an R-B framework will generate a socially-optimal configuration of prices. In this regard, the Commission is of the view that Optus's approach:

- is based on the unrealistic assumption of it earning normal profits over the relevant markets, notwithstanding the fact that Optus is likely to be making some level of above-normal profits over these markets. Under these circumstances, the Commission notes that the R-B mark-up on the DGTAS is likely to be too high since the pricing structure is configured to recover both legitimate costs (including opportunity costs) and those components of profits which are 'above-normal';
- does not take into account the extent to which its estimated 'welfare maximising' prices will be set for all of the modelled services;
- does not encompass all of the relevant services which would likely give rise to Optus's FCCs, in that it has excluded 'mobile data services' from the framework. This suggests that, other things being equal, the R-B mark-up on the DGTAS will be inflated above its efficient level;
- recognises that there is some uncertainty about the own and cross-price elasticity estimates used in CRA's modelling. However, the Commission considers that there is still significant uncertainty as to the credibility of the elasticity parameters used in the CRA model, which determine that the 'super-elasticity' for FTM services. This uncertainty stems from the methodology used by CRA to determine these parameters, the failure to consider all relevant cross-price effects, the 'highly aggregated' nature of the specified services and the failure to consider the sensitivity of using alternative elasticity combinations. Moreover, the assumption of using linear demand curves

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[220] See Oftel, *Ramsey Pricing – Oftel's Response to a Letter of July 4*, 12 July 2002, p. 9.

would appear to result in a higher R-B mark-up on the DGTAS than if constant elasticity demand curves were used;

- assumes that Optus will impose single-part linear prices for the relevant mobile services. However, in reality MNOs such as Optus determine sophisticated non-linear 'multi-part' pricing strategies in the retail market; and
- appears to fail a basic reality test in that if the 'welfare-maximising' set of prices were to be implemented by Optus, it would result in a significant reduction in the number of mobile subscribers in Australia. This would appear inconsistent with Optus's argument elsewhere that a 'NES' should be levied on the price of its DGTAS in order to generate a socially-efficient level of mobile subscription above the existing level.

Overall, for all of the reasons outlined in this chapter, the Commission is not convinced that a R-B framework for the recovery of common costs, as proposed by Optus, is appropriate in this context. That said, even if it were more appropriate to allocate relevant common costs according to a R-B framework, the Commission believes the framework and inputs used in the CRA model to determine a mark-up of **c-i-c** cpm, would, for the reasons outlined above, be likely to substantially overestimate the appropriate level of an R-B mark-up.

Moreover, for the reasons outlined above, the Commission does not accept Optus's view that its R-B framework will necessarily result in the more socially-optimal configuration of prices, including a price for the DGTAS, than if an EPMU approach was used. In this regard, the Commission refers to the previous discussion about its concerns with the R-B approach implemented by Optus. This, combined with the risk of significant efficiency losses from setting a price for the DGTAS in a mis-specified partial R-B framework, leads the Commission to believe it would be more appropriate to allocate a contribution of relevant FCCs to the DGTAS on an EPMU basis.

More generally, however, the Commission notes that it does not necessarily accept the proposition that a properly-constructed R-B configuration of prices must lead to a mark-up above TSLRIC greater than that which would arise using the alternative EPMU rule to allocate relevant common costs between services. This depends, critically, on the inclusion of all of the relevant services that give rise to these costs; accurate estimation of the relevant 'super-elasticities' of each of the modelled services, including a comprehensive consideration of all the relevant cross-price effects and the incorporation of multi-part pricing into the model.

7. The Network Externality Surcharge (NES)

As noted in section 4.4.3 above, Optus's 'welfare-maximising' charge for the DGTAS includes a mark-up on FL-LRIC to account for what it terms a 'mobile subscription network externality' (MSE). The surcharge on Optus's DGTAS to account for this effect is termed a 'NES', and has been quantified by CRA at 2.12 cpm.[221]

Again, the Commission notes that this chapter does not involve an assessment of the 'reasonableness' of Optus's proposed price terms against the relevant statutory criteria, which is included at Chapter 10. Rather, the aim of this chapter is to allow the Commission to consider the appropriateness of the methodology, assumptions and data inputs used by CRA to generate its 'welfare-maximising' estimates. This analysis ultimately assists (as opposed to determines) the Commission's assessment of the 'reasonableness' of Optus's proposed price terms and conditions against the criteria set out in 152AH of the Act – which are considered as a whole (i.e. including all three components) – in Chapter 10 of this report.

In assessing Optus's NES mark-up, the Commission will consider whether:

- network externalities are likely to exist in relation to the Australian retail mobile services market;
- CRA considers all of the possible external effects that relate to both mobile and fixed-line subscription;
- to what extent, the subsidy raised from a NES can be effectively targeted; and
- the methodology used to estimate the NES mark-ups is appropriate.

Each issue is considered in turn below. Also, as background, an outline of the relevant externality concepts is included at Appendix 4 of this report.

7.1. Relevance of network externalities

7.1.1. Optus's view

Optus submits that by setting MTAS prices higher than the price of origination services, mobile subscribers are able to capture some proportion of the benefits to others associated with their mobile subscription, and that this pricing is the normal outcome in a competitive two-sided market and integral to the efficient operation of the market. Optus submits that there will be too little mobile subscription in the absence of this cross-subsidy arrangement. Optus also cites CRA, which states that:

> For telecommunications services, the most important type of externality is network externality, i.e. the benefit that other subscribers receive when an additional subscriber joins a network and that is not reflected in the marginal subscriber's decision to join. The importance

[221] In its submission dated 16 August 2005, Optus isolates this effect by setting the RGF to 1 which resulted in the optimal termination charge falling by 2.12 cpm. Optus therefore submits that this amount may be taken as the proportion of the mark-up attributable to the network externality. The Commission understands that a different approach to isolating the 'NES' using the Rohlfs model was adopted in the UK by Ofcom. Ofcom estimated the LRIC+EPMU of each relevant service, and then ran the Rohlfs model with all relevant costs included as 'incremental' cost (i.e. no 'fixed and common cost pool').

> of network externalities is recognised in relation to supporting higher numbers of fixed telephony subscribers via USO schemes.[222]

CRA considers that the rationale for a NES on the MTAS as 'fairly intuitive'. In its view, increasing the extent to which costs are recovered in the price of mobile subscription (i.e. increasing mobile subscription prices) will be likely to lead to fewer mobile subscribers than otherwise and, in turn, fewer mobile outgoing calls and fewer FTM calls given that there will be fewer mobile subscribers to call.[223]

Optus also takes issue with the Commission's view, outlined in the MTAS Final Report, that the 'marginal benefit of a new subscriber is zero'. Based on the advice of its consultant, Professor Hausman, Optus considers that the Commission has made at least two errors. First, Optus submits that there is not a perfect correlation between the marginal private valuation (MPV) a person places on his/her individual subscription and the marginal social valuation (MSV) of the mobile subscriber. In Optus's view, this condition is necessary in order for the Commission's assumption (in its June 2004 MTAS Final Report) that the marginal external benefit is downward sloping, and eventually becomes zero, to hold. In this regard, Optus cites the analysis of Professor Hausman which suggests that, contrary to the Commission's stated view, Optus data show that later adopters of mobile phones actually create more external benefits than early adopters.[224]

Second, Optus submits that, as noted by Professor Hausman:

> The ACCC mistake arises from using an aggregate analysis, rather than recognising that the ability to call a person is a unique good and must be valued individually.[225]

Optus therefore submits that it is reasonable that there will be an efficient non-cost based structure of mobile originating and MTAS charges. Optus further submits that the question of whether this pricing structure is welfare enhancing is an empirical question that is addressed in the welfare analysis prepared by Professor Hausman and by CRA in estimating the efficient price for the DGTAS. This analysis is considered in section 7.2.2 below.

Submitters' views

Cave and Chambers submit that the argument for a NES only works on restrictive assumptions, which include a full 'waterbed effect', fixed users benefiting proportionately to the number of mobile subscribers and a relationship at the margin

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222 The CRA Report, p. 15.

223 While CRA acknowledges that, conceptually, it is possible that the level of FTM prices may impact on fixed subscriber numbers, it states that the empirical evidence suggests that fixed subscription is extremely inelastic, and would be expected to be even more inelastic with respect to the price of one particular type of call (i.e. FTM call). Moreover, CRA considers that the case for a mobile subscription subsidy is stronger in light of empirical findings that mobile subscription is substantially more price elastic than fixed subscription and hence the social benefit of a subsidy would be expected to be higher.

224 Based on a sample of *prepaid* and *postpaid* data supplied by Optus for 2003-04, Professor Hausman observes that prepaid customers received more calls than postpaid customers during this period. Professor Hausman considers that this invalidates the Commission's position that the majority of growth in the mobile subscriber base is due to prepaid customers, and that because they make fewer outgoing calls they therefore create fewer external benefits. Professor Hausman also disputes the view that 'later adopters' of mobile phones create fewer external benefits than early adopters. In this regard, Professor Hausman again notes that Optus data suggests that later adopters on average receive more calls than early adopters.

225 Professor Hausman, paragraph 66.

between higher MTAS charges and mobile subscription. Cave and Chambers submit that these conditions are unlikely to be satisfied given the current high penetration levels in Australia (i.e. close to saturation) and the likelihood that a marginal mobile subscriber would not alter the calling behaviour of most subscribers to fixed networks.[226]

Hutchison considers that developments in telecommunications markets (both in Australia and overseas) indicate that the alleged welfare-maximising consequences of imposing such a surcharge are illusory. On this issue, Hutchison also notes and adopts the views of its consultant, MJA, which submits that the benefits from a NES on termination require a significant waterbed effect and that any network externality is likely to be small given that mobile penetration in Australia is approaching 100 per cent of available subscribers.[227]

AAPT submits that it does not consider that any of the reasons offered by CRA for including a NES are persuasive and considers that its justification for the NES appears to be based upon the assertion that 'it is highly unlikely that additional subscribers will confer no external benefits'. AAPT further submits that mobile network externalities should be ignored in setting the regulated MTAS price because they may already be internalised without any need for corrective pricing, and also because the Australian mobiles market has reached a level of natural saturation so the marginal network externality in the mobile market is likely to have either diminished in importance or simply disappeared.

The Commission's view

Before considering the merits of Optus's 'NES', the Commission considers it important to clearly identify the externality that Optus is seeking to account for in its Undertaking price terms. The exact nature of the 'externality' is not outlined in detail by Optus, though it is described as a 'mobile subscription externality' (MSE) in its latest submission (16 August 2005).[228] In its original submission, the term 'MSE' was not explicitly used. Rather, Optus referred to the relevant mark-up as reflecting the:

> … externality value that fixed-to-mobile callers receive from mobile subscribers'.[229]

The exact nature and source of the 'externality' is set out more clearly by CRA, which states that it is measuring a 'network externality' which accrues to both existing fixed and mobile subscribers due to the increased communications opportunities that additional mobile subscription creates. This network externality effect captures both the network 'usage' externality and the network 'option' externality that are discussed in Appendix 4. CRA retains Rohlfs's original assumption that 'call externalities' are fully internalised.

The Commission considers that there appears to be some confusion on the part of Optus as to the exact nature of the externality that is incorporated into its Undertaking

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[226] Cave and Chambers, p. 20.

[227] MJA Report, pp. 49-51

[228] The Commission notes that, elsewhere in its original submission, Optus uses generic terms such as 'externality benefit' (paragraph 10.5), 'externalities' (paragraph 10.29), 'externality mark-up' (10.39) and 'externality surcharge' (paragraph 7.5) to describe this mark-up. Moreover, in paragraph 10.6, Optus submits that, although it has been termed an 'externality', it may be more appropriately considered an 'efficient transfer of consumer surplus from FTM to mobile users'.

[229] Optus submission, p. 32.

price terms, or at least an inconsistency in the terminology that it applies and the actual externality that is quantified by CRA. The Commission holds this view for two reasons.

First, in attempting to explain the basis for an 'externality mark-up', Optus has referred to the externality value that FTM callers receive when a new subscriber joins the network.[230] However, the Commission understands that the model used by CRA to quantify 'externalities' that arise when a new subscriber joins a mobile network, includes benefits accruing to *both* existing fixed and mobile subscribers. Notably though, the Rohlfs model employed by CRA assumes that the external benefits to mobile users are internalised to a greater extent than those to fixed users.

Second, Optus submits (footnote 19 of its original submission) that it has not included any value associated with the 'option' to call a mobile subscriber not reflected in the actual calls made, and that including this would 'increase the optimal externality charge'. However, the Commission notes that the Rohlfs model applied by CRA actually does include this 'option externality' and that this is captured by the 'net externality factor' which is represented by a parameter of 1.05 – 1.1 in the model.[231]

Notwithstanding these issues, the Commission is of the view that the concept of a 'network external effect' in relation to mobile subscription has intuitive validity. That is, the Commission considers that there may be circumstances where a potential mobile subscriber's marginal private valuation (MPV) means that he/she would not purchase a mobile subscription, even though it would be socially efficient for him/her to come on to the network (i.e. Marginal Social Valuation (MSV) > MPV).

However, the Commission considers that, in many cases, network external effects associated with mobile subscription are likely to be internalised by both existing subscribers and MNOs. In the case of *existing subscribers*, the Commission is of the view that there are likely to be a number of situations where parties known to the marginal subscriber will contribute in some way to the subscription decision.[232] In the case of MNOs, the Commission notes that they are likely to internalise some network effects through the implementation of sophisticated non-linear or multi-part pricing strategies.[233]

Further, the Commission believes, that the empirical importance of this network external effect is likely to be relatively less in highly mature mobile markets such as

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230 Optus submission, p. 32.

231 As will be further discussed below, however, CRA does not appear to control for this 'net externality factor' correctly in using the Rohlfs model. This suggests that, other things equal, Optus has overestimated the 'NES' on the DGTAS by approximately 0.40 cpm.

232 For example, a family member may assist a child to purchase a mobile subscription where they expect to derive a benefit from being able to call (or have the option to call) their child in the case of an emergency. Similarly, a business may subsidise an employee's mobile subscription on the expectation that it will derive some benefit from other employees having the ability or option to call that employee, at any time, should an important issue arise.

233 For example, the Commission notes that Optus currently offers a wide variety of *prepaid* and *postpaid* mobile plans for potential (and existing) mobile subscribers. These are based on a myriad of pricing structures, such as the emergence of capped (or 'bucket' plans) which contain a variety of call/data rates and the opportunity for 'free' on-net talk time. In short, there would appear to be a mobile plan to suit most types of (if not all) users. Moreover, the emergence (and increasing popularity) of prepaid plans targeted at 'low-use' subscribers (i.e. low entry fees, high call rates) demonstrates quite clearly that MNOs have strategies in place to attract users who may not opt to purchase a mobile subscription if they were forced to sign a postpaid contract.

Australia. In this regard, the Commission notes that SingTel Optus cites mobile penetration levels at 92 per cent in Australia at 30 September 2005.[234] In the Commission's view, although it may be true that the addition of the remaining 8 per cent of the population as mobile subscribers would bring external benefits to existing subscribers, it is likely that these marginal subscribers will make (and receive) less calls on average than existing subscribers.[235] Therefore, the marginal social benefits resulting from the addition of each new subscriber are likely to be declining. Moreover, to the extent that the marginal social cost of raising the subsidy from a NES on the MTAS remains constant, or is even increasing, this suggests that the case for continuing to subsidise mobile subscription is weakened.

The Commission notes that on this issue, and on Optus's behalf, Professor Hausman has provided evidence (based on Optus sample data) that later adopters of mobile phones in fact receive more call minutes than early adopters. However, the Commission has strong reservations about the survey's methodology and representativeness. For example, the 'average revenue per user' (ARPU) for prepaid subscribers in Professor Hausman's sample is higher than that for SingTel data[236] for the same period. Also, the average ARPU for postpaid subscribers used by Professor Hausman is significantly lower than that for SingTel data for the same period. This suggests that the data used by Professor Hausman in this regard is highly unrepresentative of the true relative calling patterns of prepaid and postpaid Optus subscribers. Further, the Professor Hausman's survey methodology involves an unrealistic assumption that subscribers who disconnect during the period are treated as if they remained connected throughout, which appears to bias the overall results of this analysis.

7.2. External effects considered in the CRA model

7.2.1. Optus's view

In its original submission (footnote 19) in support of the Undertaking, Optus notes that its Undertaking price terms exclude any value associated with the 'option' to call a mobile subscriber not reflected in the actual calls made. It notes, however, that the inclusion of this externality would 'increase the optimal externality charge'.

A more comprehensive treatment of these issues is contained in the CRA report. CRA notes that network externalities are relevant to both fixed-line and mobile networks, and that the economic rationale in relation to the USO is based on these network effects. However, CRA considers that externalities between fixed-line and mobile networks do not 'balance out' because both the subscription elasticities and marginal costs are significantly different, with mobile services being more price-elastic and costly at the margin.[237]

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234 SingTel Optus, *Management Discussion and Analysis of Unaudited Financial Condition, Results of Operations and Cash Flows for the Second Quarter and Half-year Ended 30 September 2005, p.* 41.

235 Indeed, CRA's analysis recognises this by making the assumption that marginal subscribers make (and receive) only one-third of the average number of calls made by existing subscribers.

236 SingTel, *Management Discussion and Analysis of Results of Operations for the Year Ended 31 March 2005*, p. 43.

237 CRA Report, p. 15.

CRA appears to rule out the possibility that FTM prices will have any impact on the demand for mobile subscription, although, in the Commission's view, its reasoning on this issue remains somewhat unclear. Thus, it assumed a cross-price elasticity between FTM price/mobile subscription of zero.

CRA acknowledges, however, that it is possible that the level of FTM prices may impact on fixed-line subscriber numbers. However, it submits that the empirical evidence suggests that fixed subscription is extremely inelastic, and would be expected to be even more inelastic with respect to the price of one particular type of call (i.e. FTM call). Moreover, CRA considers that the case for a mobile subscription subsidy is stronger in light of empirical findings that mobile subscription is substantially more price elastic than fixed subscription and hence the social benefit of a subsidy would be expected to be higher.

On the subject of calling externalities, CRA notes that while its application of the Rohlfs model assumes that these are fully internalised, this model does allow for calling externalities to be included. In this regard, CRA notes that including a degree of 'un-internalized' call externalities (i.e. setting this effect to 1.1 for all call types in the model) has little impact on the optimal FTM price; increasing it by 1 per cent in one year, and decreased it by 1 per cent in a later year. CRA considers that these results accord with conventional wisdom that calling externalities can be 'largely disregarded'.[238] Notably, however, Optus's other consultant, Professor Hausman, emphasises the value consumers place on receiving calls, when he states that:

> ... [e]specially in countries with 'Calling Party Pays' (CPP) such as Australia, a mobile subscriber would place a very high value (consumer surplus) on incoming calls since they are free.[239]

In a submission to the draft decision, Optus submitted that the test applied by the Commission to determine whether to include network externalities is 'too high a standard'. That is, Optus submits that in establishing the appropriate price for the DGTAS, it cannot be expected to consider the 'entire range' of effects and counter-effects that would operate across both the fixed-line and mobile platforms and which could have implications for the relevant externality effects. Rather, Optus considers that the Commission should have regard to Optus's information on its merits and if necessary, perform additional work to satisfy itself of Optus's proposed externalities.[240]

7.2.2. Submitters' views

The consultants engaged on behalf of the CCC (Professor Cave and Charles Chambers) submit that, by focusing on the mobile sector alone (i.e. impact of higher FTM prices is ignored), the CRA/Optus argument fails to take account of other consequences of higher MTAS charges, and is therefore 'inadequate'.

Hutchison submits that *network* and *calling* externalities are likely to have opposing consequences for the MTAS charge. Hutchison considers that Optus's view on the calling externality is not clear, and that its consultant, CRA, refers to the 'conventional economic view that calling party externalities can be largely disregarded'. However, Hutchison submits that Professor Hausman's reference to a

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238 CRA Report, p. 18.
239 Professor Hausman, p. 8.
240 Optus submission in response to draft decision, p. 33.

'very high value' suggests that the calling externality may be of some magnitude. Therefore, Hutchison submits that the Commission cannot conclude that the Undertaking is reasonable in circumstances where Optus's supporting material describes different externalities with 'seemingly inconsistent' consequences for termination charges.[241]

MJA notes that the Commission has not included an NES in its costing of the fixed-line network, and therefore, the inclusion of one in the mobiles sector would introduce a distortion in favour of mobile subscriptions, at a cost to fixed-line users. MJA also submits that there may be offsetting externalities such as the 'call externality.

AAPT submits that with increasing fixed to mobile substitution, it is possible that the fixed network externality may soon be of greater significance than the mobile network externality. AAPT also submits that the 'call externality' has the opposite impact on the FTM price and is likely to become increasingly important as higher levels of mobile subscription are reached.

7.2.3. The Commission's view

The Commission considers that the framework developed by Optus and CRA to identify relevant externalities is inadequate and partial because it simply assumes away the importance/relevance of external effects which may present a *prima facie* case for subsidising rather than taxing MTAS rates. For example, Optus and CRA have assumed that *calling externalities* are completely internalised, even in the light of Professor Hausman's view that in Australia, 'a mobile subscriber would place a very high value (consumer surplus) on incoming calls since they are free'.[242]

The Commission agrees with the view that many bilateral calling relationships will, over time, internalise the benefits accruing to both calling parties from the consumption of a joint telephone call. However, the Commission notes that some other calling patterns, while likely in the minority, are not 'regular' and may only ever be one way. In the situation where a subscriber receives a call from a non-regular (or one-off) source, they conceivably derive some benefit from that call, even though they have no intention of calling that party back. In circumstances where this type of call is still made, this could be characterised as an 'external benefit' accruing to mobile subscribers from incoming calls, and to the extent that it is not internalised, a 'call externality'.[243] In circumstances where this type of call is not made, even though it would be socially optimal for it to have been made, this might be thought of as a 'negative externality' effect.

WIK's view, and that of some submitters to this inquiry, is that call externalities are not efficiently internalised,[244] in relation to calls received by mobile subscribers from

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241 Hutchison submission, p. 10.

242 Professor Hausman, paragraph 20.

243 A possible caveat to this effect translating to a 'call externality' is if subscribers base both their initial and ongoing (in the case of postpaid plans) subscription decision on the MPV of not only the calls they make, but also those which they expect to receive. To a certain extent, this factor could obviate the importance of the call externality in this circumstance because even if a mobile subscriber receives calls (to which some positive value is attributed) which they have no intention of returning, the benefit received is to some degree captured in the subscription decision. That said, the existence of call externalities in this circumstance could still lead to inefficient levels of calling.

244 WIK Report, p. 43.

the fixed network. To the extent that 'call externalities' are not internalised, this would present a *prima facie* case for subsidising rather than imposing a surcharge on the MTAS. Further, the existence of 'call externalities' suggests that a cross-subsidy arrangement which imposed a surcharge on the MTAS could actually reduce the absolute quantity of mobile subscriptions, rather than increase them as postulated by Optus and its consultants.[245] .

In the Commission's view, therefore, any framework that wishes to accurately quantify a NES on the MTAS must consider the existence and importance of call externalities from fixed-line networks. In addition, to ensure that any NES has been accurately determined, consideration should also be given to the possibility of other external effects, including the possibility of externalities associated with 'fixed-line' subscription in an environment of increasing fixed to mobile substitution.[246]

For this, and other reasons, the Commission considers that CRA's analysis to determine a NES is partial because it only considers one possible externality effect, which happens to support its case for a surcharge on the DGTAS. To see the partial nature of this analysis more clearly, consider first that the demand for mobile subscriptions will depend on a number of factors, including (among other things) the:

- price of mobile subscription (movement along the demand curve as own-price changes);
- number of mobile subscribers on the mobile network (shifts the demand curve in the same direction as the quantity of mobile subscribers changes);
- number of fixed subscribers on the fixed network (shifts the demand curve in the same direction as the quantity of fixed subscribers changes); and
- price of FTM calls (shifts the demand curve in the opposite direction to the price change).

The intuition underlying the last two elements is that mobile subscribers will place some positive value on both being able to call fixed-line subscribers, and receiving calls from fixed-line subscribers. This assumption appears consistent with the evidence provided by Professor Hausman on behalf of Optus (i.e. mobile subscribers place 'significant' value on incoming calls from the fixed network).

Moreover, consider that the demand for fixed-subscription will also depend on a number of factors, including (among other things):

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[245] In this regard, Gans and King observe that if: '… mobile subscribers receive utility from receiving calls … this lowers the socially optimal termination charge; something that may offset the need for a network externality surcharge'. J. Gans. and S. King, *Price Regulation of Mobile Termination: Promoting Competition and Investment in Telecommunications*, A Report on behalf of Hutchison Telecommunications, CoRE Research, Melbourne, 26 June 2003, p. 45.

[246] On the issue of fixed to mobile substitution, WIK, has noted that (p. 48) '... we can observe a gradually increasing trend to substitute fixed access lines by mobile subscriptions. The number of telephone users which give up their fixed-line subscription and become mobile-only users is increasing. Although there seems to be indications that fixed-mobile substitution has reached a lower level than in Europe and in Asia, it is also an increasing reality in Australia. While mobile only homes are as high as 33 % in Finland and Portugal with a 15 % average across Europe, the corresponding number for Australia is estimated to 6%. The currently relative lower level of fixed-mobile-substitution gives reason to assume that this process will accelerate in the next few years in Australia.'

- the price of fixed-subscription (movement along the demand curve);
- price of fixed-line services, including the price of FTM calls (shift the demand curve in the opposite direction to the price movement);
- the number of fixed subscribers (shifts the demand curve in the same direction as the quantity changes);
- the number of mobile subscribers (shifts the demand curve in the same direction as the quantity changes); and
- the price of MTF calls (shifts the demand curve in the opposite direction as the quantity changes).

Within this framework, now consider a situation (as proposed by Optus) where MTAS rates are set 'above-cost' via a NES. In the Commission's view, the imposition of a NES could potentially have a number of offsetting effects in both the fixed-line and mobile markets. For example, on the one hand, the NES is likely to increase the demand for mobile subscription because the price of mobile subscriptions will fall (i.e. as a result of the cross-subsidy). However, the surcharge on the MTAS may also have the effect of reducing the number of FTM calls made by fixed-line subscribers due to above-cost termination rates feeding through to higher FTM prices. If mobile subscribers attribute some positive value to incoming FTM calls, it could reasonably be expected that, other things equal, a reduction in the amount of FTM calls would reduce the demand for mobile subscriptions. Moreover, increased FTM call prices could also reduce the demand for fixed-line subscriptions, particularly in an environment of increasing fixed-to-mobile substitution. Further still, this effect would likely be offset to some extent (or perhaps completely) if there is an increased number of mobile subscribers for a fixed-line subscriber to call.

Consideration of this type of framework, suggests that there is likely to be a myriad of complex effects and counter-effects between the fixed and mobile markets, and that these will likely change over time, particularly in an environment of increasing fixed-to-mobile substitution. The Commission considers that there are three important considerations to draw from the stylised analysis above in assessing the approach adopted by Optus and its consultants.

First, to the extent that above-cost MTAS rates lead to increased prices for FTM calls, this will likely reduce the number of incoming FTM calls received by mobile subscribers. If mobile subscribers attribute some positive value to these calls, which is not internalised by either the subscriber or the calling party, this effect in isolation suggests that the price of the MTAS should actually be set lower or even *below-cost* in order to encourage calls from the fixed-line network to the mobile network. The Commission notes that in determining its 'welfare-maximising' price for the DGTAS, CRA does not consider this effect. Moreover, its reasoning for excluding this effect is not convincing.

That said, CRA does reveal that its own sensitivity analysis, based on setting what it terms 'usage' externalities (apparently, the same as calling externalities in this context) to 1.1 in the Rohlfs model, suggests that incorporating 'calling externalities' would have a 'negligible impact on the optimal termination charge'. The Commission makes two points on this issue. First, the basis for using the parameter 1.1 is neither explained nor justified by CRA. Second, CRA's result would appear to contradict the one identified by Rohlfs himself who noted that:

> I did, however, examine the effects of small positive (uninternalised) usage externalities by setting all three usage externality to 1.1. Usage externalities of this magnitude significantly reduce the optimal usage prices and termination charges.[247]

Second, the Commission notes CRA's view that, conceptually, 'it is possible' that FTM prices will impact on fixed-line subscription but that empirical evidence suggests that fixed-line subscription is 'extremely inelastic' with respect to fixed subscription prices, not to mention the price of one particular type of call (i.e. FTM). CRA also submits that 'the case for a mobile subscription subsidy is stronger in light of empirical findings that mobile subscription is substantially more price elastic than fixed subscription'. The Commission has already expressed concern (section 6.1.4 of this report) about the elasticity parameters used in the CRA model, which appear to form the basis for CRA's conclusion in this regard.

Moreover, the Commission considers that CRA's views on this particular issue, which appear to be based on relatively 'dated' data, fail to factor in the increasing impact of fixed-to-mobile substitution on the relative elasticity parameters for fixed-line and mobile services. For example, increasing fixed-to-mobile substitution suggests that, going forward, more consumers will be inclined to give up their fixed-line subscription in favour of a 'mobile only' option. This trend tends to support the view that, going forward, fixed-line subscriptions will become relatively more 'elastic' compared with mobile subscriptions. That this process may be inefficiently hastened by above-cost FTM prices has led WIK to conclude that:

> We believe that the increasing trend for substitution in favour of mobile networks, network externalities should be more of a policy concern for the fixed-network than for mobile networks … The current trend of substitution gives less rationale for regulators to tax fixed network users (via higher termination rates) in favour of increasing mobile penetration levels which are already at their saturation level.[248]

Finally, to ensure that any NES imposed on the MTAS is an accurate representation of the 'optimal' surcharge, the framework used to determine it should at least attempt to take into account all the relevant external effects which are likely to give rise to externalities. Moreover, a robust framework would attempt to examine how a NES on the MTAS is likely to impact on the interrelated fixed-line and mobile markets, rather that just focusing on the impact on mobile subscriptions and mobile outgoing calls. Although these platforms are not perfectly substitutable, there is any-to-any connectivity between them which suggests that a NES levied on the MTAS could potentially have a number of varying and offsetting effects on the use and substitution of fixed and mobile communications mediums.

The Commission notes Optus's further submission that in establishing the appropriate price for the DGTAS, it cannot be expected to consider the 'entire range' of effects and counter-effects that would operate across both the fixed-line and mobile platforms and that if necessary the Commission should 'perform additional work to satisfy itself of Optus's proposed externalities'.

As noted previously, in assessing an undertaking the Commission may only, under section 152BU(2) of the Act, accept or reject the undertaking. The Commission cannot, under the provisions of the Act, 'measure and include externalities' to arrive at an appropriate price for the MTAS within an undertaking process. If the

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247 Jeffrey Rohlfs, p. 5.
248 WIK Report, pp. 48-49.

appropriate price for the MTAS should reflect a variety of potentially offsetting externality effects then Optus should determine the net result of such effects, determine the appropriate price for the MTAS on the basis of this result and then lodge an undertaking with the Commission that reflects this price. Optus's decision to measure only one such externality effect, which increases the MTAS above its underlying cost, and then suggest that if the Commission wants the other externality effects to be taken into account, it should measure these itself, is insufficient to convince the Commission to accept the NES mark-ups.

Overall, therefore, in the Commission's view, the fact that Optus's price terms only include consideration of one type of external effect, significantly weakens the validity of its conclusion that the optimal price for its DGTAS necessarily requires a 'NES', as well as the credibility of the 2.12 cpm estimate for this surcharge.

7.3. To what extent can a subsidy be effectively targeted?

In its original submission in support of its Undertaking, Optus did not appear to directly discuss the implications of whether its mobile subscription subsidy could be effectively targeted to 'marginal' subscribers.

In this context, 'marginal' subscribers are defined as people who would be induced to purchase a mobile subscription (i.e. who currently do not have one) because of the mobile subscription subsidy. These are distinct from 'infra-marginal' subscribers who already own a mobile subscription but may be induced to switch carriers or plans due to new pricing offers.

The Commission understands that, in calculating the NES of 2.12 cpm, the CRA model assumes that Optus has no ability, at all, to target this subsidy to 'marginal' subscribers. In effect, this means that the required subsidy is at a maximum, and that in calculating the required NES, CRA assumes that this subsidy will be consumed by both marginal and infra-marginal subscribers.

7.3.1. Submitters' views

MJA submits that, in line with the conclusion reached by Ofcom in the UK, evidence of price discrimination in retail mobile tariffs provides evidence of the ability to target subscribers in the Australian mobiles market. MJA notes that, based on such evidence, Ofcom concluded that price discrimination facilitates internalisation of the total externality by MNOs.

MJA further submits that 'to the extent targeting is more difficult (or there is limited incentive to target) such that subsidies are inefficient (for example, funding of upgrades to handsets for infra-marginal subscribers or encourage inefficient switching of existing subscribers), any surcharge should be reduced'.

With respect to calculating the required NES, MJA also believes that it is important to inform the debate with additional estimates and methodologies. In this regard, MJA notes that one methodology not considered by Optus is the approach adopted by the UK Competition Commission (UKCC), which it considers 'simple', 'highly transparent' and a valuable cross-check on use of the Rohlfs model. MJA estimates that applying the original UKCC methodology yields a subsidy of 0.16 cpm, while if MNOs were able to engage in 'perfect targeting' of the subsidy, 'only half of the 0.16

cpm surcharge would be required'.[249] MJA also notes that using the UKCC's 'revised' methodology yields a subsidy of 0.62 cpm.[250]

Cave and Chambers submit that the dilution of any subsidy across infra-marginal and marginal subscribers 'renders the subsidy available very small'.[251]

7.3.2. Optus reply submission

On the issue of the ability to target any subsidy, Optus submits that it is 'inherently difficult' to target mobile subscription subsidies to 'marginal' subscribers, due to the reality that new subscription tariffs would also be available and attractive to infra-marginal subscribers. Optus states that, while MJA assumes that a poor ability to target warrants a lower subsidy, this would not necessarily be the case. For example, Optus submits that 'much public expenditure on health and education may be poorly targeted at those individuals who would not otherwise be able to afford the services, the rest of the expenditure does not represent an economic loss but a different path of delivering the services (i.e. via the public rather than private sector)'.

Optus also notes MJA's calculation of the NES based on the UKCC approach. However, Optus considers that this approach is 'seriously flawed' and has been previously rejected by the Commission in the MTAS Final Report [252]

7.3.3. The Commission's view

In the Commission's view, Optus's admission that it has a 'poor ability' to target mobile subscription subsidies is an important issue to consider when assessing the merits of its proposed NES. Although the accrual of the subsidy by infra-marginal subscribers itself is not an efficiency cost *per se*, the imposition of the NES itself generates an efficiency cost to society because the price of this service is distorted above its underlying cost. Because the magnitude of the subsidy and the ability to target are inversely related, the efficiency cost to society will be greater if a MNO has a poor ability to target. This is particularly so since the efficiency costs of raising the subsidy from above-cost MTAS prices increases at an increasing rate.

Moreover, the Commission considers that the MNOs, such as Optus, may have an ability and incentive to use 'excess profits' derived from supplying the MTAS as a fund to compete for inframarginal subscribers at the retail level, with no benefit to society more generally. In this regard, the Commission notes evidence that, in relation to the Australian mobile market in 2004-05, at least 70 per cent of new handsets involved replacement rather than equipping a completely new subscriber.[253] Indeed, the likelihood that these funds may be directed towards churn-related subsidies involving the premature replacement of handsets that are only part way through their economic lives is a further efficiency cost that would need to be

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249 MJA Report, p. 58.
250 MJA Report, pp. 59-61.
251 CCC submission, p. 21.
252 Optus submission in response to interested parties views, pp. 19-20.
253 This is based on data from the Australian Mobile Telecommunications Association (AMTA) which reported handset sales of 8.02 million in 2004-05. This compares with Optus's estimate of only 2.41 million net new subscriptions during this period – see SingTel, *Management Discussion and Analysis of Results of Operations for the Year Ended 31 March 2005*, p. 43.

accounted for in any framework that attempts to calculate an 'optimal' NES. As WIK has noted:

> There are no positive welfare effects associated with subsidies provided to infra-marginal subscribers ….[254]

In this context, it is important to note that the Commission is not suggesting that handset subsidies should be abandoned. Rather, it believes that any case for taxing the MTAS to provide funding for subsidies is severely weakened where those subsidies are poorly targeted such that some of the subsidy accrues to infra-marginal subscribers.

In any case, the Commission considers that CRA's assumption when calculating the NES – that Optus has no ability to target subsidies – is extreme and unrealistic. Rather, the Commission considers that an MNO such as Optus is likely to have *some* ability to target subsidies to 'marginal' mobile subscribers through sophisticated price discrimination strategies at the retail level.

In this regard, the Commission notes that Rohlfs's original model allows for the 'base case' assumption to be relaxed by allowing for a modelling scenario where MNOs have the ability to distinguish marginal and inframarginal subscribers. This potentially has significant ramifications for the required NES in that under this modelling approach it will be unambiguously lower. For example, in the UK, the use of the Rohlfs targeting model reduced the NES from 0.66 ppm to 0.06 ppm – a reduction of around 91 per cent. Indeed, on this issue, WIK, noted that:

> If targeting of subsidies to marginal subscribers occurs the appropriate subsidy is significantly lower compared to a scenario where targeting is not possible or exercised.[255]

7.4. Welfare analysis prepared by Professor Hausman and NERA

In support of its view on the adverse impacts of reducing MTAS charges towards their underlying cost, Optus has also provided welfare analysis prepared on its behalf by Professor Hausman and NERA.

7.4.1. Professor Hausman

As noted in section 4.4.2, the analysis prepared by Professor Hausman (among other things) considers the impact on consumer surplus from a new subscriber joining a mobile network. Professor Hausman concludes that the increase in consumer surplus to existing FTM callers lies between $102 and $378 per year. Further, based on considering the effects of increased mobile penetration from lower retail prices, Professor Hausman concludes that the additional consumer surplus to calling parties using FTM is between $153 and $568 million per year. Professor Hausman then compares this estimate to the gain in consumer surplus to calling parties from a lower FTM price. In this regard, Professor Hausman concludes that this gain lies within the range of $32 to $37 million per year. Thus, based on his results, Professor Hausman concludes that Australian consumers would be worse off if a price of 12 cpm – as

[254] WIK Report, p. 45.
[255] WIK Report, p. 47.

proposed in the Commission's MTAS pricing Principles Determination – was set for the MTAS.[256]

7.4.2. NERA

As noted in section 4.4.6, the analysis prepared by NERA (among other things) considers the net welfare impacts on social surplus (i.e. consumer and producer surplus) from a 5 cpm regulated reduction in MTAS charges. On the basis of assumptions considered reasonable by Optus, NERA concludes that the direct social benefit of $1 million is outweighed by the social cost of $1.28 billion due to lost mobile subscriptions. However, NERA notes that if these estimates are amended for the assumption that the marginal cost of FTM is equal to 14 cents per minute, the social cost increases to $1.36 billion. Under assumptions which NERA believes accord with the Commission's view on particular parameters, it concludes that a 5 cpm regulated reduction in the price of termination will tend to result in a social surplus loss of around $150 million per annum.

7.4.3. WIK's view

WIK notes that under an optimisation approach the marginal benefits from subsidising mobile subscribers have to equal the marginal welfare costs of MTAS surcharges. However, WIK considers that both Professor Hausman and NERA do not determine this optimum point, but rather only compare two states described by different MTAS charges, and based on assumptions about a full waterbed effect and pass-through of MTAS charges to FTM prices. WIK therefore notes that:

> They therefore compare an aggregate welfare (or, in the case of Hausman: consumer surplus) loss from a termination surcharge with an aggregate welfare (consumer surplus) gain from subscriber subsidies. This is methodologically correct if the choice is between only two states.[257]

WIK notes that Professor Hausman's analysis only concentrates on 'consumer welfare' and does not calculate optimal prices. Moreover, WIK's own analysis shows that by correcting for a single number in relation to the gain received by FTM callers from a lower FTM price, by which Professor Hausman is more than $370 million in error, his conclusion no longer holds.[258] In other words, WIK notes that:

> Thus, even if one accepts all of Hausman's assumptions, simply adjusting for the calculation error of the consumer surplus gain for FTM calls from the FTM price reduction leads to an ambivalent rather than the clear result that Hausman claims. In fact, on average the result goes in the opposite direction.[259]

WIK also lists several additional concerns with Professor Hausman's analysis, including that it:

- is claimed that the main difference compared to the Commission's/Professor Armstrong's analysis is that he includes a 'new goods effect' from the expansion of the mobile subscriber base through handset subsidies and low

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256 Professor Hausman also concludes that the difference between the two scenarios would be even greater if the additional consumer surplus for new subscribers was included in the analysis.

257 WIK Report, p. 33.

258 This is because correcting for this error would ensure the gain to FTM callers from the resulting FTM price reduction that would be expected to follow from a decrease in the price of mobile termination, is over ten times as high as that calculated by Professor Hausman.

259 WIK Report, p. 60.

subscription charges. However, in WIK's view, Professor Hausman overlooks that there exists a close substitute for mobile services in the form of fixed network telephony. Thus, WIK considers that not all of the gain he derived from his consumer surplus analysis of demand for FTM calls is a net gain;

- neglects any effects of an increase in mobile subscribership on fixed-network subscribership;
- neglects possible non-linearity of the demand for mobile subscriptions;
- is sensitive to assumptions about FTM call minutes; and
- does not convince WIK that the FTM demand for calls to new mobile subscribers equals the average FTM demand to all mobile subscribers. Rather, WIK considers that Rohlfs/CRA assumption of marginal subscribers making and receiving one-third of the average amount of calls is more appropriate.[260]

Overall, WIK concludes that a move from the MTAS charges proposed by Optus to TSLRIC+ will not lead to a net efficiency loss, but rather to an efficiency gain. That said, WIK notes that this does not mean that MTAS charges at TSLRIC+ levels cannot be improved upon.

In relation to the NERA analysis, WIK notes that its data appears unfavourable to the regulation of MTAS charges. In this regard, WIK considers that the only 'unbiased' estimate is the one with the parameter values related to those of the Commission, and that NERA's net result here is a reduction in social surplus of $150 million.[261] However, WIK notes that it appears that NERA has not included the profit gain from increased subscription charges (while the profit reduction from reduced FTM call charges is included). In WIK's view:

> This omission … is similar to the one by Hausman and results in about $200 million change in net outcome under the linear demand analysis.[262]

7.4.4. The Commission's view

In the Commission's view, and based on the advice from WIK, there is a question over the validity of some of the key assumptions in both Professor Hausman's and NERA's analysis which may lessen the extent to which the Commission can have confidence in their respective conclusions. These are discussed in turn below.

First, Professor Hausman's analysis only considers changes in consumer surplus and does not consider broader social surplus changes which take into account any changes in producer surplus. At the very least, this suggests that Professor Hausman's analysis could be considered a partial assessment of what is likely to happen to social welfare when a particular price is set for the MTAS.

Second, both Professor Hausman's and NERA's analyses assume that the demand for calls to 'new' subscribers equals that to average subscribers. In WIK's view, this assumption is implausible because it:

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260 WIK Report, pp. 64-65.
261 WIK Report, p. 64.
262 WIK Report, p. 64.

> ... presupposes a consistent lack of correlation between the demand of the mobile subscribers for subscription and the demand for others to call such subscribers. Thus mobile subscribers with low willingness-to-pay for subscriptions are nevertheless assumed to generate an average demand for calls to them.

The Commission agrees with the *a priori* proposition that marginal mobile subscribers are likely to make and receive less than the 'average' number of calls. In the Commission's view, the CRA analysis makes the more reasonable assumption that marginal subscribers make and receive one third of the calls made and received by an average subscriber.

Third, WIK argues that Professor Hausman assumes that the demand for FTM calls to a new subscriber has no substitutes. WIK notes that, in particular, it is assumed to be independent of FTF demand. However, elsewhere in his analysis, Professor Hausman has argued that FTM and MTM calls are effectively substitutes, a proposition that should also hold for the FTM and FTF markets. In terms of impact on Professor Hausman's final results, WIK notes that this assumption:

> … bends the results heavily in his desired direction. However, the net results change substantially if only 10-20 % of the calls to new mobile subscribers would have been answered by these people on a fixed network phone had they not subscribed to mobile services … This … suggests that Hausman systematically overestimates the social gains to fixed network callers from an additional mobile subscriber. It also suggests that a fully legitimate approach would have to optimise simultaneously over fixed and mobile network activities.[263]

Fourth, as noted by WIK, Professor Hausman and NERA both appear to have made calculation errors which change the outcome of their results. In relation to Professor Hausman, WIK notes that a methodological error, of the magnitude of $370 million, results from underestimating the gains to FTM callers from a reduction in FTM prices. Correcting for this error alone would suggest that the validity of Professor Hausman's conclusion that consumer surplus would be reduced as a result of a reduction in the price of the MTAS to 12 cpm (as per the MTAS Pricing Principles Determination) is unclear. In relation to NERA's analysis, WIK notes that correctly including the profit gained from increased mobile subscription charges would alter the result by a magnitude of $200 million, again, suggesting that the validity of NERA's conclusion that a 5 cpm reduction in the price of the MTAS would reduce social welfare is uncertain.

Fifth, NERA apparently does not take into account the lost consumer surplus by mobile subscribers due to the reduced amount of incoming FTM calls. WIK considers this omission important because it could reduce the demand for mobile subscriptions (for the reasons discussed above). In this regard, NERA submits that the value of incoming calls is just a scale factor under the 'seemingly reasonable' assumption that the value of a call experienced by the calling party is proportional to that of the receiving party. While WIK agrees with this statement, it believes that it calls into question the assumption made by both Professor Hausman and NERA that the value of calls to marginal mobile subscribers from FTM callers is equal to the average value of calls to all mobile subscribers. WIK considers that, because marginal mobile subscribers value calls to themselves less than average, it is plausible to assume that so too would callers to them.

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[263] WIK Report, pp. 56-57.

Finally, in considering the possible efficiency gains (and costs) from subsidising mobile subscribers, both Professor Hausman and NERA neglect the possibility that new mobile subscribers coming on to the network due to the subsidy may have given up their fixed subscription, or at least now make fewer fixed calls. Rather, NERA suggests that the elasticity of fixed-line subscription to FTM prices and mobile subscriptions is 'immaterially different from zero'. Moreover, and as noted by WIK, neither of these analytical pieces considers the possible consumer surplus gains from mobile subscribers making more outgoing mobile calls due to lower call rates that may result from reduced MTAS charges.

7.5. Has the NES been calculated appropriately?

7.5.1. The Optus approach – RGF Factor

As noted in section 4.4.3 and Chapter 6 of this report, CRA has estimated that the NES to be included in the Undertaking price terms and conditions is 2.12 cpm. This was calculated using the Rohlfs model, which was developed in the UK, and which requires the estimation of a 'Rohlfs-Griffin factor' (RGF). The RGF is essentially a tool for measuring the amount of external benefit that is generated by additional mobile subscribers. The RGF represents the calculation of the following ratio:

$$\frac{\text{Social value of an additional subscriber}}{\text{Private benefits to the additional subscriber}}$$

In calculating the appropriate RGF factor, CRA adopted the parameter values considered reasonable by Rohlfs himself, and Oftel in the UK (now Ofcom).[264] In line with the approach taken by Rohlfs and Ofcom in the UK, CRA determined a range for the RGF of 1.3 – 1.7, and a mid-point of 1.5 for its modelling. This is based on the premise that network externalities are internalised by a variety of means.[265] Intuitively, this suggests that, on average, existing mobile subscribers receive half the benefits that a marginal subscriber derives from purchasing a mobile subscription.

That said, Optus submits that there is 'significant evidence that the actual RGF lies in the region of 2', therefore implying that its use of 1.5 is conservative.

The RGF factor is also referred to as the 'Gross Externality Factor', and CRA notes that it mainly captures the 'cross elasticities between services' (i.e. 'network externalities' arising from existing subscribers being able to call the new subscriber).

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[264] In this regard, Rohlfs's *a priori* reasoning suggested that the RGF factor would fall within the range of 1 and 2. Intuitively, an RGF of 1 suggests that there are no externalities associated with mobile subscription, and that the only benefit from an additional mobile subscription is the marginal private benefit (MPV) accruing to the subscriber. On the other hand, an RGF of 2 intuitively suggests that the private benefits to a new subscriber are, on average, the same as the benefits accruing to existing subscribers – and therefore, the social value is twice that of the individual private value.

[265] Rohlfs argued that MNOs largely internalise externalities that accrue to mobile subscribers through various multi-part pricing structures, and further, that the mobile industry as a whole has an incentive to internalise these benefits. Rohlfs also noted that competitive pressures also lead to a substantial internalisation of externalities. Importantly, it is assumed that 'calling externalities' (or 'usage externalities' as they are termed by CRA) on all call types are assumed to be fully internalised in the CRA model. As noted previously, CRA submits that the Rohlfs model does provide for these externalities to be included, although its own sensitivity analysis (i.e. setting the value of the relevant parameters to 1.1) suggests that these have a negligible impact on the optimal termination charge.

That said, CRA notes that it also encompasses a small 'net externality factor' (1.05 to 1.1) which captures the external benefit accruing to an existing subscriber by having the 'option' to call a new subscriber (i.e. 'option externality'). .

CRA also notes that its calculation of the NES is based on the assumption that marginal subscribers make and receive one third of the calls of an 'average' subscriber.[266] This is inconsistent with the assumption made by Optus's other consultants, Professor Hausman and NERA, that marginal subscribers make and receive the average number of calls. That said, in CRA's view, its assumption is 'highly conservative' as the empirical evidence suggests that volumes per subscriber appear to be increasing despite 'dramatic growth' in Australian subscriber numbers.[267]

In its original submission, Optus did not separately identify that component of its proposed Undertaking price terms that reflected the NES. However, in a later submission to the Commission,[268] Optus indicated the proportion of the mark-up on cost attributed to the externality surcharge is 2.12 cpm.[269] This compares to the UK estimate of the externality surcharge of 1.6 cpm (i.e. 0.67 pence per minute). Optus submits that the difference between the UK and Australia reflects differences in the cost and elasticity parameters used.

7.5.2. Submitters' views

Telstra submits that the Commission should consider the evidence provided in support of CRA's claims that its assumptions are conservative. If they are, Telstra submits that the Commission should consider estimating a range of optimal MTAS charges against which to assess Optus's Undertaking rates. In Telstra's view, setting access prices too low would be harmful to the LTIE, particularly given that it would impact on longer-term incentives to invest in mobile service infrastructure.

Cave and Chambers submit that the data necessary to estimate the NES are extremely elusive, and that common practice is to recycle another regulator's guess, rather than utilise a number which is estimated empirically.

Hutchison notes and adopts the views of its consultant, MJA, which submits that there has been considerable dispute about the appropriate methodology to use when calculating the size of any NES. In this regard, MJA notes that the original methodology used by the UKCC (alternative to Rohlfs model) yields a NES of 0.16 cpm, and that if MNOs were able to engage in perfect targeting of the subsidy, only half of this surcharge would be required. MJA further notes that using the UKCC's revised methodology yields a NES of 0.62 cpm.

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[266] Note however, that CRA also states that 'given this is a key assumption, we have also provided results for the case where marginal subscribers make and receive half the calls of the average subscriber' (m=0.5).

[267] In this regard, CRA submits that, while the Commission notes that ARPU declined from $65.66 to $51.13 per month over the period 1997-98 to 2002-03, this is more than accounted for by the 24.1 per cent fall in prices over the period. Likewise, it notes that the Commission reported that between 2001-02 and 2003-03, subscribers grew by some 12 per cent whereas usage grew by 17 per cent implying significantly increasing average usage levels.

[268] Optus submission, 16 August 2005.

[269] *Ibid.*, para 4.22. Note that Optus indicated that this was identified by setting the RGF factor to 1 (i.e. assuming there are no external benefits associated with mobile subscription).

WIK's view

WIK notes that the calculation approach chosen by CRA does not directly separate out the NES on FTM calls from the R-B mark-up on the FL-LRIC of the DGTAS. That said, WIK notes that Optus has identified the value of this NES at 2.12 cpm. WIK notes that it in its 'replication' of the CRA model outputs, it calculated a NES of 2.16 cpm. WIK indicates that the discrepancy between this and the Optus estimate of 2.12 cpm may be due to 'rounding errors or the use of a different algorithm than the one CRA has used'.[270]

In WIK's view, its essential result is that its 'corrected'[271] version of the CRA model generates a network externality of 0.58cpm – or about 27 per cent of the NES estimated by CRA. In WIK's view, CRA's result is:

> … due to CRA's choices regarding model structure and model parameterisation. These choices has the perhaps even more important effect of bringing about in general a grossly distorted level of the FTM retail price ($**c-i-c**) that is about **c-i-c** per cent higher than the one that the corrected model would produce ($**c-i-c**).[272]

More generally, in WIK's view, the assumptions and results of the CRA analysis are not necessarily 'conservative' as asserted by Optus and CRA. In this regard, WIK notes that the version of the Rohlfs model used by CRA (the 'Ramsey' model) assumes that the subsidy cannot be targeted at all. In WIK's view:

> … the degree of targeting and internalisation will have improved through more sophisticated pricing structures of the MNOs and the level of penetration.[273]

In addition, WIK notes that:

> The CRA approach is furthermore suffering from not relying on market information and data relating to the Australian market. In this context the calculations made by Marsden Jacob Associates (2005) give some relevant indication on the qualitative implication of applying the UK approach to the current market conditions in Australia.[274]

WIK also notes that applying the UKCC approach to Australia leads to a significantly lower externality mark-up in Australia as compared to the UK.

7.5.3. The Commission's view

The Commission notes that in using the Rohlfs model to calculate a NES of '2.12 cpm', CRA has retained many of Rohlfs's original assumptions.[275] The Commission also notes that Rohlfs's original assumptions appear to be generally in accord with its view that a substantial proportion of network external benefits associated with mobile subscription are internalised (either by MNOs or consumers themselves) and that the efficiency costs of imposing a surcharge on termination need to be factored into the

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[270] WIK Report, p. 92.

[271] In section 4.2.1.1 of its report, WIK notes that its corrected version of the CRA model assumes 'constant elasticity linear demand functions', a 50 per cent reduction in the magnitude of Optus's 'fixed and common costs', and increase in the absolute value of the own-price elasticity of FTM calls and the 'separation of the mobile market in a mass market and business market segment'.

[272] WIK Report, p. 92.

[273] WIK Report, p. 97.

[274] WIK Report, p. 97.

[275] On page 24 of its report, CRA notes that the only change in assumptions was the removal of an artificial constraint on the retail FTM price (that fixes it at 6.76 pence per minute) which was introduced for the purposes of the last exercise Ofcom undertook with the model. CRA notes that this alteration is described in its Appendix 1.

estimation process. From this perspective, in an *a priori* sense, the Commission considers that the use of the Rohlfs model, to some extent, is a reasonable starting point from which to measure any external effects.

That said, the Commission has some concerns with aspects of the Rohlfs model which may limit its effectiveness as a method for accurately measuring an appropriate 'NES' for Optus's Undertaking price terms and conditions. Some of these concerns – such as the assumptions regarding the ability to target the subsidy and the failure to include consideration of other externality types such as the calling externality – have been discussed previously in this chapter. For this reason, they are not repeated in this section although the Commission considers them also relevant to its overall conclusion on the methodology used by Optus to measure the NES.

First, while the reasoning used by Rohlfs to determine a range of 1 to 2 for this parameter has intuitive merit, the Commission notes that the ultimate selection of an RGF of 1.5 has no clear empirical basis. The Commission agrees with Rohlfs's original *a priori* reasoning that the RGF factor should not be above 2, and disagrees with Optus's view that there is 'significant evidence that the actual RGF lies in the region of 2' and that therefore its use of 1.5 is 'conservative'.[276] However, the Commission is of the view that it is extremely difficult to determine the exact value of this parameter, and that CRA simply recycles the estimate used in the UK.[277]

Second, the Commission understands that in the UK, Ofcom relied on a range of estimates to determine the 'NES' that should be imposed on the MTAS. In determining this range, Ofcom used various scenarios modelled by Rohlfs as well as an estimate derived from the UKCC. Based on this range, Ofcom determined that the optimal subsidy was 0.5 ppm. Notably, this was lower than the subsidy implied by use of the Rohlfs targeting model in isolation (0.66 ppm). In the Commission's view, this would tend to suggest that the claim by Optus that its approach is 'conservative' and in line with the approach taken in the UK is at least partly questionable.

Third, the Commission notes that CRA appears to have made a methodological error in implementing the Rohlfs model. Specifically, CRA states that it has controlled for a 'net externality factor' of between 1.05 and 1.10 in line with Rohlfs's original assumption. However, an analysis of the CRA model outputs (Mathematica files supplied to the Commission) reveals that this factor is determined at a value of −3.53832. The Commission notes that, other things equal, controlling for this

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[276] The Commission is of the view that it is highly implausible that the RGF factor is greater than 2 in the Australian mobile market where penetration rates are high (i.e. around 89 per cent at March 2005 according to SingTel). Further, the Commission is not clear what 'evidence' Optus is referring to in this context. As previously noted, however, Rohlfs's use of an RGF factor of 1.5 was based on *a priori* reasoning and an estimated range of 1.3 to 1.7 for this parameter. Although other parties to the UK inquiry, including DotEcon and Frontier, submitted models that contained an RGF factor of over 2, these were rejected by Oftel on the basis that they were intuitively implausible.

[277] The reason for this view was that a RGF of over 2 would imply that external benefits exceeded private benefits on average across each bilateral calling relationship. While it can be imagined that a particular person might particularly value being able to call another particular person, it seems unlikely that this would occur systematically across every person with whom that person has a calling relationship. Then the ability of MNOs and users to internalise externalities has to be taken into account.

variable in line with Rohlfs's original assumption, appears to reduce the NES by –0.4 cpm.[278]

Fourth, the Commission is not convinced by CRA's view that the assumption that additional subscribers make one-third of the average number of calls made by existing subscribers is necessarily 'highly conservative'. In support of this contention, CRA notes that:

- although average revenue per user (ARPU) declined from $65.66 to $51.13 per month over the period 1997-98 to 2002-03, this is more than accounted for by the 24.1 per cent fall in prices over the period; and
- over the period 2001-02 and 2002-03 subscribers grew by some 12 per cent whereas usage grew by 17 per cent, implying significantly increasing average usage levels.

The Commission has a number of reservations about these observations. For example, its own analysis of the relative rates of traffic growth and subscriber growth indicates that traffic is growing more slowly than subscription. Moreover, the use of ARPU data and aggregate subscription and traffic data to inform 'marginal' consumer behaviour is problematic. This is because, intuitively, were there actually to have been an increase in average traffic volumes per subscriber over a given period, this could just as easily be consistent with a situation where marginal mobile subscribers make significantly less calls (i.e. one-third or even less) than average. For instance, if existing subscribers increased the amount of calls they made over a given period by enough to outweigh the 'low-usage' of additional marginal subscribers, it is possible that the aggregate result would show traffic volumes increasing at a faster rate than subscriber volumes. Therefore, the Commission considers that CRA's conclusion on this point using the data referred to above should be treated with caution. Moreover, the argument proposed by CRA in this context would appear to be inconsistent with one of the key assumptions in its model that traffic volumes grow exactly in proportion to subscriber volumes.

7.6. Overall conclusion on the 'NES'

The Commission considers that the concept of 'network externality effects' in relation to telecommunications markets has intuitive validity. In this regard, the Commission acknowledges the vast amount of economic literature on the subject of network externalities in this context.

However, after considering the material submitted during this inquiry, the Commission has reached the view that, at a conceptual level, the inclusion of a NES in the Optus Undertaking price terms is not appropriate for a number of reasons.

In the first instance, and for the reasons outlined above, the Commission considers that the importance of network externalities is likely to be low in a highly mature

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[278] The Commission notes that correctly controlling for this 'net externality factor' requires a different input value for the cross-price elasticity of FTM calls with respect to a change in the price of mobile subscriptions. CRA assumes a value for this parameter of −0.18, while a correct use of the Rohlfs model appears to imply that this parameter should be around −0.015. At a conceptual level, this indicates that price reductions in the mobile subscription market would be expected to have a much weaker impact on FTM call volumes than originally assumed by CRA.

mobile market such as Australia, where at 30 September 2005 SingTel Optus estimates a penetration rate of 92 per cent.

Further, even in the event that there was some magnitude of network externalities in relation to mobile subscription, the Commission considers that the Optus framework is 'partial' in that it only considers one type of effect to justify a surcharge on the DGTAS where there are potentially a myriad of complex and offsetting effects that might be present across the fixed-line and mobile platforms. Given this, the Commission believes it would not be appropriate to adjust the price of the DGTAS to correct for only one of these effects, as Optus proposes, as it could potentially lead to an inefficient and distorting pricing structure across all relevant services.

At a practical 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 calculation of the NES by CRA. Specifically, the Commission has concerns that:

- as one submitter has noted, the data needed to estimate the NES are likely to be complex, not readily available and will probably change over time. The Rohlfs model parameters used by CRA are not formed on any empirical basis, and in no way take account of data relating to the Australian mobiles market;
- the NES is calculated on the explicit assumption that 'calling externalities' are fully internalised, when the inclusion of these effects is likely to reduce the optimal DGTAS charge;
- the NES is calculated based on the assumption that Optus cannot, to any extent, target subscription subsidies to 'marginal' subscribers. This means that the required subsidy calculated by CRA is at its maximum to take account of the likelihood that it will be consumed by both marginal and infra-marginal subscribers. However, the likelihood that Optus has some ability to target this subsidy to marginal subscribers suggests that the subsidy calculated by CRA has been overstated beyond its appropriate level;
- in the UK, Ofcom relied on a range of estimates to determine the NES that should be imposed on the MTAS, including reference to different modelling scenarios and a different model (i.e. UKCC approach). In contrast, Optus relies on a single scenario from a single model; and
- CRA appears to have made a methodological error in using the Rohlfs model – specifically in relation to the 'net externality factor' – which results in the NES being overstated by –0.4 cpm.

These concerns lead the Commission to the view that, even if a NES was considered appropriate at a conceptual level, the methodology used by CRA to estimate it is likely to have overstated its magnitude.

8. International cost benchmarking analysis

As noted in section 4.4.4, Optus has, in support of its Undertaking, provided a report by CRA (Appendix III) which contains an 'international benchmarking analysis' based on three 'comparator' countries – Malaysia, Sweden and the UK. CRA submits that making appropriate adjustments to cost estimates from these countries to reflect cost differences compared with Australia generates a reasonable range of 9.99 cpm – 20.07 cpm for the (TS)LRIC of supplying the MTAS in Australia.

In the same report, CRA also provides a survey of recent 'cost' estimates in a variety of countries since its May 2004 report and the MTAS Final Report.

This chapter is divided into three sections. Section 8.1 outlines Optus's views on the relevance of using 'adjusted' international benchmarks as a useful means for determining/informing a reasonable access price for its DGTAS. Section 8.2 considers the analysis undertaken by CRA to generate its range of 9.99 cpm – 20.07 cpm for the LRIC of supplying the MTAS in Australia. Section 8.3 considers the updated survey of international 'cost' estimates provided by CRA.

8.1. Optus's views on the use of international benchmarks

Optus submits that international benchmarking of MTAS costs is a common practice in many regulatory systems and is universally accepted as a useful comparative tool for assessing access pricing. That said, Optus submits that its usefulness can be limited according to the 'comparators' under consideration and that the jurisdictions from which these comparators are taken must be 'relevant and proportionate'.[279]

Optus submits that CRA's international benchmarking analysis demonstrates the 'reasonableness' of Optus's proposed Undertaking price terms, given that its 'cost estimate' falls within this range, and that the international cost benchmarks used by CRA do not take into account R-B principles or a NES.

Optus is critical of the Commission's decision, in the MTAS Final Report, to only make exchange rate adjustments for mobile termination cost estimates from other jurisdictions.[280]

Optus also submits that, 'significantly', CRA found that making adjustments to the benchmarked cost estimate to account for these and other factors increased the benchmarked range of 'costs' from 5 – 12 cpm to between 11.5 and 26.8 cpm. [281] The basis for this range appears to be the wider range of cost estimates surveyed in CRA's latest report. The relevance of this broader range of estimates is considered in section 9.4 below.

The CRA international benchmarking analysis, based on its three 'comparator' countries is considered in the next section.

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[279] Optus submission, p. 41.

[280] On page 9 of its 16 August 2005 submission, Optus notes that the Commission failed to make adjustments to these benchmarked values for factors that are commonly accepted as affecting the efficient cost levels such as, for example, geographic terrain, population density, network usage and scale, land and labour costs in different jurisdictions and spectrum allocations.

[281] Optus submission, p. 9.

8.2. CRA's international benchmark analysis

As noted above, the revised CRA international benchmark analysis derives a cost range for the MTAS of 9.99 cpm to 20.07 cpm, based on cost estimates in three 'comparator countries' – Malaysia, Sweden and the UK – which were recommended by Analysys.[282] These cost estimates do not take into account R-B principles or a NES. The Commission understands that they are based on an EPMU approach for the recovery of common costs, commensurate with the Commission's MTAS Pricing Principles Determination. The original cost estimates are shown in Table 8.1 below.

Table 8.1: Comparators used in the CRA benchmarking analysis

Country	Original estimate (per minute in stated currency)	In Australian cents per minute
Malaysia	11.26 to 22.52 Sens (LRIC estimate for 2002)	5 – 10 cpm. CRA used 7.65 cpm
Sweden	0.5376 SEK (LRIC estimate for 2007)	10 cpm
UK	5.06 pence (LRIC estimate for 2004-05)[283]	11.57 cpm

Source: CRA, *International Benchmarking Analysis*, pp.20, 28, 32 and 35.

In conducting its international benchmarking analysis, CRA notes that it has extended its analysis 'to take into account all of the other cost factors identified by the ACCC' in the MTAS Final Report.

That said, CRA reveals that it did not make adjustments for all of the nine factors (10 if the exchange rate is included) identified by the Commission in the MTAS Final Report (p.214-215). Rather CRA notes that it made 'appropriate adjustments for those factors that were significantly different between Australia and the selected comparator countries'.[284] These were determined to be the 'exchange rate' (also with a 'purchasing power parity' or 'PPP' adjustment for input prices), 'cost of capital' and geographic terrain and network coverage.[285]

8.2.1. Factors adjusted for

Step 1 – Adjustment for exchange rate/PPP

CRA, based on the recommendations in the 2004 Analysys report, used the 10 year-average exchange rate adjustment for converting MTAS cost estimates from other jurisdictions into an Australian dollar equivalent.

CRA notes, however, that it has used modified PPP exchange rates to account for differences in overall cost levels between countries. Specifically, it used a 50 per cent

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[282] The Commission notes that two of these countries (the UK and Malaysia) were included in estimating the Commission's range, of 5 – 12 cpm, as outlined in the MTAS Final Report.

[283] CRA states that this relates to dual band 900/1800 MHz operators and excludes the externality surcharge of 0.57ppm (1.30cpm).

[284] CRA International Benchmarking Report, p. 3.

[285] Of the ten factors considered relevant by the Commission in the MTAS Final Report, CRA did not explicitly adjust for, 'spectrum allocations', 'network purchasing power', 'vertical/horizontal integration', 'network usage and scale', 'population density', 'land and labour costs' and 'different technology'. In addition, CRA did not adjust for 'retail prices', 'scope of services offered' and 'quality of services' which were mentioned by Analysys in its May 2004 report as relevant factors to consider.

PPP adjustment – which effectively means that half of the network costs are assumed to be incurred locally, while half are assumed to be incurred internationally (i.e. in world prices) – whereas Analysys has recommended a 25 per cent PPP adjustment.[286] CRA submits that its use of 50 per cent is conservative in the cases of the UK and Sweden, as it risks overcompensating for Australia's relatively low cost level. The adjustments made by CRA in this regard are summarised in Table 8.2 below.

Table 8.2: Exchange rate/PPP adjustments

Country	Original estimate (per minute)	!0-year average exchange rate, including 50 per cent PPP adjustment	Adjusted estimate after step 1 (cpm)
Malaysia	4.75805 MYR	A$1 = MYR 1.6078	7.65
Sweden	0.5376 SEK	A$1 = SEK 6.0912	8.83
UK	5.06 pence	A$1 = £0.4373	11.57

Step 2 – Adjustment for cost of capital

CRA submits that it has used the actual costs of capital (post-tax nominal WACC) assumed in the cost modelling exercises in the benchmarked countries and accounted for differences with the estimated cost of capital for Optus. As indicated in section 5.2.1 of this report, Optus estimates a post-tax nominal WACC of **c-i-c** per cent for the purposes of estimating an appropriate price for this Undertaking. The adjustments for this step are shown in Table 8.3 below.

Table 8.3: Cost of capital adjustments

Country	Adjusted estimate after step 1	Cost of capital – post-tax nominal WACC	Adjusted estimate after step 2 (cpm)
Malaysia	7.65	11.20 per cent	7.60
Sweden	8.83	9.1 per cent	9.21
UK	11.57	**c-i-c** per cent	**c-i-c**
Australia	Na	**c-i-c** per cent	Na

For Malaysia, a post-tax nominal WACC of 11.20 per cent was used for the wireless industry. CRA submits that it made an adjustment to reach its estimate of an appropriate Australian rate of 10.50 per cent. Making use of NERA's sensitivity analysis for the Malaysian regulator, CRA submits this decreases the Malaysian cost estimate from 7.65 cpm to 7.60 cpm.

For Sweden (9.1 per cent), CRA submits that it used the sensitivity analysis performed in the development of the Swedish LRIC model, which raised the initial estimate from 8.83 cpm to 9.21 cpm.

For the UK, **c-i-c**

[286] CRA used the following cost multipliers: 92.9 per cent for the UK (based on 2003 comparative OECD price levels); 87.2 per cent for Sweden (based on 2003 comparative OECD price levels); and 69.4 per cent for Malaysia (applying 50 per cent PPP scale factor from the World Bank given Malaysia is not an OECD country).

Step 3 – Adjustment for geographic terrain and network coverage

The intuition supporting this adjustment is that, for a given volume of traffic, the greater the coverage area of the network, the higher the network's unit costs.

Overall, CRA submits that network coverage, geographic terrain and population densities impact on cost by affecting the number of base stations and related equipment required for a given traffic level. CRA states it has employed two alternative methodologies to make adjustments (shown below in Table 8.4) for differences in coverage conditions across different jurisdictions:

- the first approach focuses on the number of base stations scaled for traffic volumes. In adopting this methodology, CRA assumes that 90 per cent of network costs vary with the number of base stations. Hence, unit costs would be expected to be proportionately higher in a country that had more base stations for a given level of traffic volumes; and
- the second approach adjusts for coverage areas directly and traffic volumes. However, CRA notes that it has recognised differences in cell areas for coverage related cell sites in adjusting for coverage 'where there appeared to be significant differences between countries'.

Table 8.4 Adjustments for network coverage/geographic terrain/population densities

Country	Adjusting for 1st approach (number of base stations)	Adjustment for 2nd approach (network coverage)	Proposed reasonable range for each country
Malaysia	13.70	10.97	10.97 – 13.70
Sweden	10.88	9.99	9.99 – 10.88
UK	17.65 (900/1800Mhz) 19.90 (900 Mhz)	17.80 (900/1800Mhz) 20.07 (900Mhz)	17.65 – 20.07

To summarise, for Malaysia, CRA estimates a range of 10.97 to 13.70 cpm for the corresponding estimate in Australia. For Sweden, CRA estimates a range of 9.99 to 10.88 cpm for the corresponding estimate in Australia. For the UK, CRA provides an estimate for both a combined 900/1800Mhz operator, and an 1800Mhx operator, and generates a range of 17.65 to 20.07 cpm for the corresponding estimate in Australia.[287] Based on these results, CRA states that:

> Using the UK, Swedish and Malaysian estimates as benchmarks and taking into account key cost factors between Australia and these countries respectively, we estimated the LRIC level of supplying the mobile termination services in Australia to fall in the range of 9.99 – 20.07 cpm. This range is based on comparators that have used a LRIC-type methodology with an Equi-Proportionate Mark-Up approach to recover fixed and common costs an excluding any externality adjustment.[288]

8.2.2. Factors not adjusted for

Of the nine factors considered relevant by the Commission in the MTAS Final Report (plus the exchange rate adjustment which was also considered relevant by the

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[287] CRA also submits that if a 'NES' is taken into account (as Ofcom does in the UK), the corresponding estimates for the two technological environments are 19.10 and 21.38 cpm.

[288] CRA International Benchmarking Report, p. 4.

Commission), CRA concedes that it did not adjust for 'spectrum allocations', 'network purchasing power' and 'vertical integration of fixed and mobile network operators'. In justifying this decision, CRA submits that:

> We did not adjust for spectrum allocations and network purchasing power as these two factors were expected to have little impact on the Australian benchmark or imply that the Australian benchmark should be increased depending on the particular country. Nor did we adjust for the impact of an operator being an integrated fixed-mobile operator. This means that our benchmarks are reflective of the costs of a mobile-only operator.[289]

The reasons provided by CRA in this regard are outlined in more detail below.

Technology and spectrum assignments

CRA provides a discussion of 'spectrum allocation' under the heading 'Technology and spectrum assignments'

In relation to 'technology', CRA submits that this factor may impact on the cost of delivering mobile services, though its benchmark analysis only considers GSM networks, which was one reason for excluding South Korean networks that are CDMA. Within GSM, CRA submits that there is the issue of whether costs differ for 900/1800Mhz and 1800Mhz operators. On the question of difference, CRA cites the views of the UK and Malaysian regulators that there is unlikely to be significant cost differences. That said, CRA submits that it modelled the two different types of UK operators (i.e. 900/1800 and 1800MHz) separately.

CRA does not believe that there are clear reasons for expecting spectrum allocations to result in significant cost differences between 'Optus and the UK and Swedish operators'.[290] Moreover, CRA submits that it has not explicitly made adjustments for spectrum allocations, since its adjustments for network coverage (base stations) for given traffic levels will capture the effect of any differences in spectrum allocations.[291]

Network Purchasing Power

CRA recognises that where an MNO is part of a large international group, it may achieve better economies of scope and enjoy greater buying power, and that hence, unit costs are likely to be lower. CRA submits that a failure to adjust for this factor is likely to result in an underestimate of Optus's costs, at least in the case of the UK and Sweden. This is because Optus and SingTel together have only have 7.44 million subscribers worldwide compared to other international companies like Vodafone (128.0 million) T-Mobile (72.7 million), Tele2 (11.96 million), TeliaSonera (12.89 million), Telecom Malaysia (4.1 million), Maxis (4.9 million) and DIGI (16.5 million). In summary, therefore, CRA submits that the differences in terms of network purchasing power between Australia, Sweden and Malaysia do not seem significant.

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289 CRA International Benchmarking Report, pp. 3-4.

290 In this regard, CRA notes that as part of its recent review of spectrum pricing in the UK, Ofcom concluded that current UK spectrum prices were close to opportunity costs, implying that the impact of gaining or losing 2 x 1MHz of spectrum would change the annual costs of the UK operators by £0.712m for spectrum in the 900Mhz band and £0.554m for spectrum in the 1800Mhz band. CRA further submits that given average UK operator minutes of around 3.7 billion, even an additional 2x10Mhz of spectrum would impact unit call costs by less than a pence per minute.

291 In this regard, CRA notes Analysys's comment (2004 report, p, 12) that 'Spectrum is therefore one of the major inputs in the cost calculation, and is a key factor in determining the number of base station sites to be deployed to meet a given level of demand'.

Integrated fixed-mobile network operators

CRA submits that it did not adjust for the impact of an operator being an integrated fixed-mobile operator. CRA submits that this means that its benchmarks are reflective of the costs of a mobile-only operator.

Other factors discussed by CRA

In its report, CRA also provides discussion of some other factors that potentially lead to cost differences between countries which are not adjusted for by CRA. These include 'peak/off-peak traffic ratios and traffic loading', 'quality of service' and 'scope of services offered'.

In relation to peak/off-peak traffic issues, CRA submits that it is difficult to make cross-country comparisons of the 'peakiness' of mobile traffic. CRA notes that Analysys considered this a 'secondary cost influencing factor'.

In relation to 'quality of service' issues, CRA submits that the sensitivity analysis performed by NERA in the development of the LRIC model for Malaysia provides evidence of only a limited impact that reasonable changes in quality of service have on operating costs.

In relation to the 'scope of services offered', CRA notes the Commission's previous criticism that the exclusion of SMS volumes was likely to suggest lower costs in Australia compared with the UK. However, CRA submit that figures on 'average SMS per month/per subscriber' are lower in Australia as compared to other comparator countries, aside from Sweden. CRA submits that this suggests that by not including an SMS adjustment, it is actually being conservative in its estimation *vis-a-vis* Malaysia and the UK. For Sweden, CRA submits that the difference does not seem to be significant.

Overall, CRA concludes that these factors are likely to have a limited effect on driving cost differences between different countries, or would result in the benchmarks understating the costs in Australia.

8.2.3. Submitters' view

Telstra submits that the comparisons undertaken by CRA take into account many of the factors previously cited by Telstra as important cost drivers that generate differences in costs between countries. Telstra submits that the CRA analysis also demonstrates the complexity involved in establishing a benchmarked access price based on the costs of providing the MTAS in other jurisdictions. Therefore, in Telstra's view, the benchmarking analysis prepared by CRA provides support for the final efficient price that appears in the Optus Undertaking for 2007.

On this issue, Hutchison notes and adopts a number of the views of its consultant MJA. In the first instance, MJA submits that while it agrees with Optus that Malaysia, Sweden and the UK are appropriate comparator countries, it also should have utilised cost estimates from Israel, South Korea and the United States.

MJA also provides detailed commentary on the adjustments made by CRA to its three comparator countries. In this regard, MJA considers the 'exchange rate/PPP' adjustment 'reasonable' and accepts the cost of capital adjustment – although in line

with Analysys, it considers this latter adjustment a 'low priority'.[292] On the 'geographic terrain/network coverage' adjustment, MJA agrees that this factor should be adjusted for and that 'population density' is likely to be interrelated with this factor. However, MJA notes that CRA used 'the number of base stations per traffic volume', and considers that the implicit assumption that there is a strictly linear relationship in this regard is 'unlikely', and also that some of the base station data has been sourced from different organisations.[293]

On the adjustments not made by CRA, MJA appears to generally accept CRA's view that consideration of these factors would have little effect, or that it is unnecessary to adjust for them.[294]

More broadly, MJA considers that the fact that the approach adopted by CRA results in a broader set of cost estimates of the MTAS for Australia compared with a simple (exchange rate adjusted) comparison of the benchmarked figures, raises concerns about the robustness of the analysis.

8.2.4. The Commission's view

As noted in the MTAS Final Report, the Commission's view is that cost estimates for countries using either GSM (900/1800 Mhz) or CDMA technology and applying the TSLRIC+ (or LRIC + EPMU) cost concept without mark-up for a NES are relevant to include in an international cost benchmarking study. In this regard, the Commission considers that CRA's selection of Malaysia, Sweden and the UK is an appropriate starting point for its international benchmarking analysis.

However, as outlined in the MTAS Final Report, the Commission is of the view that any analysis that attempts to make adjustments for factors that drive cost differences between international jurisdictions should be conducted comprehensively, or not at all. In other words, in the Commission's view, it would only be appropriate to adjust estimates of cost from other jurisdictions for Australian-specific factors if all major factors that influence costs in different jurisdictions could be identified and quantified.[295] This is primarily because adjusting cost estimates from other jurisdictions for each of these factors individually will push estimates of the cost of providing the MTAS in different directions and by different amounts. Hence, it is unclear in which direction (and by what amount) a MTAS cost estimate would change if it were adjusted for all factors in combination.

For these reasons, the Commission believes that it would be inappropriate to adjust only for a subset of these factors in isolation of other possible adjustment factors as the results may be more misleading than making no adjustments at all.

In terms of identification and implementation, the Commission believes that adjusting for all the possible factors that may lead to cost differences between international jurisdictions is an extremely complex task and that some of the more complex adjustments may not be possible at all due to a lack of data.[296] The Analysys report

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[292] MJA Report, p. 68.
[293] MJA Report, p. 69.
[294] MJA Report, pp. 68-69.
[295] ACCC, *Mobile Services Review Mobile Terminating Access Service*, Final Decision, June 2004, pp. 214-215
[296] In support of this position, the Commission notes Analysys's view (International Benchmarking Report, 2004), p. i) that 'There are a wide range of factors which influence the costs of mobile

prepared for the Commission identified twelve factors which can affect the cost of the MTAS for a mobile network. Moreover, in the MTAS Final Report, the Commission identified nine possible factors (plus the obvious exchange rate conversions) in this regard.

CRA submits that its international benchmarking analysis takes 'into account' all cost factors identified by the Commission in its MTAS Final Report that are likely to drive cost differences between Australia and other countries. Notably though, CRA's analysis only adjusts for 'exchange rates' (including a PPP adjustment), 'cost of capital' and 'geographic terrain/network coverage' to derive its proposed range of 9.99 – 20.07 cpm.

The Commission considers that, by failing to make adjustments for all of the factors which have been identified by the Commission, Analysys and CRA itself, the international benchmarking can only still be considered partial. Therefore, the Commission believes it is not a sound basis upon which to inform the appropriate costs of supplying the MTAS in Australia.

The Commission notes that CRA has provided reasons for not adjusting for particular factors which were outlined above. The Commission's views on these issues are considered in turn below.

Spectrum allocations

In the Commission's view, the differences in spectrum assignments between operators, and the likelihood that these licences were purchased in different ways and for different amounts, means that a robust international benchmarking analysis would need to account for this factor.

As pointed out in the Analysys report, MNOs in Australia have a mixture of 900Mhz and 1800Mhz spectrum assignments which have been purchased differently. In the case of Optus, it owns two types of spectrum licenses. First, Optus has an *apparatus* licence to use part of the 900Mhz spectrum for its GSM network which entitles it to use about 8.2 MHz of paired spectrum. Optus pays $**c-i-c** per annum for this licence. Second, Optus has *spectrum* licences for approximately 15Mhz of paired 1800Mhz spectrum in the major capital cities, which were purchased over the course of four different auctions (in 1998 (two), 1999 and 2000) for a total cost of around $**c-i-c**. The fact that CRA does not provide any evidence on the costs incurred in the comparator countries in purchasing the relevant spectrum allocations weakens its case that there are unlikely to be significant cost differences as a result of this factor.

Moreover, Analysys points out that the interaction between spectrum allocations, primarily on the urban costs of traffic, is complex. In this regard, Analysys notes the following qualitative factors which may lead to cost differences, but note they are 'difficult to quantify without a cost model':

- Amount of spectrum – affecting re-use of interferences characteristics;

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termination in different countries. A small number of these factors can be used to make adjustments that will enable a cost estimate from an international jurisdiction to be transformed to accommodate the operating conditions of operators in Australia … However, a larger number of other, more complex factors which influence the cost of termination … unfortunately do not lend themselves to be used in such a way – in our opinion they are too complex to be captured by a simple, certain relationship, and ultimately can only be resolved with an Australia-specific model'.

- Quality of spectrum – contiguous or discrete, border restrictions (not relevant in Australia or UK, but certainly in mainland Europe); and
- Multiple bands – prevalence of dual band handsets, and the ability of network management systems to optimise frequency usage/loading.[297]

Network purchasing power

Despite its view on this factor, CRA does not provide operator-specific information relating to the cost of particular network components, or the extent to which particular operators purchase such equipment in international markets. For this reason, it is unclear, from the available evidence, what impact an adjustment for this factor would have on the relevant cost estimates.

Fixed-mobile integration

The Commission considers that, in principle, the most appropriate benchmark upon which to model the costs of providing the MTAS is the most efficient MNO standard. For this reason, and contrary to Optus's view, the Commission considers that while the model developed for Optus is specified on a 'stand-alone' mobile basis, the application of a properly specified international benchmarking analysis should account for the fact that Optus is an integrated fixed and mobile carrier. This is based on the Commission's view that, in principle, if there are efficiencies that can be realised through the integration of fixed and mobile businesses, these should be adjusted for in this context.

Other factors

In addition to the factors discussed by CRA, the Commission notes that the CRA benchmarking analysis fails to also adjust for factors such as 'quality of service', 'scope of services offered' and 'population density'.

Quality of service

In relation to the quality of service factor, CRA cites the sensitivity analysis performed by NERA to support its view that this factor is unlikely to drive significant cost differences between countries. However, in the Commission's view, this is inadequate evidence that this factor would have an immaterial impact on the cost estimates from comparator countries. As CRA notes in its report, quality of service issues include the 'percentage of calls completed successfully' and the 'clarity of the call'. Other things equal, the Commission considers that investment in network infrastructure to improve service quality levels is an important factor to consider when comparing cost estimates across international jurisdictions. In the Commission's view, aside from reference to a sensitivity analysis in relation to the Malaysian LRIC model, CRA has not provided any supporting evidence on the differences in service quality across comparator countries.

Scope of services offered

In the Commission's view, the explanation provided by CRA in this regard is not sufficient for it to conclude that the scope of services offered is an irrelevant adjustment. For example, the Commission notes that CRA has failed to consider the impact of GPRS services which are increasingly an important revenue source for MNOs operating a GSM network. Further, it is not clear from the information

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[297] Analysys, *Examination of Mobile Termination Costs*, Final Report for ACCC, 30 June 2004, p. 13.

provided by CRA whether the estimates for Sweden and Malaysia include the allocation of 'common' costs to mobile data services or not.

Reality check

More broadly, the Commission also considers that the results of CRA's international benchmarking analysis fail a basic reality test. This is because the TSLRIC+ estimate that can be derived from Optus's own 2003-04 data (**c-i-c** cpm) – a cost concept that is commensurate with the cost benchmarks used for Sweden, Malaysia and the UK – does not fall within its proposed range of 9.99 to 20.07 cpm.

An analysis of the model developed by CRA to estimate the 'welfare-maximising' level of MTAS charges in Australia reveals that the cost of Optus supplying its DGTAS in 2004-05 is **c-i-c** cpm. On behalf of the Commission, Analysys has calculated that, if Optus's FCCs are allocated using an EPMU approach – consistent with CRA's international benchmarking analysis – the resulting estimate for Optus's DGTAS is **c-i-c** cpm for 2004-05. In a subsequent submission, Optus has indicated its view that there appear to be 'errors' in Analysys's transformation of its costs in this regard and that a reasonable estimate is more likely to be in the order of **c-i-c** cpm based on the most conservative estimation. Although the Commission considers that the nature of these alleged 'errors' is not clear, in any case, Optus's own cost estimate still falls below the lower bound of the CRA's proposed range.

In the Commission's view, the fact that Optus's own 'LRIC + EPMU' estimate does not fall within CRA's proposed international benchmarking range places serious doubt over the credibility and relevance of this analysis. It also places serious doubt over CRA's argument (reiterated by Optus) that its international benchmarking analysis suggests that the Commission's target price for the MTAS of 12 cpm 'carries a substantial risk that MTAS charges will be set well below the LRIC incurred by Australian mobile operators', particularly when Optus's own cost estimate appears to fit comfortably within the Commission's previously determined range of 5 – 12 cpm. In fact, CRA's own model reveals that Optus's 'LRIC+EPMU' estimate of supplying the MTAS lies comfortably in the middle of the Commission's estimated range.

8.3. CRA's survey of 'cost' estimates

In its report, CRA also provides a review of the comparators identified by the Commission in the Mobile Services Review, and the suitability of other international comparators which were recommended in the Analysys report. A summary of the 'cost' estimates cited by CRA is shown in Table 8.5 below.

Table 8.5: CRA's recent international MTAS cost estimates (unadjusted for differences in cost factors)

Country	Estimates in Australian cents per minute (cpm)
Austria	14-16
Belgium 2003 (Mobistar)	27-33
Finland 2004	15-19
France 2002	17
Italy 2003	25
Malaysia 2003	5-10
Sweden 2004	10
UK 2003 (estimate for 2004/05)	13-14
ACCC's proposed target price (for 2007)	*12*

Source: CRA, *Updated International Benchmarking Report*, Table 3 on p. 27.

Moreover, in a further submission in response to the draft decision, Optus claims that this decision 'has not had regard to various international developments is estimating the reasonable price of access to the MTAS…'. Optus submit that this new information is particularly important because the Commission's MTAS Pricing Principles Determination was issued 'over 18 months ago'.[298]

Specifically, Optus states its view that these new developments include 'cost' estimates from Austria (14-16 cpm), Belgium (26-33 cpm), Sweden (10 cpm) and New Zealand (10-17 cpm). In particular, Optus submits that because the 'best currently available unadjusted overseas cost estimate is at 16 cpm' (i.e. Austria), the MTAS Pricing Principles Determination, which includes an upper bound of 12 cpm, needs to be revised.

In addition, Optus considers that the use of a cost estimate from South Korea (5 cpm) is 'puzzling' given Analysys's advice that the scale and nature of Korean CDMA networks are unlikely to reflect operating characteristics of Australian operators secondary CDMA networks, or their main GSM networks.[299] Moreover, Optus also claims to be 'surprised' the Commission refers to CRA's references to other cost estimates as 'confusing and unhelpful' yet appears to continue to rely on cost estimates in New York, California and Florida 'which were previously dismissed in its regulatory proceedings'. Finally, Optus submits that the Commission's 12 cpm target price should be adjusted for inflation, which would increase this estimate to 13 cpm in 2007.[300]

8.3.1. Submitters' views

As noted previously, MJA submits that while the UK, Sweden and Malaysia are appropriate 'comparator' countries, it disagrees with CRA's decision to exclude Israel, South Korea and the US. MJA includes these three countries in a broader

[298] Optus submission in response to draft decision, p. 38.
[299] Optus submission in response to draft decision, p. 40.
[300] Optus submission in response to draft decision, p. 45.

subset of comparator countries (i.e. with the UK, Sweden and Malaysia) and adjusts for 'exchange rate' differences only. Based on this analysis, MJA concludes that only a few estimates exceed the Commission's top-range estimate of 12 cpm, and that the simple average of this survey is 8.72 cpm. MJA therefore submits that CRA's estimated range of 9.99 to 20.07 cpm is 'overly conservative'. Moreover, MJA submits that the Commission's target price of 12 cpm for the TSLRIC+ of supplying the MTAS in Australia remains 'conservative'.

8.3.2. Commission's view

Critique of 'cost' estimates provided by CRA

In the Commission's view, the reference in the CRA report to the range of 'cost' estimates in international jurisdictions is both misleading and not relevant to the international benchmarking exercise it has actually undertaken to generate its proposed range of 9.99 – 20.07 cpm. This is because many of the estimates presented by CRA in Table 8.5 are either not strictly 'cost' estimates (in the sense that they relate to a 'price' set by a regulator rather than a cost study) or they include some form of 'mark-up' over cost to reflect certain factors. Moreover, some of the estimates are not based on a transparent, bottom-up TSLRIC model. This means that their relevance and robustness cannot be properly assessed based on the publicly-available information.

For example, CRA has revisited estimates from five countries – Austria, Belgium, Finland, France and Italy – and presents these as 'cost estimates'. In each case, the 'cost' estimate is in excess of the 12 cpm upper limit proposed by the Commission in its June 2004 Pricing Principles Determination. However, CRA does not provide evidence of the results of the 'cost' estimates derived from any of these five countries. Further, CRA seemingly concedes this point by not including any of these countries in its international benchmarking analysis. For completeness, these five cases are reviewed briefly.

In the case of Austria, with respect to which Optus has provided a further submission, the Commission is aware that the Austrian regulator has recently released the results of bottom-up estimation of the LRIC of providing the MTAS. From its examination of the September 2005 draft determination document,[301] the Commission understands that these cost estimates refer to a weighted average of GSM and UMTS-call minutes. Moreover, there are three scenarios which differ by the overhead costs that have been attributed to call minutes. These are the:

- overhead costs of the individual MNO;
- weighted average overhead costs of all MNOs; and
- lowest overhead costs in the sample of four MNOs.

The Commission notes that Mobikom is the largest and least-cost of the Austrian carriers. Its estimated costs under all scenarios in 2006 range from 10.02 cpm to 10.68 cpm when converted at the rate of AUS$1.00 = Euro 0.60. Given the Commission's view to date that the 'most efficient operator' is the appropriate

[301] Telekom-Control-Kommission, *Entwurf einer Vollziehungshandlung gemäß § Abs. 1 TKG 2003*, pp. 10-11.

modelling benchmark for MTAS costs, it considers that the results of the modelling exercise accord with its previously determined range of 5 to 12 cpm for the MTAS.

In the case of Belgium, CRA reviews what the Commission had previously said about this case, and argues that the Commission had not drawn the correct conclusion from a document cited. Nonetheless, CRA concludes that:

> As we did [not] find any publicly available information on the Belgian cost model, we did not include Belgium in the benchmarking report.

Given that CRA nonetheless includes a figure for Belgium in its table of 'cost' estimates, the Commission reiterates its belief that there is no evidence from Belgium of appropriate cost modelling having been carried out, nor is there any evidence of cost estimates of 27-33 cpm being made.

In the case of Finland, CRA does not present any new information, and concludes that 'Finnish termination rates do not appear to be based on a LRIC-type model'. Given this conclusion, it is difficult to understand why CRA includes an estimate of 15-19 cpm for Finland in its table of 'cost' estimates. The Commission continues to believe that there is not a robust cost estimate from Finland suggesting this or any other amount.

In the case of France, CRA 'did not find any other publicly available information about the estimated termination cost or model'. However, it still proceeds to include it in its table of 'cost estimates'. The Commission regards this practice as confusing and unhelpful and continues to believe that no robust cost estimate can be sourced from France.

Finally, in the case of Italy, CRA claims that observed rates corresponded with the operators' audited costs, but does not claim there is a cost estimate available for Italy. Again, this corresponds with the Commission's understanding, and again it believes CRA should not include Italy (at 25 cpm) in its table of 'cost estimates'.

Developments since the release of the MTAS Final Report

Since releasing the MTAS Final Report, the Commission acknowledges that there has been a number of new cost estimates that either have become available or have been completed but not publicly released. In addition to Sweden (which is used by CRA in its international benchmarking analysis), results have become available from Israel where the cost of the MTAS has been estimated as the equivalent of 5.45 cpm, and as noted above, Austria where the 'most efficient operator's' costs are estimated as around 10.02 to 10.68 cpm for 2006. Moreover, results from Cypress, Peru and a number of other countries may soon emerge. At this stage, there is still no credible or relevant cost estimate available above 12 cpm when adjusted to Australian currency.

The Commission also notes that Analysys recommended Greece as another possible 'comparator' country. CRA, however, considers that, due to the unresolved nature of a range of issues in the determination of a TSLRIC estimate in this jurisdiction, Greece was not a suitable comparator.

South Korea's TSLRIC for the MTAS was based on financial modelling undertaken in 2003. CRA cites a report produced by the Federal Communications Commission (FCC) which states that this financial modelling yielded a 'LRIC' of 33.21 Won/minute, or 4.49 cpm. CRA, however, does not recommend this model since the lack of publicly-available modelling details has precluded it from undertaking any meaningful analysis. Further, CRA states that the high population density and its

heavy regional concentration allows South Korean mobile network operators to avail themselves of economies of scale which are not possible in Australia. Given these differences, CRA believes that it would not be analytically viable to make adjustments for South Korean LRIC estimates.

8.4. Conclusion on international cost benchmarks

In the Commission's view, estimates of the TSLRIC+ cost of supplying the MTAS made in other countries provide important information relevant to the likely cost of the MTAS in Australia. Indeed, in the MTAS Final Report, the Commission referred to a number of such cost estimates which it converted to Australian currency at long-term average exchange rates. However, the Commission also argued that any analysis that attempts to adjust for factors that drive cost differences between countries should be conducted comprehensively, or not at all. This is because, in the Commission's view, different factors will tend to push particular cost estimates in different directions and by different amounts. Therefore, an approach that only makes 'partial' adjustments could lead to misleading results. Moreover, as noted by its consultant, Analysys, the possession of the information sufficient to make a comprehensive adjustment is tantamount to that necessary to construct a bottom-up model. In the Commission's view, use of the information for the latter purpose would be superior to using it for adjusting cost estimates from other jurisdictions.

The Commission notes that CRA's revised international cost benchmarking analysis claims to take 'into account' all of the cost factors identified by the Commission in the MTAS Final Report which would likely drive cost differences between countries. However, CRA's actual analysis only appears to adjust for three factors; namely, 'exchange rate/PPP', 'cost of capital' and 'geographic terrain/network coverage', and its reasons for not making adjustments for certain other factors are either unclear or insufficiently compelling for the Commission to conclude that they should not be adjusted for. Also, the Commission considers that the CRA's international benchmarking analysis fails a basic reality test because a 'LRIC+EPMU' cost estimate derived from Optus's own 2003-04 data falls outside CRA's proposed range of 9.99 – 20.07 cpm. In the Commission's view, this raises serious doubts about the credibility and relevance of the results of the revised CRA analysis.

Further, the Commission considers that reference in the CRA report to the range of 'cost' estimates in international jurisdictions is both misleading and not relevant to the international benchmarking exercise it has actually undertaken to generate its proposed range of 9.99 – 20.07 cpm. This is because many of the estimates presented by CRA are not strictly 'cost' estimates or they include some form of 'mark-up' over cost to reflect certain factors.

Overall, the Commission notes that at this stage, there is still no credible or relevant cost estimate available above 12 cpm when adjusted to Australian currency. An international cost benchmarking analysis which includes cost estimates from the increasing number of jurisdictions where transparent bottom-up cost models have been developed (i.e. New York, California, Florida, UK, Sweden, Malaysia, South Korea and Israel), and adjusting for exchange rates differences, yields a range of 4 to 12 cpm for supplying the MTAS in Australia, with more recent estimates tending towards the lower end of the range.

9. Optus's proposed 'Option 2' prices

As noted in the introduction and Chapter 4, the Undertaking provides two pricing options for access seekers to choose from (shown in Table 9.1).[302]

Table 9.1: Optus's proposed price terms

Year	Option 1 pricing	Option 2 pricing
2005	19.25 cpm	Fixed charge per SIO + 14.25 cpm
2006	18 cpm	Fixed charge per SIO + 13 cpm
2007	17 cpm	Fixed charge per SIO + 12 cpm

As shown in the table above, the Option 2 prices are ostensibly based on a two-part tariff in that they include a 'fixed' and 'variable' component. Like the Option 1 prices, the *variable* charge in Option 2 is a flat 'cent per minute' charge, although the rates are lower. The *fixed* charge is calculated according to a formula developed by Optus that factors in:

- the total number of minutes of the Optus DGTAS supplied by Optus to the access seeker in the year 2004;
- the variable rate for 2005 (19.25 cpm) provided by Option 1;
- a rate of 13.81 cpm to reflect expected growth;
- the audited number of SIOs as at 31 December 2004; and
- the audited number of SIOs as at the last day of the second quarter that immediately precedes the quarter to which the billing period relates.[303]

There is also a monthly fixed charge reconciliation, to take into account the actual number of SIOs existing at the end of each month of a billing period.

Importantly, in discussing the Option 2 pricing offers, Optus submits that:

> The fixed charge ("$X per audited number of services in operation") will be calculated for each access seeker such that the total charge under Option 2 would be the same as the total charge under Option 1, assuming expected growth.[304]

To determine the charge payable under Option 2, three charges must be calculated and added together. These consist of a 'monthly fixed charge per SIO', a 'monthly fixed charge reconciliation' and a 'monthly variable charge'.

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[302] Option 1 is the 'default' option and an access seeker must advise Optus, in writing and before any agreement is signed, if it wants to choose Option 2. In addition, once a pricing option is selected, the access seeker is bound by the terms and conditions of that option for the duration of the Undertaking, except under very limited circumstances which only apply to Option 2. Moreover, it is a condition of Option 2 pricing that if the access seeker is an MNO, upon request by Optus, the access seeker must make a binding offer, capable of immediate acceptance by Optus, for the provision of an equivalent service to the Optus DGTAS for termination of calls on the access seeker's network – on the same terms and conditions as Option 2 pricing.

[303] For example, for each of the calendar months (i.e. billing periods) of the third quarter, the actual audited number of SIOs as at the last day of the first quarter will be used to calculate the relevant fees. The Optus Undertaking indicates that, for the avoidance of doubt, the billing period for monthly fixed charges is a calendar month.

[304] Optus submission, pp. 4-5.

9.1. Optus's view

Optus submits that the Option 2 pricing offer is designed to reduce possible distortions in the downstream FTM services markets and to efficiently encourage calls to mobile users. In its view, this is because it provides retailers with greater flexibility in the manner in which their retail pricing can be structured. Optus submits that by offering a two-part tariff, access seekers are able to pass on (at the retail level) the efficiency inherent in the access price structures (at the wholesale level).

Optus also submits that, when setting the 'efficient price' for the MTAS, its consultant, NERA, has advised that efficiency will be achieved when an MNO can:

> … price termination such that no calls are inefficiently discouraged but, at the same time, all callers to marginal subscribers receive zero surplus. The latter condition is necessary if MNO's are to have the socially efficient incentive to attract/retain subscribers – ie, if the market is to deliver an efficient number of subscribers. The former condition is required to ensure that there are an efficient number of calls terminated per subscriber.[305]

Optus submits that the two-part tariff gives fixed-line carriers the incentive to reduce FTM prices, as the MTAS component of all marginal FTM calls per minute would fall. In Optus's view, this will reduce any inefficient discouragement of calls and, as a result, will promote competition in the FTM market. Importantly, however, in Optus's view it would not worsen MNOs' incentives to attract and retain mobile subscribers – as the MTAS revenue per subscriber would likely be relatively unchanged (as a result of the fixed charge).

Finally, Optus submits that the components of the Option 2 price structure serve at least two purposes:

- the variable component, which is set below average cost but above incremental cost, increases efficiency when compared to uniform pricing at average cost; and
- the fixed component encourages efficient investment in fixed and mobile infrastructure by allowing transfer of consumer surplus from FTM to mobile users.[306]

This view is supported by another of Optus's consultants, Professor Hausman, who argues that, to the extent FTM calling is expanded, mobile subscription prices could fall, mobile penetration increase and the LTIE be furthered.[307]

9.2. Submitters' views

Hutchison submits that the proposed Option 2 charging schedule is 'unreasonable', as it still prices Optus's DGTAS 'considerably above cost' which is 'inconsistent with the LTIE'. Hutchison also notes that the Option 2 pricing offer is unreasonable because it requires access seekers to disclose commercially-sensitive information to Optus, and that the Undertaking does not limit Optus's use of this information.

The consultant engaged on behalf of Hutchison, MJA, notes that, among other things, the Option 2 pricing offer is likely to introduce 'complexity' and 'non-transparency' to a market that is already difficult for consumers to understand. MJA concludes that,

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[305] Optus submission, p. 25.
[306] Optus submission, p. 26.
[307] Professor Hausman, pp. 41-42.

in its view, it is not clear that Optus's Option 2 prices will encourage economic efficiency. In this regard, MJA notes that for economic efficiency to be achieved, prices should be cost based.

Telstra submits that the Option 2 prices do not have the characteristics that usually make a two-part tariff more efficient than a fully-variable charge. In this regard, Telstra notes that, normally, a two-part tariff has a fixed component that is completely unrelated to volumes and a lower variable component (for example, a combination of a 'flag fall' and per-minute charge). Telstra considers that the benefit of such a structure is that the demand for minutes of traffic is more related to the marginal cost of providing that traffic, while still allowing the access provider to recover its fixed costs through the fixed charge. However, Telstra submits that the structure proposed by Optus does not have these features in that the 'fixed' and 'variable' components of the charge do not appear to bear any relationship to the fixed and variable costs of supplying the relevant service. Hence, in Telstra's view, it is difficult to see how efficient usage of the mobile network would be encouraged by such a structure.

Further, Telstra submits that the fixed component of the charge is not actually fixed but is calculated based on minutes of use and then simply converted to a per SIO charge. The Undertaking states that the charge is revenue neutral to Optus and the examples provided reveal that exactly the same total charge would be levied on an access seeker regardless of which option was utilised. Therefore, in Telstra's view, there are no benefits associated with Optus's Option 2 prices.

Telstra submits that the '*Audit Rights*' set out in clause 4.3 of the Undertaking are unreasonable as:

- they require both parties to share the costs attributable to the auditor, although only Optus may appoint the Auditor;
- the requirement that the access seeker provide the auditor with access to various systems, employees and records for the purposes of conducting the audit is unduly onerous and will place additional costs on the access seekers for which they will not be compensated; and
- there is no basis to challenge the auditor's finding which is particularly relevant where the access seeker has no say in the appointment of the auditor.

Cave and Chambers, on behalf of the CCC, do not endorse Optus's proposed Option 2 prices. That said, Cave and Chambers submit that Optus could (a) remove recovery of a share of common costs from the marginal MTAS prices and (b) set price closer to marginal cost than to incremental cost (i.e. to take account of economies of scale where they exist). However, they note that Optus's Option 2 offer is not for 'unalloyed' two-part pricing as a new partition of common or fixed costs among operators will be required at the end of the contract. Cave and Chambers note that this will presumably be done on the basis of actual volumes and that, anticipating this, access seekers will be aware that greater purchases now will carry a greater cost down the line. As a result, they consider that access seekers may internalise this adjustment process in their current decision, which will reduce the expected benefits of the non-linear approach's ability to offer a low marginal price.

In its submission to the draft decision, AAPT submits that Optus's Option 2 prices are problematic due to the informational requirements associated with this option and its definition of customers. On the latter point, AAPT notes that Optus seems to count customers as 'entities' and not as 'originating services'. In AAPT's view, this means

that a company that changed its strategy from focusing on 'corporates' to 'residential/small business' would be experiencing high customer growth, but potentially minutes growth that was either low or negative.

AAPT also provides analysis to support its view that the Option 2 prices are unlikely to be welfare-maximising, as, in comparison to Option 1, they provide weak incentives for access seekers to grow MTAS traffic.[308] In this regard, AAPT has determined that if the growth rate in the average 'MTAS minutes/subscriber per month' exceeds 8.8 per cent, then Option 2 will be preferred by an access seeker, while the Option 1 would be preferred if growth is less than 8.8 per cent. Moreover, AAPT notes that rather than creating incentives to grow MTAS minutes, Option 2 could 'instead just provide the incentive for access seekers to reduce the number of subscribers it has, whilst leaving the quantity of MTAS minutes relatively unchanged'.[309]

9.3. Optus's response submission

Optus rejects the view that its Option 2 prices are 'likely to add complexity and non-transparency' to the market. In this regard, Optus refers to Telstra's charging structure for PSTN originating and terminating access which is based on flag-fall and per minute charges which vary by geography.

Optus submits that Telstra's analysis of its Option 2 pricing offer is incorrect. Optus submits that, while the calculation of the 'fixed' amount is based on traffic minutes per SIO in the first period, it remains fixed for at least the duration of the Undertaking. As a result, in Optus's view, the lower variable charge provides the efficiency benefits characteristic of a two-part tariff structure as it 'more closely reflects the marginal cost of providing that traffic'.

Optus also submits that it is not to correct to presume that future MTAS prices will follow the same pricing construct.

9.4. The Commission's view

The Commission notes that, in principle, the intuition underlying two-part pricing is that if the variable component of the pricing offer is set at a level approximating long-run incremental cost (LRIC), then consumption patterns will not be distorted.[310] That is, beyond the payment of the 'fixed' component, the incentive to purchase the variable component of the service will theoretically be in accord with efficient consumption of the good or service.

This suggests that a key element in developing an efficient two-part pricing offer is to set the variable component of the charge at 'long-run marginal cost'. A second key element is that the 'fixed' component of the tariff structure should be truly unrelated to the amount consumed. In the trivial-sounding case where the 'fixed' component is proportional to consumption, the two-part price reverts to a single-part price, and would not have the advantages associated with a two-part tariff.

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308 AAPT submission in response to draft decision, January 2006, p. 6.

309 AAPT submission in response to draft decision, p. 5.

310 See R. Coase, 'The Marginal Cost Controversy', *Economica*, 13, August 1946, pp. 169-189, for the seminal contribution on two-part pricing. For a more didactic treatment see R. Braeutigam, 'Optimal Policies for Natural Monopolies' in R. Schmalensee and R. Willig (eds), *Handbook of Industrial Organization*, Volume II, Elsevier, 1989, chapter 23, particularly pp.1327-1336.

In relation to the 'variable' component proposed by Optus in its Option 2 prices, the Commission notes that these are lower than the flat-rate Option 1 prices, as shown in Table 9.1 above. However, the Commission notes that Optus's own cost model suggests that its FL-LRIC of providing the DGTAS is **c-i-c** cpm. Moreover, on the advice of Analysys, the Commission notes that Optus's own cost model suggest that the FL-LRIC of Optus supplying its DGTAS, plus an allocation of FCCs based on an EPMU method, is **c-i-c** cpm.

Based on this information, the Commission considers that the variable charges proposed by Optus in its Option 2 pricing offer (which tracks towards a 'target' price of 12 cpm in 2007) would appear to be above its own measure of the incremental cost of supplying this service. As a result, while the Commission considers that the per-minute charge in Option 2 is likely to be closer to LRIC than those in Option 1, it does not have any confidence that the two-part pricing structure advocated by Optus does involve a per minute charge set equal to LRIC.

In relation to the 'fixed' component proposed by Optus in its Option 2 prices, the Commission notes Telstra's view that this is 'not really a fixed charge at all' because 'it is calculated based on minutes of use and then simply converted to a per SIO charge'. In response, Optus has submitted that this analysis is incorrect because the calculation of the 'fixed' charge in Option 2 is based on traffic minutes per SIO in the first period and then remains fixed for at least the duration of the Undertaking.

On this issue, the Commission considers that to the extent that the calculation of the 'fixed' charge is based on a 2004 figure for 'minutes of use' then, other things being equal, for the duration of the Undertaking an access seeker that selected Option 2 would have an incentive to grow its traffic base, possibly through lower prices at the retail level to encourage an increase in demand for outgoing calls.

However, the Commission notes that the strength of this incentive would appear to be based, in part, on the relationship between the growth in the 'number of minutes' and the 'number of SIOs' for a particular access seeker. For instance, if there is a positive relationship between the two, then the incentive to select Option 2 prices and to design a more efficient pricing structure in the retail market to encourage higher call volumes could potentially be weakened if this also results in a higher number of SIOs for that access seeker. This is because if the access seeker grows its SIO base then, other things equal, this would feed back into a higher 'fixed' charge for the access seeker in future periods based on the formula supplied by Optus. Moreover, the Commission notes AAPT's view that Option 2 prices could in fact provide an incentive for an access seeker to reduce the number of subscribers it has, while leaving the quantity of MTAS minutes relatively unchanged.

As a result of this, the Commission considers that while the Option 2 prices have the potential to provide incentives to access seekers to design more efficient pricing schemes in downstream retail markets, the actual strength of this incentive is unclear due to the 'variable' access charge being set above LRIC and the fact that an increase in an access seeker's SIO base will feed back into a higher 'fixed' charge.

Moreover, the Commission notes that, on Optus's own admission, the Option 2 pricing offer has been developed such that the total charge faced by an access seeker over the three-year Undertaking period would be equivalent to Option 1. In this regard, the Commission notes that Optus has also used '13.81 cpm' in its formula to

calculate the fixed charge per SIO, and notes that this number was chosen to reflect expected growth (although it does not elaborate how this figure was derived).

The Commission has conducted an analysis of the likely impact of an access seeker opting for Option 2 prices, using data which was disclosed in its *2003-04 Market Indicator Report* (MI Report) in order to simulate more realistic traffic volumes and SIO figures.[311] This analysis indicates that if a commensurate 2 per cent growth rate for both 'SIOs' and 'traffic volumes' (in line with CRA assumptions in its application of the Rohlfs model) is assumed, an access seeker will likely pay a higher 'average' price for the service over the three-year period. Alternatively, if a 2 per cent growth in 'SIOs' and a 10 per cent growth in 'traffic volumes' is assumed, the Commission's analysis suggests that it is likely that an access seeker will pay a marginally lower 'average' price for the service over the three-year Undertaking period. A marginally lower price again would result if a 20 per cent growth in traffic volumes was assumed. These results are summarised in Table 9.2 below.

Table 9.2: Comparison of MTAS in cpm under Option 1 and Option 2 pricing[312]

Scenario	Option 1	Option 2
2 per cent growth rate in SIOs and traffic	18.47	18.07
2 per cent growth rate in SIO's and 10 per cent growth in traffic	17.90	17.99
2 per cent growth in SIOs and 20 per cent growth in traffic	17.27	17.91

In the Commission's view, there are two key points to note from this analysis.

First, there is uncertainty as to whether an access seeker will pay a lower average price over the three-year period under Option 1 or Option 2. Optus has incorporated a figure into its calculations for the fixed charge per SIO to reflect expected growth, and that figure appears designed so the total charge under Option 2 would be the same as under Option 1. However, the Commission notes that there will still be fluctuations in the total price payable depending on the actual increase in SIOs and minutes. Therefore, ultimately, the result will depend on the relative mix of SIO and traffic growth for a particular access seeker.

Second, even if it is assumed that an access seeker is able to grow its traffic at a substantially faster rate than its SIO base, the above analysis suggests that, in any case, the actual average price paid under Option 2 will be significantly similar to that

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311 The 2003-04 Market Indicator Report (ACCC, *Telecommunications Market Indicator Report 2003-04*, June 2005) indicates that there were 0.76 million 'fixed' end-user access lines attributed to 'Other' in this year, and 685 million FTM call minutes to the same category. In its analysis, the Commission has used half of the end-user access figure ('380,000') to simulate a more realistic number of SIOs for a potential access seeker to Optus's DGTAS. For minutes, the Commission has divided the number of FTM call minutes (685 million) by two and then multiplied this by Optus's approximate market share (33 per cent) to arrive at a more realistic number of minutes demanded by a potential access seeker (113 million minutes).

312 This uses Optus's variables and methodology in the example provided in section 3 of its Undertaking. As an Access Seeker must stay on its chosen option for the duration of the agreement, average MTAS price over this time is a relevant consideration.

under Option 1. In this regard, the Commission notes that the average price paid by an access seeker over the duration of the Undertaking would likely be above the target price of 17 cpm in the Option 1 pricing offer, no matter which pricing option was selected, and regardless of the extent to which an access seeker is able to grow its traffic base. This suggests that although an access seeker would potentially face an incentive to grow its traffic base under Option 2, this incentive may be weak.

In addition, and as noted in the preceding chapters, the Commission has reached a view that it has significant concerns with Optus's proposed estimate of 17 cpm for the 'welfare-maximising' price for this service. These concerns are both at a conceptual level, as well as the methodology and assumption used to derive the estimate. For further detail on these concerns, see chapters 5 – 8 of this report. Moreover, the Commission notes that the 'target' price in the Option 1 price terms is likely to be significantly above the TSLRIC+ of supplying the MTAS in Australia Hence, to the extent that Option 1 and Option 2 are equivalent, they share the same deficiencies considered in chapters 5 – 8 of this report.

In addition to these issues, the Commission notes that Option 2 would require access seekers to disclose commercially-sensitive information (i.e. regular audited information on SIOs, minutes, transit traffic and incoming international traffic) to Optus, without explicit safeguards in the terms and conditions of the Undertaking on how that information can be used by Optus. Further, Optus's right to appoint an auditor (with costs of this shared between Optus and access seeker) to audit this information may be a further reason as to why access seekers would be somewhat reluctant to select Option 2.

Also, because the Option 2 pricing offer must be a reciprocal arrangement between MNOs, there is also uncertainty of the price Optus will be required to pay an access seeker (if the access seeker also provides the MTAS to Optus). While the charges payable by each party under Option 2 will be calculated using the same structure set out in Table 1 and the methodology set out by Optus in its undertaking, if the parties experience different starting points and rates of growth in their demand for minutes terminated, it is possible that one party may effectively end up paying the other party more per minute than the other party is paying it.

Overall, the Commission acknowledges the efficiency properties of appropriately crafted two-part pricing arrangements. That said, it has concerns about whether Optus's proposed Option 2 prices satisfy the requirements of an optimal two-part pricing arrangement. Further, the Commission's analysis suggests that the actual average price paid by an access seeker will be significantly similar, whether they select Option 1 or Option 2 – even if it is assumed that an access seeker is able to grow its traffic base significantly faster than its SIO base. In effect this suggests that irrespective of the option selected an access seeker will pay an average price for Optus's DGTAS which is above 17 cpm for the duration of the Undertaking period. As noted in chapters 5 – 8, the Commission has significant concerns with Optus's claim that this is a 'welfare-maximising' price for this service.

10. The reasonableness of the price terms and conditions

The Commission must not accept an undertaking unless it is satisfied that the terms and conditions are 'reasonable' based on the criteria set out in section 152AH of the Act. This chapter considers the reasonableness of the *price* terms and conditions in the Undertaking.

In forming a view about whether the price terms and conditions are reasonable, the Commission must have regard to the range of matters set out in section 152AH(1) of the Act, which are summarised in section 3.2.4 of this report.[313]

The analysis contained in chapters 5 – 9 of this report is designed to assist the Commission in its reasonableness assessment. That is, these chapters are mostly concerned with the analysis of 'elements' of Optus's proposed prices to enable the Commission to form a view about whether the elements are conceptually and empirically justified. This chapter involves an analysis of the reasonableness of Optus's proposed price terms and conditions taken as a whole.

10.1. Application of the 'reasonableness' test

10.1.1. Submitters' views

In response to the draft report, both Optus and Telstra express disagreement with the Commission's application of the 'with and without' test in the context of assessing the reasonableness of the Undertaking terms and conditions.

Optus submits that the Commission has applied the 'with and without' test by comparing Optus's proposed prices against a single point estimate (i.e. 12 cpm) that the Commission itself considers to be reasonable. However, Optus submits that whether the price of access to Optus's DGTAS is reasonable 'should be determined by reference to a range of values that reflect the efficient costs of providing the MTAS in Australia' rather than a 'specific value that is considered by the Commission to be reasonable (i.e. 12 cpm).[314] In Optus's view a value that falls within such a range should be considered to be 'reasonable' by the Commission for the purposes of section 152BV(d) of the Act. Optus further submits that there is 'ample evidence founded on case law and approaches in other regulatory contexts' that support this proposed approach.[315]

Telstra submits that while it is true that the Australian Competition Tribunal (the Tribunal) has found the use of the 'with and without test' helpful, it has also stated that it 'is not the ultimate or final answer to the issues posed'.[316] Telstra further submits that while being a potential 'useful aid' to consideration, the 'with and without' test should 'not be used as a substitute for a comprehensive or objective consideration of whether a particular thing is in the LTIE'.[317]

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313 It is also noted that the Commission is not limited by the matters to which regard may be had, as set out in section 152AH(2) of the Act.

314 Optus submission in response to draft report, p. 6.

315 In this regard, Optus cites a recent report to the Prime Minister by the Exports and Infrastructure Taskforce and a statement by the Australian Competition Tribunal in *Re: application by GasNet Australia (Operations) Pty Ltd* [2003] ACompT 6 at paragraph 29.

316 Telstra submission in response to draft report, p. 4.

317 Telstra submission in response to draft report, p. 4.

10.1.2. Commission's application of the 'reasonableness' test

The Commission's approach to the 'reasonableness' test is to have regard to the section 152AH criteria and any other matter considered relevant to this assessment. To assist in this assessment, the Commission will use, where appropriate, the 'with and without' test in relation to particular criteria.

The Commission does not simply form a view as to a specific price that it considers to be the 'reasonable' cost of providing the MTAS and then compare that price with the proposed access price. The Commission does, however, have in mind what it considers to be an efficient cost range of providing the MTAS and this is relevant when applying the 'with and without' test in respect of particular section 152AH criteria. Nevertheless, this is not determinative of the matter. The 'reasonableness' assessment encompasses a much broader range of considerations that are detailed in this chapter.

Since the draft report, the Commission has clarified and refined its approach to assessing the reasonableness of the terms and conditions in the Undertaking, including the application of the 'with and without' test. In the Commission's view, these clarifications and refinements address the issues raised by Optus and Telstra in response to the draft report.

The Commission believes that it is appropriate to apply the future 'with and without' test expressed in the Sydney Airports case.[318] The Commission notes that in the Seven Network Ltd case,[319] the Australian Competition Tribunal (the Tribunal) was of the view that the 'future with and without' approach provides helpful guidance in applying the LTIE test. Similarly, the Commission considers it an appropriate analytical tool in applying the reasonableness criteria set out in section 152AH(1) of the Act (which includes the LTIE test).

Essentially, the test enables the Commission to benchmark the Undertaking against other potential outcomes in the absence of the Undertaking, in relation to specific criteria. This is particularly important because the Commission must assess the Undertaking in terms of its reasonableness over the life of Undertaking and not just according to the present circumstances. The Undertaking, if accepted would operate for a term of approximately two years. Accordingly, the Commission must take a short and longer term view as to the possible effects of the Undertaking through a consideration of the counterfactual circumstances.

Having said that, the Commission notes that the 'with and without' test lends itself to some, but not all, of the relevant criteria in section 152AH(1) of the Act. Accordingly, in applying the 'with and without' test, the Commission will only apply the test to those criteria where it facilitates the Commission's analysis toward the Commission ultimately determining the overall reasonableness of the Undertaking terms and conditions.

In applying the 'with and without' test, the Commission will compare the following two situations:

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[318] *Sydney Airports Corporation Ltd* (2000) 156 FLR 10.
[319] *Seven Network Ltd* [2004] ACompT 11.

- the pricing options available under the Undertaking; and
- the pricing outcomes the Commission believes are likely to otherwise occur – having regard to the procedures and protections for access seekers that arise under Part XIC of the Act.

Each of these alternatives is described in greater detail below.

The Commission notes, however, that ultimately its task is to assess the reasonableness of the terms and conditions specified in the Undertaking. Section 152BV(2)(d) of the Act requires that in order for the Commission to accept the Undertaking, it must be satisfied as to the reasonableness of the terms and conditions specified in the Undertaking. This would appear to necessitate a balancing and evaluation of the relative weight of the matters to which the Commission must have regard in section 152AH of the Act. In this regard, the 'with and without' test is therefore not a substitute for a consideration of the reasonableness of the specified terms and conditions.

Pricing options set out in the Undertaking

The price terms and conditions specified in the Undertaking, which include two different options, have been described in considerable detail elsewhere in this report (for instance section 4.2) and are shown in Table 1.1 on page 1. The pricing options proposed in the Undertaking are, effectively, determined according to a pricing principle that would see the price of the DGTAS trend towards Optus's estimate of its 'welfare maximising' price. The 'welfare maximising' price is argued, by Optus, to be equal to the forward-looking long-run incremental cost (FL-LRIC) of supplying the DGTAS, augmented by two mark-ups to account for the recovery of fixed and common costs (FCCs) according to Ramsey-Boiteux (R-B) principles and the inclusion of a 'network externality surcharge' (NES). This pricing concept is hereafter referred to as 'FL-LRIC++'.

The Commission's assessment of the material provided in support of these price terms and conditions, and the views of interested parties in relation to this material, has been considered in Chapters 5 – 9 of this report.

Pricing outcomes in the absence of the Undertaking

In the event that the Commission decided not to accept the Undertaking, a number of alternative pricing outcomes might arise. In the first instance, in the absence of the Commission accepting the Undertaking, all procedures and protections provided for in Part XIC in respect of declared services will be available to access seekers who wish to acquire the MTAS (including the DGTAS) from Optus.

In addition to the rights conferred under section 152AR of the Act, access seekers are able to seek a binding resolution by the Commission to any disputes they may have with Optus regarding access to the DGTAS on Optus's mobile telephony network(s). This is available under Division 8 of Part XIC of the Act, which gives the Commission power to arbitrate access disputes. Under Division 8, the Commission must make a final determination on any matter relating to access by the access seeker to the declared service, which binds both parties to the dispute. The Commission has been notified of a number of access disputes in relation to supply of the MTAS[320] by

[320] The Commission notes that although the arbitrations are characterised in terms of the declared MTAS, they also relate to the DGTAS as described in the Undertaking.

Optus. As detailed on the Commission's website (www.accc.gov.au), the Commission is currently arbitrating access disputes between Optus and PowerTel, Hutchison, AAPT and Telstra.

Alternatively, other access seekers may continue to seek to determine terms and conditions of access via commercial negotiation without recourse to arbitration of an access dispute. In this regard, the Commission notes that some access seekers have currently not notified the Commission of an access dispute in relation to the supply of the MTAS by Optus. Also, Telstra withdrew a previously notified access dispute it had with Optus in relation to the MTAS in 2005.

The Commission appreciates that given commercial imperatives for certainty and the costs involved with pursuing a regulatory outcome, there may be some instances where an access seeker will negotiate an access price higher than it believed could be obtained using regulatory means. Based on the behaviour of some access seekers to date (in availing themselves of their arbitral rights under Part XIC of the Act in respect of Optus's supply of the MTAS), however, the Commission believes it likely that in the event the Undertaking was rejected, some parties would continue to avail themselves of their arbitral rights under Part XIC with respect to supply of the DGTAS in future periods.

Without seeking to prejudge the outcome of these arbitral disputes, the Commission notes that a number of outcomes could be possible in relation to those access disputes that are ongoing in relation to the supply of the MTAS by Optus. In this regard, the Commission notes that it released its MTAS Pricing Principles Determination on 30 June 2004, which contained indicative price related terms and conditions for the MTAS. The pricing principle upon which these terms and conditions are based and the information upon which they were determined is outlined in Chapter 2 of this report.

Whilst the Commission does not comment publicly on specific arbitrations, it notes that, under section 152AQA(6) of the Act, it is required to have regard to any pricing principles determination in arbitrating an access dispute in relation to the declared service.

That said, the Commission emphasises that it should by no means be assumed that the Commission would necessarily set prices at the same level as set out in its MTAS Pricing Principles Determination in a final determination in an access dispute. This could be for a number of reasons, including that:

- access disputes are generally bi-lateral in nature such that it may be appropriate to specify different terms and conditions in final determinations in different disputes; and/or
- new material may be put before the Commission in an arbitration that suggests either the TSLRIC+ principle on which the MTAS Pricing Principles Determination is based, or the 12 cpm target price contained within it, are not appropriate.

Based on the information currently before it (including the analysis outlined in Chapters 5 – 9 of this report), however, the Commission is of the view that if it were to reject the Undertaking, it would be likely that price terms and conditions that would emerge would be substantially lower than those in the Undertaking. This is because:

- as outlined in Chapter 5 of this report, based on the Commission's TSLRIC+ pricing principle, the CRA model implies that the TSLRIC+ of Optus providing the DGTAS on its network is **c-i-c** cpm;[321] and
- even if the Commission were persuaded it would be appropriate to set a price for the MTAS in an arbitral dispute involving Optus according to the FL-LRIC++ pricing principle, the Commission believes, as outlined in Chapters 5 – 7 of this report, that the CRA model has been configured and populated with input parameters that are likely to overstate the FL-LRIC component, and what would be appropriate R-B and NES mark-ups.

Accordingly, irrespective of whether it would be appropriate to specify the price according to a TSLRIC+ or FL-LRIC++ pricing methodology, the Commission believes it likely that it would set a price for the MTAS on Optus's GSM network that would be substantially lower than that specified in the Undertaking, if it rejected the Undertaking and continued to be asked to determine prices for the Optus MTAS in an access dispute. In light of this, the Commission considers it is also unlikely that other access seekers that have not currently notified the Commission of an access dispute in relation to the supply of the MTAS by Optus would settle for price terms and conditions consistent with those in the Undertaking in commercial negotiations.

Hence, in having regard to some of the criteria under section 152AH(1) of the Act, the Commission will take into account the pricing options available under the Undertaking with the (substantially lower) pricing outcomes that would be likely to occur if the Undertaking were rejected.

The Commission's assessment of the price terms and conditions contained in the Undertaking against the statutory criteria set out in section 152AH(1) of the Act (and discussed in section 3.2.4 of this report) is considered in turn below.

10.2. The LTIE

As discussed elsewhere in this report, the Commission has published a guideline explaining what it considers is meant by the phrase LTIE. This was outlined in section 3.2.4 and also section 10.1.1 of the report.

10.2.1. Optus's submissions

As it did in the Mobile Services Review, Optus submits that the MTAS is supplied within the broader (two-sided cluster) mobile services market. This contrasts with the Commission's approach to defining the market for the purposes of the MTAS Final Report, where it determined that a single market existed for the MTAS on each MNOs network. In this regard, Optus refers to the statement of Professor Hausman (a

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[321] The Commission has concerns with aspects of the conceptual modelling decisions made by CRA to determine this estimate, as well as concerns about the input parameters and assumption that CRA has used to populate its model. In combination, these concerns lead the Commission to believe that even **c-i-c** cpm is likely to be a conservatively high TSLRIC+ estimate for providing the MTAS in Australia

summary of which is included in section 4.4.2) and also case law from New Zealand.[322] Optus also re-submitted with the Undertaking the papers by NERA titled *Existence and Exercise of Market Power in Mobile Termination* and *Mobile Services as Jointly Produced Products: Concepts and Empirics*. The Commission notes that both of these papers were initially submitted to the Commission in response to the Commission's MTAS Draft Decision of March 2004.

Optus submits that the mobile services market is highly competitive and that the current MTAS charges promote competition in that market and the FTM market. Optus further submits that because the Undertaking prices are set below prevailing market rates, they are likely to promote competition in the mobile services market. Optus further submits that the inclusion of a NES in the Undertaking prices can be considered to be 'an efficient transfer of consumer surplus from FTM users to mobile users'.[323] Optus then concludes:

> Therefore, the inclusion of an externality mark-up in the undertaking price will not lessen competition in either the mobile services market or the market for fixed to mobile call services.[324]

Optus also submits that its proposed pricing options, and in particular the Option 2 prices, will increase efficiency in both the mobile services and the FTM services markets by encouraging an efficient level of mobile subscription. In support of this view, Optus cites the paper by Professor Hausman, as well as NERA's paper *Mobile Services as Jointly Produced Products: Concepts and Empirics*. These arguments were outlined in detail in Chapter 7 of this report.

In relation to any-to-any connectivity, Optus submits the offering of access to the Optus DGTAS in the Undertaking will allow any-to-any connectivity. It further submits that as the prices offered are consistent with existing commercial rates and with efficient costs, they will encourage any-to-any connectivity. Optus then submits that offering the two pricing options in the Undertaking will enable the wholesale level to mimic retail price trends, and end-users will be more likely to enjoy the price benefits irrespective of their operator choice.

10.2.2. Submitters' views

Hutchison submits that the pricing options proposed by Optus are not in the LTIE, because they will neither promote competition nor create the pre-conditions necessary to achieve greater competition in any market for listed services. Rather, Hutchison submits that acceptance of the Undertaking will be detrimental to competition in individual subscriber markets; single mobile operator markets; the market for the MTAS; the FTM market; and the retail mobile services market. Hutchison further submits that the acceptance of the Undertaking will harm dynamic efficiency, prevent allocative efficiency and would be inconsistent with productive efficiency.

Telstra submits that it generally supports Optus's assessment of the costs of supplying its DGTAS. It also submits that this service is supplied in the same market as mobile originating access services and mobile subscription services and that the mobile services market is highly competitive. However, Telstra submits that the price terms and conditions of the Undertaking are unreasonable because they are not in the LTIE

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[322] Professor Hausman, paragraphs 6.12 to 6.21.
[323] Optus submission, p. 21.
[324] Optus submission, p. 22.

and are not in the interests of those who have a right to use the declared service. Specifically, Telstra submits that:

- the 'glide path' proposed in the Undertaking is not necessary to protect Optus's legitimate business interests and will not be in the LTIE because it will delay the benefits of competition in downstream markets. Instead, Telstra supports an adjustment path which has a large initial reduction in the price of the MTAS, followed by smaller incremental reductions; and
- pricing Option 2 in the Undertaking provides no efficiency benefits because the fixed and variable components of the pricing structure bear no relationship to the fixed and variable costs of supplying the DGTAS. Further, Telstra submits that the fixed cost is not actually fixed, since it is determined by minutes of use.

Cave and Chambers submit that it is unlikely that the Commission can be satisfied that the Undertaking is consistent with the relevant statutory criteria. In this regard, they note that '[w]hen unregulated prices are found to be excessive, there is no legitimate business interest in allowing that position to be maintained a moment longer than is necessary', and accordingly submits that the proposed adjustment path is 'probably excessive'.[325]

Virgin Mobile Australia (VMA) submits that the although the price in Optus's Undertaking are not 'ideal', they are more reasonable than the Commission's proposed prices (set out in the MTAS Pricing Principles Determination) and as such will likely result in less harm to the LTIE. Specifically, VMA submits that, compared with Optus's proposed prices, the Commission's prices would result in greater direct harm to the LTIE due to reduced competition (i.e. VMA less able to be a vigorous and effective competitor), reduced efficient investment (i.e. VMA less able to make future investments) and compromise legitimate business interests (of VMA itself).[326] In addition, VMA submits that the benefits that the Commission predicted would result from its MTAS decision are not becoming apparent, and that, instead, VMA has experienced a decrease in FTM per customer compared to the previous year, and is unaware of any evidence of chapter FTM prices or otherwise improved FTM services.[327]

The Commission notes that since the draft decision was released, Optus announced that it has acquired Virgin Mobile Australia.[328]

Slimtel and AAPT did not make specific comments on the Undertaking in relation to the statutory criteria the Commission is required to assess undertakings against. That said, AAPT submits that the current pricing arrangements by MNOs are consistent with the exercise of market power and expresses support for the Commission's original conclusion (in the Final MTAS Report) that externalities should be ignored in setting the regulated price for the MTAS.[329]

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325 Cave and Chambers, p. 22.

326 Virgin Mobile (Australia), submission to Discussion Paper, p. 7.

327 Virgin Mobile (Australia), submission to Discussion Paper, pp. 3-6.

328 For example, see: http://www.optus.com.au/portal/site/aboutoptus/menuitem.813c6f701cee5a14f0419f108c8ac7a0/?vgnextoid=0c02a0473e7b8010VgnVCM10000029867c0aRCRD&vgnextchannel=44b4ce4b55728010VgnVCM10000029867c0aRCRD&vgnextfmt=default

329 AAPT, *An Economic Critique of the Submission by Charles River Associates (CRA),* pp. 8-10 and 22-23.

10.2.3. The Commission's view

Under section 152AH(1)(a) of the Act, in determining whether something is in the LTIE, the Commission must consider whether it is likely to promote competition, any-to-any connectivity, and the economically efficient use of, and investment in, infrastructure.

Each element of the LTIE is considered in turn below.

In having regard to the LTIE criteria the Commission will apply the 'with or without test' to considering whether the price terms and conditions would be likely to promote competition, any-to-any connectivity and the economically efficient use of and investment in infrastructure.

Promoting competition

In considering whether Optus's proposed prices are likely to promote competition, it is first useful to identify the relevant markets in which competition may be affected. In the MTAS Final Report, the Commission identified the following markets as being relevant to the question of whether it should declare the MTAS and, if so, the pricing principles it should specify for this service:

- the individual markets for the MTAS on each MNO's network;
- the market within which FTM services are provided; and
- the market for retail mobile services.

The MTAS on each MNO's network

The Commission concluded in the MTAS Final Report that there was a separate single market for the MTAS on each MNO's network. In so finding, the Commission reached the view – which it continues to hold – that MNOs are not constrained in their pricing decisions for the MTAS, and have both the ability and incentive to raise the price of this service above its underlying cost of production. The Commission's view is based on the lack of alternative substitutes for the service.[330] Further, the Commission's view was informed by the view that the MTAS is a wholesale service which is not sold as part of a bundle or cluster of retail mobile services, such that any competition in the retail mobile market would not act as a constraint on the price MNOs would be able to charge for the MTAS.[331]

As such, the Commission is of the view that Optus's proposed Undertaking prices will not (and in fact cannot) promote competition in the wholesale market for the MTAS on Optus's network.

The Commission notes Optus's continued assertion that the MTAS – and therefore its DGTAS – is supplied within the broader (two-sided cluster) mobile services market. However, the further arguments put forward by Optus in this regard have not

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[330] In the Final MTAS Report, the Commission found that the termination services of individual MNOs are not substitutable for each other, irrespective of the size of individual operators or the network technology they employ. Further, the Commission concluded that alternative forms of communication, such as fixed-line network services, SMS messages, email and calls using voice over Internet protocol technology (VoIP), are not sufficiently substitutable means of contacting a mobile subscriber to constrain providers of a MTAS. See, for instance, pages 29 to 56 of the MTAS Final Report.

[331] MTAS Final Report, p. 42 to 55

dissuaded the Commission from the view it expressed in the MTAS Final Report. In the MTAS Final Report the Commission stated:

> It is the Commission's view that MNOs have control over access to termination of calls to subscribers on their network. As a result of this, the Commission does not believe that MTASs provided on different mobile networks are substitutable for each other – calls to a consumer connected to one mobile carrier's network cannot be terminated on another carrier's network. Further, there are no adequate demand- or supply-side substitutes that will constrain mobile network operators in their pricing decisions for the mobile termination service. These factors, combined with a lack of consumer awareness (on the part of both the A- and B-party consumers) and the incentives that arise from the CPP principle that governs calls to mobile networks, fails to mitigate the control over access mobile operators have with regard to calls terminating on their networks.[332]

The Commission was also of the view that this control over access to calls to subscribers to their network gave MNOs the ability and incentive to set the price for the MTAS above its underlying (TSLRIC+) cost of production. In doing so, MNOs generate 'above-normal' profits from providing the MTAS.

Each mobile subscriber therefore brings with it a source of economic profits as it enables the MNO to charge above-cost prices for calls made to each subscriber. As a result of this, the Commission believes that MNOs may, depending on the level of competition they face when attracting subscribers to their network, seek to attract more subscribers to their network by subsidising the prices they offer potential mobile subscribers for retail mobile services. This suggests MNOs may have an incentive to transfer part of the economic profits from pricing the MTAS above cost to retail mobile subscribers in the form of subsidised prices for retail mobile services (e.g. handset subsidies, free access plans, etc.). The greater is the level of competition for retail mobile services, the greater will be the incentive to transfer economic profits earned from the MTAS to retail mobile subscribers. The Commission believes, therefore, that MNOs may determine a cross-subsidised structure of prices with higher-than-cost prices for the MTAS and below-cost prices for some retail mobile services.

While the Commission believes regulation of the MTAS is unable to promote competition over the provision of the MTAS, it does believe it is able to promote competition over the provision of FTM and retail mobile services. The extent to which acceptance or rejection of the Undertaking will promote competition for each service type is considered in turn below.

FTM services

In the MTAS Final Report, the Commission found that, based on its market observations, MNOs appeared to be setting charges for the MTAS well above the underlying (TSLRIC+) cost of supplying the service. The Commission further found that this above-cost pricing of the MTAS was increasing the cost to providers of FTM calls above the underlying cost of that service, which in turn raised the price of FTM calls. The Commission continues to believe that this is the case. Indeed, the CRA model would seem to support this view, as it can be used to estimate a TSLRIC+ of providing the DGTAS on Optus's GSM network of **c-i-c** cpm. The CRA model also assumes that current prices for FTM calls are, on average, 40.8 cpm.[333] This compares

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[332] MTAS Final Report, p. 54.
[333] The CRA Report, p. 33.

with the Commission's estimate of the underlying (TSLRIC+) estimate of providing FTM calls being somewhere in the region of 9 to 17 cpm.[334]

The Commission also notes its view that the TSLRIC+ estimate of Optus supplying its DGTAS (i.e. FL-LRIC of **c-i-c** cpm to which an EPMU mark-up of **c-i-c** cpm is added to estimate TSLRIC+) based on the CRA model inputs, would, at the very best, represent an upper bound on the efficient costs of supplying the MTAS in Australia. In reaching this view, the Commission has been informed by work conducted for it by Analysys.[335]

The Commission notes Optus's view that 'the reasonableness of Optus' Undertaking prices is supported by a comparison of Optus' proposed rates against overseas regulators' cost estimates of the MTAS'. However, as the Commission sets out in detail in Chapter 8 of this report, it has significant concerns with the international benchmarking analysis undertaken by CRA which, in its view place serious doubt about the credibility and relevance of the benchmarking results. In particular, the Commission notes that the TSLRIC+ (the relevant cost concept in relation to CRA's international benchmarking analysis) that is implied by the CRA model (i.e. **c-i-c** cpm) falls substantially below the range (i.e. 9.99 cpm to 20.07 cpm) that CRA separately argues provides a reasonable range for the TSLRIC+ of providing the MTAS in Australia based on its benchmarking analysis.

In contrast, the Commission notes that **c-i-c** cpm estimate that is derived from Optus's own data falls comfortably within the range of **c-i-c** cpm for the MTAS that it believes would result from its preferred approach to benchmarking against TSLRIC+ cost estimates from overseas jurisdictions.

At present, the Commission understands that the MTAS is being priced somewhere between 18 and 20 cpm. Clearly, therefore, on the evidence available, the price of the MTAS is likely to be substantially in excess of the TSLRIC+ of providing the MTAS on Optus's 2G GSM mobile network.

The Commission believes above-cost pricing of the MTAS is being used, in part, to subsidise below-cost pricing for retail mobile services. The Commission believes this is the case irrespective of the way in which markets are defined to include the MTAS, retail mobile and FTM services. The Commission is of the view that Optus's submission that the inclusion of a NES in the Undertaking prices can be considered to be 'an efficient transfer of consumer surplus from FTM users to mobile users' suggests that it too believes above-cost pricing for the MTAS is being used to subsidise below-cost pricing for retail mobile services.[336]

At issue is whether this cross-subsidised pricing arrangement is likely to be promoting competition in the downstream markets within which retail mobile and FTM services are being provided. As indicated in the MTAS Final Report, the Commission is

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[334] As outlined in section 2.3 of this report, the Commission believes the TSLRIC+ of the MTAS, based on consideration of benchmarking against overseas cost estimates, is likely to lie somewhere in the range of 5 to 12 cpm. The Commission also estimates that the TSLRIC+ of providing fixed origination and transmission is likely to be approximately 5 cpm. Combined, this gives rise to a likely range of the cost of providing the MTAS of between 9 and 17 cpm. The Commission notes, however, that to the extent the CRA model accurately estimates the TSLRIC+ of providing the MTAS service, the underlying cost of providing FTM calls is likely to be around **c-i-c** cpm.

[335] See, for instance, Analysys Final Report, p. 5.

[336] Optus submission, p. 21.

concerned that above-cost pricing of the MTAS allows integrated fixed and mobile providers to raise the costs of rival FTM service providers that only operate fixed-line networks above that which the integrated operators face for calls that terminate on their own networks.

For instance, in 2005 Optus had a market share of approximately **c-i-c** per cent of mobile subscriptions.[337] Assuming mobile networks receive MTAS minutes in proportion to their market share of mobile subscriptions, this implies approximately **c-i-c** per cent of call minutes to mobile phones will terminate on Optus's GSM network. Further, assuming the price of the MTAS was set according to the Undertaking rate of 19.25 cpm during 2005, this would imply (on the basis of the CRA model) that Optus has a cost advantage over non-integrated fixed-line only providers of FTM calls of **c-i-c** cpm[338] on **c-i-c** per cent of the FTM call minutes it sells to fixed-line consumers.[339] That is, whilst a fixed-line only operator must pay the full MTAS rate for all calls its customers make to mobile phone users, Optus will only face the underlying (TSLRIC+) cost for those calls that its fixed-line consumers make to Optus mobile phone users. To the extent that the CRA model is likely to overstate the TSLRIC+ of providing the MTAS on Optus's GSM network, this cost advantage would be even greater.

Given that the average price access seekers pay for the Optus DGTAS is likely to be broadly similar under Option 2 as that provided for under Option 1 of the Undertaking (see section 9.3 of this report for further detail), the Commission believes these concerns will exist under both pricing options proposed by Optus in its Undertaking. While access seekers may have an incentive to structure retail charges for FTM services in a way that encourages a greater volume of FTM calls under the Option 2 pricing proposal, the Commission believes Optus will still be able to raise the input cost of a non-integrated rival in the provision of FTM services above that which it faces itself for calls that terminate on its GSM network. This is especially the case given the per unit charge in the Option 2 pricing proposal is at all points above the TSLRIC+ estimate of supplying the MTAS on Optus's 2G GSM network. Access seekers will also need to pay a fixed charge on top of this per unit charge.

In response to this point of view, Optus argues that it cannot take advantage of any cost advantage it might have over non-integrated providers of FTM calls to enhance its competitive position in the market within which these calls are provided. This is because, it argues, it must use all excess profits it receives from providing the MTAS to efficiently subsidise retail mobile services. The Commission disagrees with this view, however, as it believes – for reasons spelt out in Chapter 6, section 10.2 and Appendix 5 of this report – that Optus is making 'above-normal' profits over the provision of its entire mobile business, and that Optus will only increase prices for retail mobile services in response to a regulated reduction in MTAS charges if it is profit-maximising for it to do so. The Commission believes this gives Optus the ability to take advantage of the cost advantages it has over non-integrated fixed-line only operators as a result of above-cost prices for the MTAS that may result from its control over access to termination of calls on its mobile network.

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337 Credit Suisse First Boston, *Australian Telecommunications 2005*, 6 May 2005, p. 41.

338 **c-i-c** cpm = 19.25 cpm minus **c-i-c** cpm (i.e. TSLRIC+ implied by the CRA model).

339 Assuming call patterns from Optus fixed-line networks to mobile networks are similar to those of other providers of FTM calls.

As the Commission stated in its MTAS Final Report, a closer association of the price of the MTAS with its underlying TSLRIC+ cost of production is likely to improve competition in the market within which FTM services are provided. Specifically, a closer association of price and cost will allow equally or more efficient FTM providers to place more competitive pressure on integrated providers of FTM services to improve their own efficiency and reduce the FTM prices paid by their own consumers. Therefore, this approach to pricing is likely to provide a stimulus for increased competition from existing FTM providers, and possibly from new entrants. The Commission notes that this increased competition can manifest itself in many ways, including reduced prices and improvements in the quality and range of product offerings made available by providers of fixed-line services.

Putting aside consideration of the legitimate business interests of the access provider – which is considered in section 10.2 below – the Commission believes these competitive benefits would be greater the more immediate and complete are reductions in the price of the MTAS towards its underlying (TSLRIC+) cost of providing the service.

The Commission notes that, by reducing the price of the DGTAS closer towards TSLRIC+, the Undertaking will likely have the effect of promoting competition to some extent in the market within which FTM services are provided. However, the Commission believes it is likely that the price of the MTAS will move closer towards TSLRIC+, and more quickly, via arbitral and other processes if the Undertaking were to be rejected. Accordingly, the Commission believes that competition over the provision of FTM services will be more likely to be promoted if the Undertaking were rejected rather than if it were to be accepted.

Further, even if the Commission were to be persuaded that competition over the provision of FTM calls was better promoted by a price for the service equal to FL-LRIC++ (17.0 cpm), as argued by Optus, the Commission believes (for the reasons outlined in Chapters 5 – 9 of this report), that Optus's estimate of this number contains methodological flaws and is populated with some inappropriate inputs. The Commission believes this would support a view that an accurately calculated FL-LRIC++ estimate would be substantially lower than the 17 cpm estimate proposed by Optus.

Accordingly, irrespective of whether a price for the MTAS equal to its TSLRIC+ or its FL-LRIC++ would be more likely to promote competition in the market within which FTM services are provided, the Commission believes accurate estimates of both these numbers would be substantially less than the prices contained in the Undertaking. Given the Commission's expectation that substantially lower prices for Optus's DGTAS would emerge if the Undertaking were rejected, the Commission believes competition in the market within which FTM services are provided would be better promoted if the Undertaking was not accepted.

Retail mobile services

In relation to the retail mobile services market, the Commission noted in the MTAS Final Report that, while the retail mobile services market is exhibiting more encouraging market outcomes than the markets for fixed-line telecommunications services, it is unlikely to be effectively competitive as yet. This was because:

- there continued to be a high level of concentration at the carrier network level (where the Commission estimated the combined market shares of Telstra, Optus and Vodafone was greater than 97 per cent of the market);
- barriers to effective entry into the market (associated with national coverage and sunk costs) remain high; and
- established MNOs (and in particular Telstra and Optus) appear to be earning profits well in excess of those the Commission would expect in competitive markets for these services.

In addition to this, the Commission noted that reductions in the prices paid for retail mobile services appeared to have slowed in recent years, with some indication that prices increased, on average, during the 2002-03 financial year.[340]

While the market share of Hutchison's two mobile networks has increased since June 2004,[341] and there is some anecdotal evidence that the introduction of capped pricing plans has seen a return to price reductions for retail mobile services over the 2004-05 financial year, the Commission believes that the combined market shares of Telstra, Optus and Vodafone still ensure the market is highly concentrated at the carrier network level. Further, the Commission still believes that barriers to entry into this market are high due to national coverage and sunk costs, and believes this was exhibited during 2004 by the decisions of Telstra and Hutchison,[342] and Vodafone and Optus[343] to enter into infrastructure sharing arrangements in relation to the radio access networks associated with the deployment of 3G mobile networks. While Optus has issued profit downgrade warnings in relation to its mobile business,[344] the Commission notes that its expected profit levels for the 2005-06 financial year still appear to be well in excess of those expected in an effectively competitive mobile industry.[345] As discussed in section 10.2 of this report, the Commission also believes that the high returns earned by Optus over recent years are indicative of earnings well in excess of normal profit levels over the lifetime of its investment in its 2G GSM network, and those required to recover its initial GSM investment.

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340 See, for instance, MTAS Final Report, section 4.3.3.

341 A report by Credit Suisse First Boston indicates that Hutchison's subscriber market share increased from 3.9 per cent in 2004 to a forecast 5.7 per cent in 2005. See *Australian Telecommunications 2005*, 6 May 2005, p. 41.

342 See, for instance, ACCC media release, *ACCC Not to Oppose 3G Radio Access Network Sharing Arrangement Between Hutchison and Telstra*, 10 December 2004.

343 See, for instance, ACCC media release, *ACCC Not to Oppose 3G Mobile Radio Access Network Sharing Agreement Between Optus and Vodafone*, 14 December 2004.

344 The Age, 19 September 2005 at: http://blogs.theage.com.au/malcontent/archives/2005/09/optus_profit_wa.html

345 For example, and as cited by AAPT, see Christian Guerra, *Australian Mobiles Market? Competitive? You must be kidding*, Goldman Sachs JBWere, 19 May 2005.

Overall, therefore, the Commission continues to believe that structural features of the mobile industry indicate the retail mobile services market is not effectively competitive at this point in time.

Whilst the Commission expected that the greatest competitive benefit from regulation of the MTAS was likely to occur in the market within which FTM services are provided (and not the market within which retail mobile services are provided) it did indicate it expected that a closer association of the price of the MTAS and its TSLRIC+ of production would help promote competition in the retail mobile services market to the extent that it:

- serves to overcome the ability established operators might have to frustrate new entrants interconnecting with established networks on reasonable terms and conditions; and
- leads to a more efficient use of and investment in the infrastructure used to provide retail mobile services.[346]

At issue for the purposes of this Undertaking assessment is whether competition would be better promoted in the provision of retail mobile services by the acceptance or rejection of the Undertaking.

At one level, it might be argued that so long as all MNOs are regulated in a consistent manner by the Commission with respect to the price of the MTAS, any price level for this service should ensure that MNOs are able to compete with each other on their relative efficiencies and competitive merits. In that sense, therefore, one might argue that the prices proposed in the Undertaking and those that might emerge in the absence of the Undertaking would have a neutral impact on the level of competitiveness over the provision of retail mobile services, provided they reflected changes offered by other MNOs for this service.

Such a viewpoint would fail to recognise, however, the likelihood that reductions in the price of the MTAS are likely to have varying impacts on different mobile operators due to the fact that some (Telstra and Optus) provide both fixed and mobile services to consumers, while others (Vodafone and Hutchison) predominantly only supply retail mobile services.

The Commission noted in its MTAS Final Report that whilst declaration may be expected to put in place pre-conditions that help to promote competition in the retail mobile services market, declaration is likely to affect different mobile operators in different ways.

In this regard, the Commission considered arguments from some mobile service providers that substantial reductions in the price of the MTAS might weaken their competitive position as compared to integrated fixed and mobile operators. These arguments have been reiterated during this inquiry by VMA (which has also provided data on the extent its expected revenue losses in the event of a regulated reduction in MTAS rates). This is because these parties believed there is no imperative on fixed carriers to 'pass-through' lower prices for the MTAS to consumers of FTM services, and further, no evidence of such pass-through since the Commission released the MTAS Pricing Principles Determination in June 2004. On this issue, VMA submits

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[346] See, for instance, MTAS Final Report, Chapters 5 and 6.

that it has, in fact, 'experienced a decrease in FTM calls per customer,[347] compared to the corresponding period last year' and 'is unaware of any evidence of cheaper consumer fixed-to-mobile (FTM) prices or otherwise improved consumer FTM services since the MTAS decision'.[348]

Accordingly, such parties were, and continue to be, concerned that if MNOs are required to lower MTAS rates, their integrated competitors who operate in the market for FTM services will experience lower input costs without having to reduce the prices they charge for FTM services to the same extent. Further, these parties believed a reduction in the MTAS prices will reduce the revenues of MNOs more generally, such that they are less able to invest in and deliver new services and keep the retail mobile market competitive.

In general, and as indicated above, the Commission believes that all MNOs have the ability to raise the price of the MTAS above its underlying cost of production (in the absence of regulation of this service), and that this enables them to earn above normal economic profits when providing this service. Accordingly, all MNOs are likely to experience reduced economic profit from the provision of the MTAS if the price is set in a way that ensures a closer association of prices and (TSLRIC+) costs for the MTAS.

Whether or not particular MNOs will suffer a proportionately larger reduction in overall revenues from an equal reduction in MTAS rates is, however, less clear. On the one hand, the Commission believes that mobile-only operators may, in the short-term, experience a relatively larger proportionate reduction in revenues from the MTAS than integrated operators will experience across the combination of the MTAS and FTM services if FTM pass-through is incomplete. On the other hand, however, the Commission notes that continued reductions in the price of the MTAS towards TSLRIC+ should, by improving the state of competition in the market within which FTM services are provided, help to ensure the level of FTM pass-through increases over time.

Hence, as competition in the market within which FTM services are provided improves, it is possible that reductions in the price of the MTAS could lead to even greater absolute reductions in the price of FTM (and other fixed-line services) call minutes. This is because, at present, the extent of the absolute divergence between price and underlying cost would appear to be greater for FTM call minutes than it is for MTAS call minutes.[349]

Accordingly, the relative impact of continued declaration on mobile-only and integrated fixed and mobile operators is uncertain and heavily dependent on the extent of FTM pass-through and the enhancement of competition in the market within which FTM services are provided. As indicated above, the Commission expects that a reduction in the price of the MTAS towards its underlying (TSLRIC+) cost of

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[347] VMA submitted that from January 2004 to March 2005, VMA's incoming fixed minutes *decreased* as a proportion of off-net incoming minutes, from **c-i-c** per cent to **c-i-c** per cent.

[348] Virgin Mobile submission in response to draft decision, p. 1.

[349] Based on an estimate of the TSLRIC+ of providing the MTAS of between 5 – 12 cpm, and a TSLRIC + of providing the remaining elements of a FTM call of 5 cpm, the TSLRIC+ of a FTM call is likely to be somewhere between 9 and 17 cpm. This is at least 21 cpm below the average price charged by Telstra during the second-half of 2004 of 38 cpm. In contrast, the current price of the MTAS is likely to lie between 18 and 20 cpm. At most, this represents a difference of 16 cpm above TSLRIC+.

production will promote competition in the market within which FTM services are provided and that this will generate pressures for a greater level of pass-through.

On this issue, the Commission notes VMA's submission and would make three points in response to the arguments raised in this submission.

First, the Commission notes that the fact that VMA's incoming fixed minutes *decreased* as a proportion of off-net incoming minutes (from **c-i-c** per cent to **c-i-c** per cent) could, in fact, be consistent with an *absolute* increase in incoming off-net FTM call minutes, so long as there was a relatively larger increase in incoming off-net MTM call minutes. VMA has not provided sufficient information to determine this, and thus, the trend for incoming FTM calls is unclear.

Second, although the Commission released its indicative prices for the MTAS in June 2004 (which included a three-year adjustment path towards a target price of 12 cpm), it is important to note that these are not the prices currently being charged for this service by competing MNOs. Rather, the Commission understands that over the period referred to by VMA, the price charged by MNOs for the MTAS was anywhere between 18 and 20 cpm, which may, at least partly, account for the lack of (or only limited) FTM pass-through to this point.

Third, the Commission notes that Telstra's FTM volume grew by 3.5 per cent in 2004-05 and that its yield decreased from 37.79 cpm to 35.79 cpm and that its volume per fixed line increased by 8.5 per cent.[350] This would tend to accord with the view that limited reductions in the MTAS rate since June 2004 have, to some limited extent, been passed through to lower FTM prices.

More generally, however, the Commission believes that any impact on the ability of integrated and mobile-only operators to compete with each other following reductions in the price of the MTAS is a result of existing distortions created by the price of the MTAS being at above-cost levels in the first place. To the extent that prices were set at the TSLRIC+ of the most efficient mobile operator for all MNOs, the MNOs would then be left to compete on their relative efficiencies and competitive merits in the market for retail mobile services.[351] Accordingly, and putting aside consideration of the legitimate business interests of the access provider (which is considered in detail in section 10.2 below), competition in the market for retail mobile services would be best promoted by more immediate and faster reductions in the price of the MTAS towards its underlying (TSLRIC+) cost of production.

The Commission notes that, by reducing the price of the DGTAS only partly towards its TSLRIC+ of production, the extent to which competition in the market for retail mobile services is likely to be promoted by is unclear. By continuing to allow the price of the service to be set substantially in excess of its underlying (TSLRIC+) cost of production, competition in the market within which FTM services are provided

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350 Telstra Corporation Limited, *Full Year end Results and Operations Review Year Ended 30 June 2005*, pp. 15-16.

351 The Commission notes VMA's submission that the reduction in the price of the MTAS (or the DGTAS more specifically) will harm its ability to compete in the retail mobile services market. However, to the extent that VMA is equally efficient in providing retail mobile services as other mobile service providers, the Commission considers that it should be able to adjust equally as well as Optus to a decrease in the price of the MTAS greater than that outlined in the Undertaking submitted by Optus.

would not be expected to be effective. This would likely have the effect of limiting the extent of 'pass-through' of lower MTAS charges that might result from reductions in the price of the MTAS towards cost made by other MNOs. In turn, this might inhibit the ability of mobile-only operators to compete as effectively with integrated and fixed and mobile network operators in the market for retail mobile services.

In contrast, the Commission believes it is likely that the price of the MTAS will move closer towards TSLRIC+, and more quickly, if the Undertaking were to be rejected. Accordingly, the Commission believes that competition over the provision of retail mobile services will more likely be promoted if the Undertaking were rejected rather than if it were to be accepted.

Finally, even if the Commission was persuaded in an arbitration that competition over the provision of retail mobile services was better promoted by a price for the MTAS set equal to FL-LRIC++, as argued by Optus, the Commission believes (for the reasons outlined in Chapters 5 – 9 of this report) that Optus's estimate of this number is both methodologically flawed and populated with some inappropriate inputs. The Commission believes this would support a view that an accurately calculated FL-LRIC++ estimate would be substantially lower than the 17 cpm estimate proposed by CRA and Optus.

Conclusion in relation to promotion of competition

Were the promotion of competition in the markets within which FTM and retail mobile services are provided to be the only objective when setting prices for the MTAS, the Commission believes it would be appropriate to reduce the price of the service to its optimal level immediately. To the extent the optimal price is based on TSLRIC+, this would imply the price of the service should be reduced to a level likely lower than **c-i-c** cpm, based on the CRA model inputs. Alternatively, if FL-LRIC++ were the appropriate price standard, the Commission's analysis in Chapters 5 – 9 indicates the price should be lowered to levels substantially below 17 cpm, and with immediate effect.

Overall, therefore, the Commission is not convinced that Optus's proposed pricing options for its DGTAS would promote competition in the relevant markets to an extent greater than would likely be the case if the Undertaking were rejected and prices were determined via alternative means.

Any-to-any connectivity

The Commission notes that as a 'standing offer' to supply the DGTAS, Optus's Undertaking will be *prima facie* consistent with the objective of achieving any-to-any connectivity.

In the MTAS Final Report, the Commission concluded that any-to-any connectivity can be promoted through declaration of the MTAS, and this was a key reason for it defining the MTAS in such a way that it applies to termination of both FTM and MTM calls on all types of mobile networks. The Commission reached this conclusion due to the ability of established MNOs (having control over access to all consumers directly connected to their networks) to frustrate a new entrant's ability to offer a full end-to-end service to its subscribers by hampering supply of the MTAS on reasonable terms and conditions.

The Commission notes that the Undertaking submitted by Optus only relates to a subset of the declared MTAS. Notwithstanding this, the Commission believes that the Undertaking is consistent with the object of achieving any-to-any connectivity.

As such, the Commission believes that the object of any-to-any connectivity is likely to be promoted regardless of whether the Commission accepts or rejecting the Undertaking.

Efficient use of, and investment in, infrastructure

In the MTAS Final Report, the Commission indicated it believed the following pricing structure was likely to emerge across the MTAS, retail mobile and FTM services:

- above-cost (inclusive of normal profit) pricing of the MTAS;
- consequent above-cost pricing of retail FTM services; and
- subsidised prices of some retail mobile services.

This, the Commission believes, is likely to generate direct efficiency losses in the markets within which FTM and retail mobile services are provided – specifically, less than efficient consumption of retail FTM services and greater than efficient consumption of retail mobile subscription services. The Commission also considered it may give rise to faster than efficient turnover of mobile handsets, as consumers took advantage of highly subsidised mobile handset offerings.

The Commission also indicated that it believed a reduction in the price of the MTAS towards its TSLRIC+ would promote efficiency in use in the market within which FTM services is provided by lowering the input cost of providing this service towards its underlying cost of production. The Commission also acknowledged reductions in the price of the MTAS might lead to consequent increases in the prices of some retail mobile services. However, the Commission indicated the extent to which this would be likely to occur was unclear. This issue is discussed further in Appendix 5 to this report. In any case, to the extent that retail mobile services were being priced below their underlying cost of production, and a Pareto-relevant externality were not relevant, any increases in the prices of these services would be likely to improve the efficiency in use of these services.

The Commission also expressed concern that the cross-subsidised pricing structure that exists with respect to the MTAS, FTM and retail mobile services is likely to create distortions to efficient investment decisions by integrated, mobile and fixed-line only operators. The Commission expressed specific concern that:

- above-cost pricing of the MTAS is reducing demand for mobile terminating access (and therefore FTM) services. In turn, this is likely to distort investment decisions by encouraging operators to under-invest in the mobile and fixed network capacity needed to provided FTM calls; and
- subsidised pricing of retail mobile services is likely to be encouraging excessive investment in the infrastructure used to provide retail mobile services. For instance, subsidised handset prices (such as free handset offers) are likely to have encouraged greater than efficient turn-over of mobile handsets by consumers. Further, it is likely to have led to excessive investment in the infrastructure used to develop new handsets.

Implicitly, the CRA model that is used to support the price terms contained in the Undertaking suggests that the current configuration of prices for FTM services, MTM calls and mobile subscription services is not at a level consistent with promoting efficiency in use of these services. This is because the CRA model indicates that the prices of these services should be set at substantially different levels to their current prices if they are to be welfare maximising.

CRA and Optus do not agree, however, that the price of the MTAS should be set at a level consistent with the TSLRIC+ of providing this service. Rather, and as indicated above, CRA and Optus argue that the welfare maximising price of the MTAS should be set at a level consistent with price equalling the FL-LRIC++ of providing the service. In other words, the TSLRIC cost of providing the service should be augmented by mark-ups to reflect the allocation of so-called 'fixed and common costs' according to R-B pricing principles and to include a NES.

As set out in detail in Chapters 5, 6 and 7 of this report, the Commission believes that the FL-LRIC++ price estimate made by CRA and Optus is likely to overstate the price that would best promote efficiency in use and investment in FTM and retail mobile services. The Commission has reached this view for a number of reasons.

In the first instance, and as set out in Chapter 5 of this report, the Commission believes CRA's underlying estimate of the FL-LRIC of supplying the DGTA on Optus's GSM network is likely to overstate the efficient costs of supplying this service.

In addition, and as set out in Chapter 6 of this report, the Commission has concerns that, at a conceptual and empirical level, the inclusion of an R-B mark-up on the FL-LRIC of Optus's DGTAS (**c-i-c** cpm in 2004-05) is likely to substantially overstate what might be seen as an appropriate mark-up above attributable cost to efficiently recover the relevant common costs of supplying the service. Further, the Commission considers that there is not certainty that the R-B framework proposed by Optus will result in a superior outcome to the EPMU approach preferred by the Commission in the MTAS Pricing Principles Determination, and may in fact, lead to a significantly inferior outcome. Hence, the Commission believes that Optus's proposed pricing options for the MTAS, based on this estimate, will not promote efficient use of or investment in infrastructure used to provide telecommunications services.

Moreover, as set out in Chapter 7 of this Report, the Commission does not consider, for conceptual reasons, that the framework specified by Optus to justify the inclusion of a 'NES' on its DGTA price terms is adequate. In particular, the Commission believes that it only considers one of many possible external effects that exist as a result of consumption of both fixed-line and mobile telephony services. Further, even if the 'network externality' was considered relevant, and the only external effect that required some form of corrective pricing, the Commission has concerns with Optus's actual calculation of the NES based on CRA's application of the Rohlfs model, including that it appears to contain a methodological error which overstates the mark-up. This would therefore tend to suggest that – to the extent that one were to accept the need for a NES – CRA's calculation of this surcharge would not be expected to result in a socially optimal outcome. Accordingly, the Commission believes that the NES on the FL-LRIC of Optus's DGTAS is likely to be inappropriate at a conceptual level and overstated at an empirical level.

Accordingly, were the promotion of efficient investment in, and efficient use of, the infrastructure by which telecommunications services are provided the only objective when setting prices for the MTAS, the Commission believes it would be appropriate to reduce the price of the service to its optimal level immediately. To the extent the optimal price is TSLRIC+ (as the Commission has previously indicated it believes it should be), this would imply the price of the service should be reduced to a level likely lower than **c-i-c** cpm. Alternatively, even if FL-LRIC++ were the appropriate price standard as Optus argues, the Commission's analysis in Chapters 5 – 9 of this report indicates the price should be lowered to levels substantially below 17 cpm, and with immediate effect.

The Commission notes that, by reducing the price of the DGTAS closer towards its optimal level, the Undertaking will likely have the effect of promoting the efficient investment in, and efficient use of, the infrastructure by which telecommunications services are provided to some extent. However, the Commission believes it is likely that the price of the MTAS will move closer towards its optimal level, and more quickly, if the Undertaking were to be rejected. Accordingly, the Commission believes that the efficient investment in, and efficient use of, the infrastructure by which telecommunications services are provided will be more likely to be promoted if the Undertaking were rejected rather than if it were to be accepted.

More generally, the Commission believes that the set of 'welfare maximising prices' proposed by CRA on behalf of Optus fail basic reality tests. In this regard, the Commission notes that in addition to specifying the optimal welfare-maximising price for the DGTA, the CRA model specifies optimal prices for four retail services – mobile subscription; MTM on-net; MTM off-net and FTM (and, by implication, the DGTA) services. In particular, the Commission notes that the end result of the model implies that it is optimal to have a set of welfare-maximising prices that:

- more than halves the total number of mobile subscribers in the entire mobile industry;
- slightly decreases the number of FTM minutes (despite a significant reduction in the price of the service);
- generates a substantial increase in the amount of MTM off net call minutes; and
- generates a very small reduction in MTM on net call minutes.

In the Commission's view, it is very unlikely that Optus's optimal prices for mobile subscription and MTM calls would emerge were the MTAS charge to be reduced to 17 cpm, even if this were to happen immediately. As a broad observation, the Commission notes that despite MTAS rates declining over time (including in the period from release of the MTAS Pricing Principles Determination to present) subscription levels have continued to increase (albeit at slower rates as saturation is reached). The Commission also notes that traffic levels to and from mobiles continue to increase; including for FTM services. This lends further support to the Commission's view that the price terms and conditions in the Undertaking are unlikely to be welfare-maximising and, logically, unlikely to promote efficient use of and investment in telecommunications infrastructure.

Amended criterion

In its draft report, the Commission sought interested parties' views on whether the amendments to section 152AB change the way the Commission should assess whether an undertaking promotes the economically efficient use of, and investment in, telecommunications infrastructure.[352] The amended criterion clarifies, *inter alia*, that in considering whether a particular thing promotes the efficient use of and efficient investment in infrastructure, the Commission must consider the incentives for, and the risks involved in, investment in new and existing infrastructure.[353]

On this issue Telstra submits that this amendment emphasises the need for the Commission's undertaking assessments and arbitral determinations to 'adequately take into account the broader range of investment decisions and the flow-on impact on those decisions of regulatory decision making which is a key driver of technology take-up in Australia.[354]

On the other hand, AAPT submits that based on the views expressed about the amended LTIE test by the majority of parties to the Senate Inquiry – two of which were Optus and the Commission – the Commission should not presently change the way in which it assesses whether or not an undertaking promotes this criterion.[355]

The Commission notes Optus's original submission raising the related issues of sunk costs and option value in relation to TSLRIC estimation appears relevant to the issue of interpretation of the amendments to section 152AB of the Act. Specifically, Professor Hausman refers to 'general agreement' of a 'downward bias [in TSLRIC] when sunk and irreversible investments are present'.[356] He further refers to 'numerous academic papers' he has published that suggest that TSLRIC estimates are 'incorrect when significant sunk costs exist'.[357] These are also related to the 'option value created by sunk cost investments'.[358]

Firstly, the Commission notes it is unaware of any regulator in any jurisdiction for any utility industry that has accepted real-option arguments such as these. The reality amongst regulatory bodies appears to be the complete converse of the 'general agreement' referred to by Professor Hausman.[359] Further, the Commission notes the arguments made by Professor Hausman for Optus have been subject to considerable debate, with many counterpoints having been made by, in particular, Hubbard and

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352 The section 152AB(2)(e) criterion (encouraging economically efficient use of and investment) was subject to legislative change in the course of the Commission's consideration of the Undertaking (September 2005) As a result, the Commission used the release of its draft decision as an opportunity to seek comments on how this amendment might change its approach to application of the criterion.

353 Explanatory Memorandum to Telecommunications Legislation Amendment (Competition and Consumer Issues) Bill 2005 pp. 4 and 8

354 Telstra submission in response to draft report, pp. 4-5.

355 AAPT submission in response to draft decision, p. 6.

356 Statement of Jerry Hausman, para 32. This statement was submitted as appendix A to its December 2004 submission.

357 *Ibid.*, para 31.

358 *Ibid.*, para 32, fn 22.

359 Hausman may be referring to acceptability by economists rather than by regulators, but even then there are those (like Hubbard and Lehr) who disagree.

Lehr.[360] The Commission also notes that Optus itself has raised arguments in other regulatory processes that appear to directly contradict its views in this Undertaking process.[361] With respect to sunk costs and their relationship to fixed-line access prices, Optus has submitted:

> Given the sunk nature of much of the incumbent's current infrastructure, TSLRIC is a conservative measure of economic costs and provides an upper-bound measure of the costs an efficient incumbent firm would actually incur in providing the service …[362]

More substantively, the Commission considers that the option to delay investment is inconsistent with the LTIE criteria – and specifically that of promoting efficient investment in and use of telecommunications infrastructure. Rather, the Commission considers that the 'option value' of delaying investment identified by Professor Hausman appears to be an artefact of monopoly power. That is suppliers in competitive markets do not have the option to delay profitable investments because, if they did delay, they would lose the opportunity to invest to a rival. In the presence of monopoly power (as the Commission believes exists in relation to the MTAS) the delay of investment would be privately-profitable (as it would increase the scarcity of the termination service) but socially-undesirable (as expansion is valued by end users in excess of its cost of provision). Optus's conclusion in favour of a compensation for removal of this option in the form of a surcharge on TSLRIC would only serve to retain monopoly profits and retard socially-efficient investment.

Further, the Commission considers that the arguments made by Professor Hausman and Optus overlook the scope for investments to give rise to new, unanticipated services and their corresponding revenue streams. For example, it appears that Optus has overlooked that its investments in 2G infrastructure became more valuable as a consequence of technological change that gave rise to the unanticipated advent of SMS and other data services. Similarly to the enhancement of copper by the development of DSL technologies, these new services present a 'put option', suggesting there should be a reduction in the access price rather than an increase.

In this regard the Commission notes that in *Seven Network Limited (No 4),*[363] the Australian Competition Tribunal expressed its general agreement with the Commission's approach to applying the LTIE test established by the Commission's publication, *Access Pricing Principles, Telecommunications – a guide*[364] (the APPs), and the Commission's use of TSLRIC pricing. In the decision, the Tribunal relevantly stated that, in its view, the key pricing principles in applying the LTIE include:

- The price of a service should not exceed the minimum costs that an efficient firm will incur in the long-run in providing the service.

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360 R.G. Hubbard, and W.H. Lehr, 'Telecommunications, The Internet, and The Cost of Capital', in I. Vogelsang and B.M. Compaine (eds.), *The Internet Upheaval*, MIT Press, 2000. An earlier draft of this paper is available at http://www.gsb.columbia.edu/faculty/ghubbard/Papers/HubbardLehr_TPRC_Dec99.pdf

361 See, for example, SingTel Optus, *Optus Submission to Australian Competition and Consumer Commission on Telstra's Undertaking for Domestic PSTN Originating and Terminating Access, Unconditioned Local Loop Service and Local Carriage Service*, March 2004, at paragraph 6.112.

362 *Ibid.*, para 9.22.

363 [2004] ACompT 11. The Commission notes this decision was made prior to 2005 amendments to section 152AB of the Act.

364 ACCC, *Access Pricing Principles, Telecommunications – a guide*, July 1997.

- The costs are the forward-looking costs, including a normal return on efficient investment (which takes into account the risk involved).
- Forward-looking means prospective costs using best-in-use technology. The access provider should only be compensated for the costs it would incur if it were using this technology, not what it actually incurs, for example in using out-of-date technology which is more costly. Of course, a firm may be using older technology because it was the best available at the time the investment was made and replacing it cannot be justified commercially. In a competitive market, however, that firm would only be able to charge on the basis of using the most up-to-date technology because, if it did not (in this hypothetical competitive market) access seekers would simply take the service from an alternative service provider.
- The cost of providing the service should be the cost that would be avoided in the long-run by not having to provide it. Thus, it is the additional or incremental costs necessarily incurred, assuming other production activities remain unchanged..[365]

Further, the Tribunal noted that '… 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.'[366]

The Commission notes that the purpose of the amendment was to make it clear that the incentives for investment in new and existing infrastructure and the risks of making such an investment are given due consideration in assessing whether the particular thing promotes the efficient use of and efficient investment limb of the LTIE test. Consideration to date (including those arguments made by Telstra, AAPT and Optus) does not suggest that this amendment requires any material change to the Commission's approach to assessing whether the Undertaking submitted by Optus promotes the economically efficient use of, and investment in, the infrastructure by which the MTAS or any other infrastructure is supplied. As recognised in the Tribunal decision, and cited above, TSLRIC pricing includes a normal return on efficient investment (which takes into account the risk involved). Any further allowance for the 'option value' associated with sunk costs would appear unnecessary and inadequate alone, in failing to account for unforeseen revenue sources that may arise from sunk investments. However, the Commission is conducting a further examination of these matters in the light of the amendments to the Act and any changes in approach will be reflected in its future consideration of issues under Part XIC of the Act.

10.3. Optus's legitimate business interests

The reasonableness criteria in section 152AH of the Act require the Commission to take into account the legitimate business interests of Optus, and its investment in facilities used to supply the MTAS when assessing the Undertaking.

In having regard to Optus's legitimate business interests, the Commission will apply the 'with and without' test.

10.3.1. Optus's view

Optus submits that the use of the word 'legitimate' in the context of the conflicting expectations of the service provider and access seeker raises questions as to the categorisation of business interests as 'legitimate'. Optus notes the Commission's

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365 *Seven Network Limited (No 4)* [2004] ACompT 11, paragraph 135.
366 *Ibid.*, paragraph 136.

previous views on how it is defined. It also notes that in the context of the access regime set out in the National Gas Code, the Supreme Court of Western Australia has taken a different view:

> There was a submission from Alinta that in the context of this Code the recovery of monopoly prices or tariffs, above the level of economically efficient prices, should not be seen as "legitimate". I find no support in the Act or the Code for such a view. While some expressions of economic theory and passages in the Hilmer Report would suggest that it is against the interests of society as a whole, at least in some situations, for a monopolist to be able to recover monopoly prices or exercise monopoly power in the market, that does not make the enjoyment by a monopolist of a monopoly an illegitimate business interest.[367]

Optus submits that in setting a 'glide path' to its target price for the DGTAS, it has had regard to the significant adjustment in mobile subscription and origination prices needed to implement lower DGTAS prices without material negative impact on Optus and its mobile customers. The 'glide path' that will allow it time to recover the lost termination revenue from other services including origination and subscription is valued at $**c-i-c** million in the first year of the Undertaking[368] and has been formulated with regard to:

- Optus's current investment plans, business planning and commercial pressures to maintain a reasonable return on investment and stability in cash flows and operations for the business over the next two years; and
- the LTIE of mobile services and the inability of mobile operators to change prices for mobile services given a large proportion of customers are on contracted plans of between 12 and 24 months. A forced reduction in MTAS rates will result in increases in prices for mobile originating services. This is known as the 'waterbed effect'.

10.3.2. Submitters' views

Telstra submits that the adjustment path proposed in the Undertaking is not necessary to protect Optus's legitimate business interests and will not be in the LTIE, because it will delay the benefits of competition in downstream markets. Instead, Telstra supports an adjustment path which has a large initial reduction in the price of the DGTAS, followed by smaller incremental reductions.

Hutchison submits that if the market in which the MTAS was provided was competitive, the price of the MTAS would be driven down to the cost of the lowest cost provider who would be using 3G technology, and that Optus would only be able to charge this same price. In this regard, Hutchison submits that Optus's legitimate business interests extend to earning a return based on the cost of terminating calls on a network using forward-looking technology, not to being compensated for operating an older GSM network.

As noted in section 6.2.1 above, AAPT has cited a recent report by an analyst from Goldman Sachs JBWere which contends that the mobiles market in Australia is highly profitable.[369] In this regard, AAPT submits that this seems to be confirmed by the CRA model which shows that even when SMS and data revenues and costs are

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[367] Optus submission, paragraph 9.6, pp. 28-29.
[368] Optus submission, paragraph 9.9, p. 29.
[369] Christian Guerra, *Australian Mobile Market Competitive? You must be kidding*, Telecommunications Sector Commentary, Goldman Sachs JBWere, 19 May 2005.

excluded, at the initial (or current prices) prevailing in the market, the mobile industry generates a profit of $**c-i-c** million.

VMA submits that the Commission's proposed prices in the MTAS Pricing Principles Determination are directly harming VMA's legitimate business interests, as they are 'directly reducing VMA's gross margins and *simultaneously* reducing VMA's capacity to offset this loss'.[370] In contrast, VMA submits that the Undertaking 'addresses legitimate business interests and is also more cost-reflective than the Commission's proposed prices'.[371] VMA therefore considers the Undertaking to be 'more reasonable' than the Commission's proposed prices.[372]

10.3.3. The Commission's view

The Commission's *Access Undertakings – A guide to Part IIIA of the Trade Practices Act* (the Access Undertakings Guide) states that:

> The Commission's analysis of legitimate business interests of the service provider will focus on commercial considerations of the service provider. The Commission will take into account the provider's obligations to shareholders and other stakeholders, including the need to earn a commercial return on the facility. It will also aim to ensure that any undertaking provides appropriate incentives for the provider to maintain, improve and invest in the efficient provision of the service.[373]

The Access Undertakings Guide also states that:

> The Commission will take an interest in the extent to which competition arising from access to a service generates real benefits to intermediate and final consumers and the community in general. It will not assess business interests as legitimate if they have the purpose or effect of preventing the objectives of the Trade Practices Act being realised, in particular the objective of enhancing the welfare of Australians through the promotion of competition and efficiency. In addition, and in line with the stated intentions of the access regime, the Commission will not allow for reimbursements of forgone monopoly profits which the provider may incur as a result of increased competition in an upstream or downstream market, except insofar as they affect the ability of the firm to discharge CSOs.[374]

In relation to Optus's Undertaking, the Commission has previously implicitly indicated that a price equal to or in the range of the TSLRIC+ of providing a service would be likely to ensure an access provider's legitimate business interests are met. In this regard, the Commission noted in *Access Pricing Principles, Telecommunications – a guide* (the APPs) that:

> As an access price consistent with these principles allows efficient access providers to recover their costs of production it will not violate their legitimate business interests.[375]

That said, the Commission noted in its MTAS Final Report that, in the case of the MTAS, an immediate reduction in the price of the service towards its underlying (TSLRIC+) cost of production 'would impinge upon the legitimate business interests

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[370] In this regard, VMA submits (p.3-4 of original submission) that, based on its business plan for 2005, the impact of reducing MTAS charges from 21cpm to 18cpm reduces its gross margin by around $**c-i-c** million. Further, reducing MTAS price from 18cpm to 15cpm in 2006 would further reduce its gross margin by around $**c-i-c** million.

[371] Virgin Mobile, p. 9.

[372] Virgin Mobile, p. 9.

[373] ACCC, *Access Undertakings – A Guide to Part IIIA of the Trade Practices Act*, 30 September 1999, pp. 4-5.

[374] ACCC, *Access Undertakings – A Guide to Part IIIA of the Trade Practices Act*, 30 September 1999, p. 6.

[375] ACCC, *Access Pricing Principles, Telecommunications – a guide*, July 1997, p. 18.

of access providers who have, to date, based their business plans around existing pricing structures and the previous retail benchmarking pricing principle'.[376]

In recognition of this, the Commission included in its MTAS Pricing Principles Determination an adjustment path of 30 months duration for the price to fall from above 21 cpm from 1 July 2004 to the Commission's target price of 12 cpm on 1 January 2007. As set out in the MTAS Final Decision Report, (pp. 220-221) the Commission was:

> … mindful that an immediate and significant reduction would give mobile operators little time to adjust their business plans in response … [The] Commission considers that this period allows sufficient time for MNOs to unwind or realise their business decisions made in reliance on the previous regulatory approach …

Underlying this view was a belief that 3 cpm per annum reductions in the MTAS charge, over a three year period, would be achievable without harming an MNOs ability to recover reasonable costs (inclusive of a normal profit), and without placing undue pressure on any pricing plans that a MNO had designed and/or implemented for other services.

The Commission continues to believe that a 3 cpm annual reduction in the price of the MTAS would not violate Optus's legitimate business interests. As noted in the MTAS Final Decision, the Commission recognises that a MNO like Optus would have likely incurred losses in its early years when establishing its GSM mobile network, including through the installation of base stations and the acquisition of spectrum.[377] Seen in this context, the Commission notes that the recovery of capital costs in later years is a legitimate circumstance.

That said, the Commission notes that publicly available information released by (or on behalf of) Optus over the period 1998-99 to 2004-05, would appear to suggest that the profitability of its GSM mobile business has improved significantly over this period. The data upon which the Commission has relied to form this view are shown in Table 10.3 below.

Table 10.3: Estimation of Optus's ROCE (1998-99 to 2004-05)

Year	EBITDA reported (a)	Capital expenditure (b)	Depreciation (10% of previous year's capital employed (c)	Capital Employed (d)	EBIT (e)	Cost of Capital (f)	ROCE (g)	Excess of EBIT over Cost of Capital
98-99	468		170	1900	298	**c-i-c**	**15.7**	**c-i-c**
99-00	585	396	190	2106	395	**c-i-c**	**18.8**	**c-i-c**
00-01	665	405	211	2300	454	**c-i-c**	**19.7**	**c-i-c**
01-02	818	411	230	2481	588	**c-i-c**	**23.7**	**c-i-c**

[376] MTAS Final Report, p. 216

[377] In this regard, the Commission understands that there are two types of spectrum licence costs incurred by Optus. On the one hand, Optus pays an annual *apparatus licence* fee of around $**c-i-c** million for spectrum in the 900Mhz band. Also, over the course of four different auctions (in 1998 (two), 1999 and 2000), Optus has paid around $**c-i-c** million for spectrum in the 1800Mhz band. The Commission understands that this spectrum is predominantly used for GSM. Moreover, ACMA has informed the Commission that Optus also pays an annual license fee to use 'Microwave Links' to link up their mobile Base Stations, and that this fee was around $**c-i-c** million for 2004-05.

02-03	1056	263	248	2496	808	**c-i-c**	**32.4**	**c-i-c**
03-04	1248	278	250	2524	998	**c-i-c**	**39.5**	**c-i-c**
04-05	1515	226	252	2498	1263	**c-i-c**	**50.56**	**c-i-c**

Sources:

(a) JPMorgan, *Australian Mobile Industry Return on Capital Analysis*, Sydney, May 2001, Table 1, page 4 for 1998-99 to 2000-01, Macquarie Research Equities, *Another Tough Year Ahead for Telcos*, 17 January 2003, Table 4 for 2001-02; Singapore Telecommunications Limited and Subsidiary Companies, *Management Discussion and Analysis of Financial Condition and Results of Operations for the Fourth Quarter and Year Ended 31 March 2004*, 6 May 2004, page 40, for 2002-03; and Singapore Telecommunications Limited and Subsidiary Companies, *Management Discussion and Analysis of Financial Condition and Results of Operations for the Fourth Quarter and Year Ended 31 March 2005*, page 43 for 2003-04 and 2004-05.

(b) For 1999-2000 from JPMorgan, *op. cit.*, Table 3. For 2002-03 onwards from SingTel *Management Discussion and Analysis*.

(c) Estimated as 10% of the previous year's capital employed. This is intrapolated for 1998-99.

(d) Beginning with JPMorgan's estimate for 1998-99, this is calculated forward by adding annual capital expenditure and subtracting annual depreciation.

(e) EBIT = EBITDA minus depreciation.

(f) Calculated as Optus's pre-tax WACC (**c-i-c**) x capital employed. This **c-i-c** WACC is in the CRA model.

(g) ROCE = EBIT divided by capital employed.

The evidence available to the Commission indicates that losses in Optus's formative years were relatively modest in comparison. According to Optus's submission on the Draft Report in the 2001 review of retail price controls:

> Mobile operators are making substantial losses and not earning their opportunity cost of capital concerning their present investments. For example… [it] 'accumulated losses as at March 31 2000 from the start of its operations in 1992 … [of] $**c-i-c** million'.[378]

Based on this information, the Commission is of the view that it is likely that Optus has accumulated sufficient profits from its GSM mobile business to more than outweigh any initial and ongoing costs it incurred in developing this network.

The Commission notes Optus's view that its 'glide path' has been determined with regard to the 'significant adjustment' in mobile subscription and origination prices needed to implement lower DGTAS prices 'without material negative impact on Optus and its mobile customers'. Optus values these 'lost' revenues at $**c-i-c** million in the first year of the Undertaking period.

The Commission would make three points in response to this.

First, it is important to reiterate in this context that the Commission's MTAS Pricing Principles Determination included an 'adjustment path'. This adjustment path specified that the MTAS price should be decreased by 3 cpm per annum over a 20 month period, towards a target price of 12 cpm. Moreover, as indicated above, this adjustment path was formulated with the legitimate business interests of access providers (including Optus) firmly in mind.

Second, to the extent that Optus is presently making above-normal economic profits, the Commission considers that a regulated reduction in the price of the MTAS will not necessarily automatically result in the need for an increase in the price of retail

[378] Cable & Wireless Optus, *Submission to the Australian Competition and Consumer Commission's Draft Report: Review of Retail Price Controls*,16 January 2001, paragraph 3.9.

mobile services to maintain normal profit levels (as Optus has suggested it will need to do in response to reduced revenues from MTAS). Rather, as outlined in Appendix 5 to this report, the Commission considers that the impact on the price determined for retail mobile services would most likely depend on whether this course of action is profit-maximising.

Third, even if Optus did not elect to increase its retail mobile prices in response to a reduction in MTAS rates, the Commission considers that, irrespective of whether the MTAS price reduction followed the adjustment path specified in the MTAS Pricing Principles Determination or the Undertaking, Optus's legitimate business interests would not be compromised.

In any case, the direct impact on Optus of reductions in MTAS charges in line with the MTAS Pricing Principles Determination (i.e. 3 cpm annual reduction), the Commission considers that any losses incurred by Optus are likely to be small relative to the profits generated by its GSM mobile business. That is, far from threatening Optus's ability to earn a reasonable return on its capital employed, the Commission considers that a 3 cpm reduction in the price of the MTAS is unlikely to affect Optus's existing substantial excess of EBIT over its own cost of capital.

While Optus is currently a net receiver of terminating minutes, its surplus of terminating 'in-payments' over terminating 'outpayments' is not significant enough for the reduced MTAS charges to pose a significant threat to its revenues.

For 2005, the Commission estimates that the net direct effect on Optus's EBIT from a 3 cpm reduction in the MTAS termination charge received and paid would be around $40 million, or about 4 per cent of its Mobiles EBIT in 2004-05. When expressed in terms of the impact in excess of that made by Optus's Undertaking price (19.25 cpm rather than 18 cpm), this falls to just $17 million, or less than 2 per cent of mobiles EBIT in 2004-05.[379] The ROCE would be in the high forties rather than over **c-i-c** per cent, and it would still be roughly four times Optus's estimated WACC. The impact would grow in 2006 and 2007, but would still be small relative to current levels of profits.

Further, based on the information available to it, the Commission considers that lower access prices in line with alternative price paths that involve faster reductions in MTAS prices would, to a point, have a relatively minimal impact on Optus's ROCE, which would remain as a **c-i-c** of Optus's WACC. That is, the prospective losses from a greater reduction in MTAS charges could likely be absorbed by Optus over the Undertaking period without an appreciable impact on Optus's substantial above-normal economic profits.

Overall, therefore, in the context of this Undertaking assessment, and the application of the 'with and without test', the Commission considers that the implementation of Optus's proposed price terms and conditions would allow Optus to set a price that more than recovered its underlying TSLRIC+ of providing the MTAS (inclusive of a normal profit). Therefore, the Commission believes that the Undertaking price terms and conditions are greater than those necessary to ensure that Optus's legitimate business interests are met.

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[379] These estimates are consistent with those made by Paul Fletcher in a *SingTel Optus Regulatory Update* made to Australian Stock Exchange in March 2005.

In the first instance, and for reasons set out in Chapters 5 – 9 of this report, the Commission believes the Optus price terms and conditions are based on a pricing principle which is likely to be inappropriate for this service. In this regard, the Commission believes that a TSLRIC+ pricing principle would be more appropriate for determining a long-term target price for the service that would ensure Optus's legitimate business interests are not compromised. In this regard, the Commission notes that the CRA model implies that the TSLRIC+ of providing the DGTAS on Optus's network is **c-i-c** cpm. As outlined in Chapter 5 of this report, however, the Commission believes this estimate is still likely to overstate the true TSLRIC+ of providing the service on Optus's 2G GSM network.

Further, even if the Commission accepted that a price estimated according to the FL-LRIC++ principle was appropriate in order to meet the legitimate business interests of Optus in the long-term, the Commission believes that Optus's 17 cpm estimate of the FL-LRIC++, upon which the Undertaking is based, results from a model that is populated with some inappropriate assumptions and inputs. Accordingly, the Commission believes the true FL-LRIC++ of providing the MTAS on its network is likely to be substantially below 17 cpm. Accordingly, the Commission believes that a price of 17 cpm is more than is necessary to meet Optus's legitimate business interests.

Further still, the Commission believes that even if 17 cpm was an appropriate price for the DGTAS in the long term, it would not be necessary for the adjustment path towards that price to be as slow, and involve as many steps, as that specified in the price terms and conditions in the Undertaking. Rather, the Commission believes Optus's legitimate business interests would still be preserved if price reductions for the MTAS were larger than those proposed by Optus such that 17 cpm was reached earlier than 1 January 2007, as proposed in the Option 1 price terms in the Undertaking. Similarly, the Commission believes that faster attainment of the end point of the Optus price path in Option 2 would also meet Optus's legitimate business interests.

The Commission considers that in the event that the Undertaking was rejected, Optus's legitimate business interests would not be compromised. Further, the Commission also believes that the lower MTAS prices that are likely to emerge if the Undertaking were rejected would ensure that Optus's legitimate business interests are not compromised and may in fact continue to be more than protected.

10.4. The interests of persons who have the right to use the declared service

Consideration of the interests of persons who have rights to use the MTAS includes consideration of the ability for access seekers to compete for the custom of end-users on the basis of their relative merits. Terms and conditions favouring one competitor, or class of competitors, over another may distort the competitive process and harm the interests of persons who have rights to use the MTAS.

In having regard to this criterion, the Commission will apply the 'with and without test'.

10.4.1. Optus submission

Optus submits that the Undertaking pricing options promote the interests of access seekers because they are consistent with the rates that, it expects, would have been arrived at through commercial negotiations. Optus argues that its proposed Undertaking rates are below those that it would expect to agree commercially with Telstra based on a trend line it applied to MTAS charges that were commercially agreed between the two parties since 1 July 2000. Optus also submits that it has conducted imputation testing that demonstrates that the interest of access seekers criterion is satisfied.

Further, Optus submits that the pricing structures offered in the Undertaking, particularly Option 2, allow access seekers to pass-through substantial reductions in the per minute termination rates to end-users in retail FTM prices. Optus submits that the Option 2 pricing structure provides a commercial opportunity to access seekers to lower the average termination rate by growing 'minutes per subscriber'.

10.4.2. Submitters' views

Hutchison submits that the Undertaking prices are not in the interests of access seekers, as a high MTAS charge discourages access seekers from reducing their retail prices. Hutchison argues that by lowering retail prices, access seekers will increase demand for retail services which in turn requires the access seeker to acquire more of the MTAS from other networks. This, Hutchison submits, creates or exacerbates a traffic imbalance between the access seeker and the access provider, thereby discouraging access seekers from expanding their businesses through lower retail prices.[380]

Telstra submits that the price terms and conditions are unreasonable because they are not in the interests of those who have a right to use the declared service.[381] Specifically, Telstra submits that the adjustment path proposed in the Undertaking is not necessary to protect Optus's legitimate business interests and will not be in the LTIE – because it will delay the benefits of competition in downstream markets. Instead, Telstra supports an adjustment path which has a large initial reduction in the price of the MTAS, followed by smaller incremental reductions.[382] Further, Telstra submits that the Option 2 prices provide no efficiency benefits because the fixed and variable components of the pricing structure bear no relationship to the fixed and variable costs of supplying the MTAS. Also, Telstra submits that the fixed cost is not actually fixed, since it is determined by minutes of use.[383]

10.4.3. Commission view

As already noted in this chapter, the Commission believes that, in the absence of regulation, MNOs (such as Optus) are not constrained in their pricing decisions for the MTAS. Indeed, the Commission considers that possession of market power over the calls that terminate on their mobile networks means that MNOs (such as Optus) have both the ability and incentive to price the MTAS substantially above-cost. This, in turn, raises the costs of access seekers who purchase the declared service.

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380 Hutchison submission, p. 15.
381 Telstra submission, p. 3.
382 Telstra submission, p. 5.
383 Telstra submission, p. 8.

In some respects, and assuming that MNOs charge each other reciprocal MTAS rates, raising the cost of the MTAS above its underlying cost might be thought to have a competitively-neutral effect. However, the relative impact on each MNO is complicated by the fact that some MNOs only own a mobile network, while others own both a mobile network and fixed-line network. In effect, this means that some MNOs are 'net receivers' of MTAS revenues (i.e. revenue received from its providing the MTAS outweighs what it must pay other MNOs for the MTAS) while some are 'net payers' of MTAS. Moreover, some access seekers for Optus's DGTAS will only own a fixed line network, meaning that, in effect, they could always be considered as 'net payers' of the MTAS.

In essence, therefore, there are four different types of access seekers with respect to Optus's DGTAS which are relevant for consideration under section 152AH(1)(c) of the Act:

- Telstra as an integrated fixed-line and mobile operator;
- Hutchison as a mobile-only network operator;
- MVNOs, such as VMA, that purchase wholesale network capacity from a MNO, such as Optus, and operate their own switching, billing, voicemail and SMS platforms; and
- AAPT, Primus and other fixed-line only operators.

Given this, it should be acknowledged in this context that a regulated (or otherwise) reduction in MTAS rates is likely to affect different access seekers in different ways, and by different magnitudes depending on whether they own a mobile or fixed network (or both) and the mix of their incoming and outgoing traffic on those networks. The effect on these access seekers can also be expected to differ over time as traffic levels to and from mobile and fixed networks adjust in response to changes in the MTAS rate. For example, and as elaborated on below, the Commission expects that a reduction in the MTAS rate is likely to be passed through to end-users in the form of lower FTM retail rates. This, in turn, is likely to increase demand for FTM services, and consequently, the MTAS. Hence, whilst a reduction in the MTAS rate may initially result in lower MTAS revenues for mobile-only operators and MVNOs – and a net revenue reduction – in the longer term such MTAS rate reductions may well give rise to greater MTAS revenues for mobile-only operators and MVNOs as a result of increased demand for FTM services.

It is also important to note that Optus, as an integrated fixed and mobile operator, has the ability and incentive to raise the costs of rival FTM service providers that only operate fixed-line networks, through raising the cost of the MTAS above its underlying cost. This is because the MTAS is purchased as a direct input by fixed-line operators when they wish to supply a FTM call. Importantly, and as noted previously in this chapter, the existence of above-cost MTAS rates inhibits the ability of these fixed-line only operators to compete in the market within which FTM services are provided. This is because, in many instances, they will face rates for the MTAS substantially above those faced by their competitors which own their own mobile network. In the Commission's view, therefore, the existence of above-cost FTM rates constrains competition in the market within which FTM services are provided.

For this reason, the Commission believes that a closer association of the price and the underlying (TSLRIC+) cost of the MTAS will allow equally or more efficient FTM

providers to place more competitive pressure on integrated providers of FTM services to improve their own efficiency and reduce the FTM prices paid by their own consumers.

As detailed in Chapters 5 – 9 of this report, the Commission considers that there is a significant difference between the TSLRIC+ of providing Optus's DGTAS to access seekers and the proposed target prices that Optus proposes to offer to access seekers – noting also that Optus is proposing a lengthy adjustment path to this target price. Given this, the Commission does not believe that the proposed Undertaking pricing structures will achieve, or even promote, a more competitively-neutral outcome in the market within which FTM services are provided, as compared to the situation that the Commission believes would be more likely to arise if the Commission rejected the Undertaking.

Further, the Commission does not believe that Optus's submissions regarding the promotion of the interests of access seekers go any way to showing that the Undertaking pricing options will promote or achieve a competitively neutral outcome in the relevant downstream markets, and particularly the market within which FTM services are provided. It holds this view for two main reasons.

Firstly, the Commission notes that the commercially-agreed rates referred to are those agreed between Optus and another integrated fixed and mobile provider (namely, Telstra).

Secondly, the Commission believes that MNOs are not constrained in their pricing decisions for the MTAS. Hence, an extrapolation of the likely price that would be agreed commercially between two providers of MTAS (that both have the ability and incentive to raise the price of this service above its underlying cost of production) is above the proposed pricing options in the Undertaking is not indicative of an outcome that is likely to promote competitive neutrality amongst all providers in all relevant downstream markets.

Overall, the Commission believes a price for the MTAS equal to (or in the range of) the TSLRIC+ of providing the service would be more likely to be in the interests of persons that have a right to use the declared service than Optus's proposed price terms and conditions. For the reasons set out in Chapters 5 – 9 of this report, the Commission believes neither of the pricing options contained in the Undertaking represent pricing options consistent with the TSLRIC+ of providing the DGTAS.

Further, even if a price equal to the FL-LRIC++ of providing the DGTAS were considered consistent with that which would be in the interests of persons that have a right to use the declared service, the Commission believes the model developed by CRA to estimate this price has a number of methodological flaws and is populated with inappropriate input parameters. As a result of this, the Commission believes the true FL-LRIC++ of providing the DGTAS on Optus's GSM network would be likely to be substantially below that specified in the price terms and conditions in the Undertaking.

Accordingly, the Commission believes the interests of persons that have a right to use the declared service would be better promoted if the Undertaking were to be rejected as compared to the situation that would likely arise if it were to be accepted.

10.5. The direct costs of providing access to the declared service

In having regard to this criterion, the Commission does not consider that it would be useful to apply the 'with and without' test.

10.5.1. Optus's view

Optus submits that the inclusion of this criterion is to ensure that access providers are compensated for the cost of providing access to the declared service and that access prices are not inflated by the access provider to recover any increase in costs arising from an increase in competition that access has facilitated. Optus also submits that, in setting its Undertaking pricing options on a top-down cost model based on providing the DGTAS on its GSM network, it has proposed prices that are consistent with the direct costs of providing the Undertaking service.[384]

10.5.2. Submitters' views

Hutchison submits that 'direct costs' can either mean the costs that an efficient forward-looking technology would incur, or alternatively, the actual subjective costs of the access provider. If the former, Hutchison submits that the actual subjective costs are irrelevant to the Commission's consideration. However, if the latter, then Hutchison submits that Optus's costs need to be viewed in the absence of any mark-ups. As Optus has not specified that component of its undertaking price that represents its actual subjective costs, Hutchison submits that the Commission is unable to consider this statutory factor. Further, Hutchison submits that its calculations suggest that when fixed costs are allocated according to the Commission's usual EPMU approach, Optus's actual subjective costs remain below 12 cpm.[385]

10.5.3. The Commission view

As already indicated in this report, the concept of the 'direct' costs of providing access to a declared service encompasses those that are necessarily incurred (or caused) by the provision of access. At a minimum, in this context, the phrase 'direct costs' is interpreted to mean that an access price should cover the direct incremental costs incurred in providing access. It does not, however, extend to receiving compensation for loss of any 'monopoly profits' that occurs as a result of increased competition. In this regard, the Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 states:

> … 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.[386]

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384 Optus submission, p. 31.

385 Hutchison submission, p. 15.

386 Explanatory Memorandum to the Trade Practices Amendment (Telecommunications) Bill 1996, p. 44.

This is also set out in the Commission's Access Pricing Principles which note that an access price should not be inflated to recover any profits the access provider (or any other party) may lose in a dependent market as a result of the provision of access.[387]

With respect to this particular Undertaking assessment, the Commission notes that Optus's estimate of its own incremental cost (or FL-LRIC) of providing the DGTAS in 2004-05 appears to be **c-i-c** cpm. In addition to this incremental cost, Optus proposes that two-mark-ups should be added in order to determine an appropriate price for this service; a **c-i-c** cpm mark-up for the recovery of FCCs based on R-B principles and a 2.12 cpm mark-up for the inclusion of a NES.

In relation the FL-RIC estimate, as indicated in Chapter 5 of this report, the Commission also believes that the CRA model is likely to overstate the FL-LRIC of providing the MTAS on Optus's 2G DGTA network. For this reasons outlined in Chapter 5, therefore, the Commission considers that **c-i-c** cpm is likely to represent, at the very best, and upper bound on the efficient costs of providing the MTAS in Australia.

In relation to the R-B mark-up, the Commission considers that it is unclear whether an interpretation of 'direct costs' in this context should necessarily include consideration of the recovery of common costs. To the extent it does, however, the Commission believes common costs should be recovered according to an EPMU rule rather than R-B pricing principles, for the reasons outlined in considerable detail in Chapter 6 of this report. That said, even if the Commission were to be convinced that it should consider R-B pricing principles for recovering relevant common costs when having regard to the 'direct costs' of providing the MTAS, as outlined in Chapter 6, it has significant concerns with the way in which CRA has estimated this mark-up. These concerns have led the Commission to the view that the CRA model is likely to overestimate the empirical magnitudes of the R-B mark-up, even if the Commission agreed that they were relevant and/or appropriate at a conceptual level.

In relation to the NES, the Commission's view is that it is not relevant to the direct costs of providing the MTAS. That is, the Commission notes that the NES is not a 'cost', but rather relates to the re-structuring of prices in an attempt to account for a relevant externality benefit.

Taken in combination, these issues lead the Commission to believe that Optus's direct costs of providing the MTAS are likely to be substantially lower than both the target price terms offered in Option 1 and Option 2 of the Undertaking.

The Commission notes Hutchison's submissions regarding the possible meanings of the phrase 'direct costs'. The Commission believes that even if one considers that section 152AH(1)(d) of the Act refers to the direct costs of a hypothetical efficient firm using forward-looking 'best in use' technology, Optus's submissions regarding its direct costs of supplying the DGTA provides further (and therefore relevant) information about what any such direct costs of a hypothetical operator might be. Irrespective of which definition of the two proposed by Hutchison is applied when assessing the Undertaking against the 'direct costs' of providing the service, the

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[387] In particular, the Efficient Component Pricing Rule (ECPR) may be inconsistent with this criterion. The ECPR bases price on the incremental cost of providing the access service plus the opportunity cost of foregone profits from losing business in related markets.

Commission considers the price terms and conditions in the Undertaking are likely to be substantially higher than the direct costs of providing the MTAS on Optus's 2G DGTA network.

10.6. The operational and technical requirements necessary for the safe and reliable operation of the carriage service/telecommunications network/facility

The Commission's view is that an access price should not lead to arrangements between access providers and access seekers that encourage the unsafe or unreliable operation of a carriage service, telecommunications network or facility. This criterion is usually more relevant to consideration of non-price terms and conditions.

Optus submits that its Undertaking offers an operationally and technically feasible service.

The Commission has received no submissions that suggest that there is any risk that the price-related terms and conditions of the Undertaking could lead to unsafe or unreliable operation of a carriage service, telecommunications network or facility.

10.7. The economically efficient operation of a carriage service/telecommunications network/facility

Like the test described under the 'efficient use of, and investment in, infrastructure' LTIE criterion, this criterion also relates to the productive and allocative efficiency of a proposed undertaking. An undertaking should encourage access providers to select the least-cost method of providing the service and provide those services most highly valued by access seekers.

For the reasons outlined above under the 'efficient use of, and investment in, infrastructure' LTIE criterion, the Commission considers that the economically efficient operation of a carriage service/telecommunications facility would be more likely to be promoted if the Commission rejected the Undertaking than would be the case if the Commission were to accept it.

10.8. Other matters

The Commission did not have regard to any other matters in determining whether the terms and conditions are reasonable as permitted by section 152AH(2).

10.9. Overall conclusion on the price terms

Having had regard to the criteria in section 152AH(1) of the Act the Commission has concluded as follows.

The Commission believes that acceptance of the Undertaking would, as compared to the situation likely to occur if it were rejected, be less likely to promote the LTIE, as it is less likely to promote competition in the market within which FTM services are provided, and the market within which retail mobile services are provided, and is likely to lead to less efficient use of, and investment in, the infrastructure used to provide fixed services, the DGTAS on Optus's GSM network (and the MTAS generally) and retail mobile services.

The Commission believes that the prices proposed in the Undertaking are greater than what is necessary to protect the legitimate business interests of Optus and its

investment in facilities used to supply the DGTAS. The Commission also believes that Optus's legitimate business interests will not be compromised (and may in fact continue to be more than protected) if the Undertaking were to be rejected.

The Commission believes that acceptance of the Undertaking would, as compared to the situation likely to occur if it were rejected, be less likely to promote the interests of persons who have a right to use the DGTAS.

The Commission believes that the proposed prices set out in the Undertaking are above what is necessary to recover the direct costs Optus faces in providing access to the MTAS in the relevant period.

The Commission believes that the price terms and conditions in the Undertaking will not lead to arrangements between access providers and access seekers that encourage the unsafe or unreliable operation of a carriage service, telecommunications network or facility.

The Commission believes that acceptance of the Undertaking would, as compared to the situation likely to occur if it were rejected, be less likely to promote the economically efficient operation of a carriage service/telecommunications network/facility.

Overall, therefore, the Commission is of the view that the price terms and conditions in the Undertaking are not reasonable.

11. The 'reasonableness' of the non-price terms and conditions

As noted previously, determining whether the terms and conditions of the Undertaking are reasonable must include an assessment of both the price and non-price terms and conditions taken as a whole. This chapter considers the reasonableness of the non-price terms and conditions. An overview of the non-price terms and conditions of the Undertaking is provided in section 4.3 of this report.

It will be noted that some of the criteria set out in section 152AH(1) of the Act are not particularly directed at the non-price terms and conditions. For instance, the criterion dealing with the 'direct cost' of providing access to the declared service, and the economically efficient operation of a carriage service appear more relevant to considering the price terms and conditions. There are, however, a number of criteria that lend themselves to consideration from a non-price perspective. These, and how they are relevant to the non-price terms and conditions, are discussed more fully below.

11.1. Relevant criteria

11.1.1. Whether the terms and conditions promote the LTIE

As previously discussed, the Act requires the Commission to have regard to whether the terms and conditions promote the LTIE. The three elements of the LTIE have been discussed elsewhere in this report. With respect to the element concerning the 'promotion of competition', the Commission notes that an important benchmark in this regard is the consistency of the proposed terms of access with the principle of non-discriminatory access between downstream suppliers of the Optus DGTAS. Ultimately, a proposal for access must represent an opportunity for effective access by an access seeker to the particular service. More broadly, an effective form of access should lead to the promotion of competition, lead towards achieving any-to-any connectivity and also contribute toward the efficient use of, and investment in, infrastructure.

11.1.2. Legitimate business interests of the Carrier/CSP and its investment in the facilities used to supply the declared service

This criterion requires the Commission to take into account the legitimate business interests of the access provider. In relation to the non-price terms and conditions, the Commission views this criterion as requiring an assessment of the broader commercial interests of the access provider in conducting its own business affairs. An access provider, as an owner or controller of particular facilities, should not, simply because it is under an obligation to provide access to its service, be unduly compromised in the conduct of its own legitimate business interests. For instance, an access provider must have the right to make reasonable decisions about modifications and upgrades to its network or the right to set reasonable requirements for billing and the payment of accounts. Generally speaking, an access provider is entitled to have some legitimate control over its relationship with an access seeker to the extent reasonably required to protect its business concerns.

11.1.3. Interests of the persons who have rights to use the declared service

This criterion requires the Commission to take into account the interests of persons who have rights to use the declared service. In this regard, the Commission's focus is not on any one particular access seeker, but all potential access seekers who may seek to use the declared service.

The Commission's approach is to recognise that simply because an access provider is the owner or controller of a facility and provider of the particular service, this does not mean that the provider can dictate the terms of access such that the form of proposed access does not represent a commercially feasible business model for the access seeker. This is about ensuring that the ability of an access seeker to compete in the supply of a service in a dependent market is based on the cost and quality of its service relative to its competitors rather than about ensuring that an access seeker is able to conduct a profitable business. As noted above in terms of non-discriminatory treatment of downstream users, an access seeker should not be subject to overly onerous commercial terms simply because of its status as an access seeker.

On this basis, from a non-price perspective, the Commission would, for example, expect an access seeker to receive reasonable treatment in relation to payments and creditworthiness matters and not be subject to unjustified intrusion into its business affairs , face unwarranted, suspension of services or be compromised in other facets of business where its customer relationship may be impacted.

11.1.4. Operational and technical requirements necessary for the safe and reliable operation of the carriage service, network or facility

Similar to the criterion relating to the legitimate business interests, this criterion requires the Commission to take into account the need for the safe and reliable operation of a network or facility. An access provider will generally seek to have in place operations and procedures designed to ensure the integrity of a network or facility is not harmed. Non-price terms and conditions such as these are considered necessary and essential to safeguard the business interests of both the provider and access seeker, provided they are reasonable. In this regard, the Commission would be concerned to ensure that any non-price terms and conditions, purportedly in relation to the safe operation of a network, are not used as a barrier to effective access.

11.1.5. Other relevant matters

The Commission is not limited in its assessment of reasonableness to these criteria but may consider other matters relevant to the reasonableness of the non-price terms and conditions.

The Commission considers there to be some common themes or indicia arising from these statutory criteria that serve as a useful guide to the Commission's assessment of the non-price terms and conditions. They are as follows.

A non-price issue may arise in relation to **timeliness**. That is, the time it takes for an access seeker to obtain access or any other matter related to access. This will include an assessment of the process an access seeker must negotiate to obtain access.

Intertwined with this concept is the issue of **delay** or **potential for delay** in providing access. Unreasonable delay is tantamount to no access. In relation to the above issues, the Commission will look at conditions that specify timeframes and

preconditions that may attach to timeframes in the context of what potential obstacles to access may exist.

As the undertaking will govern the terms and conditions of access and form the basis on which the provider will satisfy the applicable SAOs, there should be **certainty** in the terms of the agreement. This certainty should be reflected in the technical and non-technical aspects of the agreement. Silence or lack of clarity in an agreement may deprive an agreement of certainty. The undertaking has to provide certainty on the face of the agreement. That is, it should not have to require the Commission to make inquiries to seek clarification as to the intended terms and operation of an agreement.

The Commission is generally concerned to see that an undertaking (if it deals with dispute resolution) has clear and decisive mechanisms for resolving disputes in a timely manner, especially since an access seeker will not be able to avail itself of the arbitration route once an undertaking is accepted.

Encompassing all of the above matters are the concepts of **fairness** and **balance**. As noted above, the criteria requires the Commission to have regard to the interests of both the provider and access seeker. Accordingly, an undertaking should reflect the balanced rights of these parties. In this regard, terms and conditions that tend to unfairly treat an access seeker, in comparison to the rights of an access provider, might be regarded as unreasonable.

In deciding whether particular non-price terms and conditions are reasonable, the Commission will to some extent also be guided by any applicable ACIF Codes relevant to the matters under consideration, as well as having regard to current industry norms and practices.

The reasonableness of the non-price terms and conditions are assessed on this basis.

11.2. Assessment of the non-price terms and conditions

11.2.1. Optus's overall view as to reasonableness

Optus submits that the non-price terms and conditions in the Undertaking are reasonable, satisfy the statutory criteria, and should therefore be accepted by the Commission. In its view, this is because they are based on the Telecommunications Access Forum (TAF) Code (which has been recognised as the standard default terms and conditions for access), are commercially reasonable and are accepted as good industry practice and the SAOs provide a sound basis for equivalent access, quality and timing.[388]

In response to the draft decision, Optus makes the point that the Act does not require that an undertaking specify all the terms and conditions of access to a declared service.[389] In this regard, Optus has deliberately only specified some of the terms and conditions of access while others terms are to be later developed and/or agreed between Optus and the access seeker if and when the Undertaking comes into operation. Optus points out that it currently provides the MTAS to a large number of access seekers under existing agreements that reflect the wider set of terms and

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[388] Optus submission, p.42.

[389] See Note to section 152BS(1) of the Act.

conditions not specified in the Undertaking, and that, to its knowledge, it 'has not had difficulties in settling these terms with access seekers…'.[390]

11.2.2. Submitters' overall views as to reasonableness

Hutchison submits that the non-price terms and conditions contained in the Undertaking are generally not reasonable since they do not sufficiently protect the interests of access seekers. Furthermore, Hutchison believes that it would not agree to these terms and conditions as part of normal commercial negotiations.[391]

Likewise, Telstra submits that a number of the non-price terms and conditions are unreasonable because they are not in the LTIE, nor in the interests of persons who have a right to use the declared service.[392]

11.2.3. Commission assessment of specified non-price terms and conditions

This section contains interested parties' views on specific non-price terms and conditions and the Commission's assessment of these provisions. It focuses on those non-price terms and conditions of most significance and concern to the Commission.

Commencement and duration

Clause 2.3 of the Undertaking provides that:

> If an agreement under which the (DGTA) is being supplied by Optus expires on or before 31 December 2004 and Optus continues to supply the (DGTA), the prices set in Schedule 2 will apply in respect of the continued supply of the (DGTA) supplied on and from 1 January 2005.

Telstra submits that the aim of this clause is to apply the Undertaking pricing structure proposed by Optus, prior to the acceptance of the Undertaking by the Commission, regardless of any contractual arrangements that exist between Optus and access seekers. Telstra submits that this clause is unreasonable since there is no provision within Part XIC of the Act for the retrospective application of the terms of an Undertaking which has been accepted by the Commission. In this context, Telstra refers to subsection 152BS(10) of the Act which provides that the terms and conditions of an undertaking may be expressed to come into effect after the undertaking is accepted, or at a later time in accordance with the undertaking.[393]

The Commission concurs with Telstra's view as to there being no provision in the Act for the retrospective operation of the Undertaking. All clauses in the Undertaking should be expressed to take effect from the date of acceptance at the earliest and should not purport to have retrospective effect. This (significant) concern would appear to extend to clauses 2.3 and 2.4 of the Undertaking.

Schedule 1 – Service description

As noted in Chapter 5, Hutchison has expressed concern that the Undertaking relates to a subset of the declared MTAS as it does not cover voice termination on 3G networks.

The Commission does not have a concern with the fact that the Undertaking relates to a sub-set of a declared service. In terms of the appropriateness of this term, the

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390 Optus submission in response to draft decision, p. 46.
391 Hutchison submission, p. 18.
392 Telstra submission, p. 3.
393 Telstra submission, p. 6.

Commission notes that the Optus DGTAS is an end-to-end service for the carriage of voice calls from a point of interconnection (POI) or potential POI, to a B-Party directly connected to the Optus GSM network. The POI being the demarcation between the access seeker's network and Optus's network and the B-Party being the end-user to whom a telephone call is made. In this regard, it can be said that the Optus DGTAS to be supplied pursuant to the terms of the Undertaking is in the LTIE to the extent that it promotes the objective of achieving any-to-any connectivity in relation to carriage services involving communications between end-users.

Schedule 3 – Terms and conditions of access to the Optus DGTAS

Non-discrimination

The non-discrimination provisions of clause 3 are significant. In general terms, they commit Optus to the non-discriminatory treatment of access seekers in relation to:

- the supply of the Optus DGTAS as required by the applicable SAOs;
- the technical and operational quality of the service; and
- fault detection, handling and rectification of a technical and operational quality and timing equivalent to that to which Optus supplies itself.

As indicated at the outset of this chapter, the Commission considers the benchmark for the promotion of competition in downstream markets to be the extent to which an access seeker obtains non-discriminatory treatment in the provision of the declared service.

As a binding statement of intent, the Commission considers that such principles can be viewed as reasonable in that they would, if implemented, promote the LTIE to the extent that they would promote competition in markets for listed carriage services and, in particular, remove obstacles to end-users of listed services. Further, the principles of non-discrimination would also represent a means of encouraging the economically efficient use of infrastructure and serve to better the interests of persons who have rights to use the declared service.

Access Services

Clause 5.1 of Schedule 3 of the Undertaking has raised the concern of some interested parties. Clause 5.1 provides:

> Optus will only be required to provide the Optus DGTAS to the Access Seeker to the extent that the Access Seeker has complied with the Interconnect, Ordering and Forecasting Procedures in respect of the Optus DGTAS and has requested, paid for and been provided with sufficient interconnection under the Service Agreement.

Hutchison submits that this only requires Optus to provide the MTAS where the originating operator 'has been provided with sufficient interconnection under the Services Agreement'. Hutchison argues that Optus itself would generally be supplying this interconnection capacity and that if it is unable to supply interconnection capacity, it would be relieved of its obligation to supply the MTAS. Hutchison considers that the linking of unrelated services is unreasonable.[394]

Telstra submits that clause 5.1 is unreasonable since Optus's compliance with the SAOs is dependent upon procedures – the *Interconnect Forecasting and Procedures*

[394] Hutchison submission, p. 18,

(Procedures) – which are not part of the Undertaking. Telstra further states that since the Procedures have not been released by Optus, it cannot verify whether they are reasonable. In its view, such a provision fails to appropriately balance the interests of the access provider and the access seeker.[395]

On 19 August 2005, the Commission wrote to Optus seeking further information about whether Optus would generally be supplying the interconnection capacity referred to in this context, and if not, who it would generally come from.[396] Optus responded to the Commission's request for further information about the provision of interconnection under the Services Agreement by stating that:

> In relation to Hutchison's arguments which are referred to on page 4 of the Commission's letter of 19 August 2005, interconnect capacity will be supplied by Optus according to the terms of the Services Agreement. If the Access Seeker has complied with the *Interconnect, Ordering and Forecasting Procedures* and other relevant terms and conditions of supply, such as the payment of applicable charges, then Optus will provide such supply. As discussed earlier, if the parties are in dispute about the *Interconnect, Ordering and Forecasting Procedures* then, the access seeker can notify a dispute and seek the Commission to arbitrate the matter.[397]

Pursuant to clause 5.1, Optus is only obliged to supply the Optus DGTAS to the access seeker if, *inter alia*, the access seeker has paid for and been provided with sufficient interconnection under the Services Agreement. It seems to the Commission from Optus's response, that Optus would be providing that sufficient interconnection. On its face, therefore, if Optus decided that it was not prepared to provide the access seeker with sufficient interconnection, it would be impossible for the access seeker to meet the requirements of clause 5.1 of Schedule 3 of the Undertaking.

As a consequence, this clause would appear to place complete control of the ability of an access seeker to meet the precondition for the supply of the Optus DGTAS under clause 5.1 in the hands of Optus itself. The Commission is concerned with a clause that requires an access seeker to meet a precondition before there can be supply of the service where its ability to meet that precondition rests with the access provider. In the Commission's view, this clause represents a potential obstacle to access which could be used to deny or at least hinder supply of the DGTAS, should Optus be unwilling to provide the interconnection required.

As Telstra has observed, this situation is compounded by the fact that supply is dependent on compliance with the Procedures, which have not been determined as yet and therefore are not available to the Commission at the time of assessing the Undertaking (see below). As a result, the Commission has significant doubts about the reasonableness of this term.

Term, suspension and termination

Technical failure

Clause 6.2 allows Optus to suspend the service by giving a 'Suspension Notice' to the access seeker within 20 business days of becoming aware of the 'Suspension Event'. A 'Suspension Event' includes, *inter alia*, any technical failure, modification or maintenance involving the service (clause 6.2(a)). Under clause 6.4, if the access seeker fails to institute remedial action as specified in the 'Suspension Notice' within

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395 Telstra submission, pp. 9-10.
396 Letter from the Commission to Optus, 19 August 2005, p. 4.
397 Optus, Letter to ACCC, 20 September 2005, p. 8.

20 business days after receiving the notice, Optus may refuse to provide or suspend the service and proceed to terminate the service if the notice has been in force more than 30 business days.

It is clear from these provisions that the consequences of not complying with a 'Suspension Notice' due to a 'Suspension Event' are serious for the access seeker as it can result in termination of the service.

The Commission believes that the technical failure, modification or maintenance which created the 'Suspension Event' must be linked to the fault of the access seeker. For instance, a mere technical fault not attributable to the access seeker should not be used to penalise an access seeker by a 'Suspension Notice' and, thereafter, possible termination. The Commission believes that a more balanced approach would be achieved if clause 6.2(a), which constitutes the 'Suspension Event', is worded so that it applies only to a technical failure, modification or maintenance caused by the access seeker. As a result, the Commission has significant doubts about the reasonableness of this term, in its present form.

Breach of Services Agreement

Telstra submits that clause 6.2(e) is unreasonable since it allows Optus to suspend the service '*if the access seeker breaches a term of the Services Agreement'* without any form of materiality threshold. Telstra submits that it goes beyond the legitimate interests of the access provider to be able to suspend a service for a breach that may be of no material effect.[398]

The Commission notes the broad nature of Optus's discretion built into clause 6.2(e), and would be concerned if an access seeker were denied the service owing to a relatively minor breach of the Services Agreement. This is of particular concern since the terms of Services Agreement are unknown. Clauses such as 6.2(e) can be used by access providers to unreasonably disrupt and deny access to services and basically present an obstacle to effective access. Overall, the Commission does not consider that the clause reflects a reasonable balance of the legitimate business interests of Optus with those of the access seeker.

Reasonable endeavours

Hutchison submits that interconnection agreements generally impose an obligation on the access provider to use 'reasonable endeavours' to re-route a service if supply is suspended due to modification or maintenance of the service. Hutchison notes that the Undertaking does not contain a reasonable endeavours requirement to re-route the service which could result in the service being interrupted for longer than necessary.[399]

This comment would appear to be relevant to clause 6.8 dealing with temporary suspensions of the service due to maintenance. It is noted that clause 6.8 does require Optus to give reasonable notice of the temporary suspension of service as well as the date and approximate period of suspension. It is noted, however, that there is no proposal for re-routing of a service during maintenance periods.

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398 Telstra submission, p. 10.
399 Hutchison submission, p. 18.

Immediate termination

Telstra makes the general submission that clause 6.10 of Schedule 3 of the Undertaking allows Optus to immediately terminate a Services Agreement for the supply of the DGTAS in a number of situations where, in Telstra's view, termination would be unreasonable or unlawful.[400] The Commission assesses these and other termination clause concerns below.

Termination upon removal of declaration

Telstra submits that clause 6.10(f) is unreasonable. Clause 6.10(f) provides that the DGTAS will be terminated if Optus's obligation to supply listed carriage services is removed (i.e.: it is no longer declared). Telstra submits that this clause is unreasonable as it does not allow the access seeker reasonable notice of the need to negotiate new DGTA rates, or in extreme circumstances, migrate services after termination, or provide an alternative service to end-users. In Telstra's view, access seekers should be given a reasonable notice period of termination.

The Commission notes that Optus would be entitled to terminate supply of the service should its statutory obligation under Part XIC be removed. However, the Commission does share the above concern in terms of the potential effect immediate termination would have on an access seeker's business. In this regard, the Commission agrees that some reasonable notice of the termination would at least provide the access seeker with some opportunity to make alternative arrangements.

Payment of sums due

Both Hutchison and Telstra raise concerns with clause 6.10(g). This clause provides that Optus may terminate the Service Agreement or the supply of the DGTAS by written notice with immediate effect if the access seeker does not pay any sums due to Optus under the Services Agreement by the due date, within 2 days of receiving notice from Optus.

Hutchison submits that two days is unreasonably short as Optus can then cease supply completely. Hutchison argues that it would not agree to such a term in commercial negotiations.[401] Similarly, Telstra submits that the term is unreasonable because the notice period is too short and inconsistent with industry standards. Further, it submits that such a term is unduly onerous and goes beyond what is required to protect the legitimate business interests of the access provider, and is contrary to the interests of those who have a right to use the declared service. Telstra submits that a 7 – 14 day period would be reasonable.[402]

The Commission believes that two days would seem to be an inordinately short period of time for the payment of sums due – especially where the potential consequence of non-compliance is immediate termination of supply. As a result, the Commission has significant doubts about the reasonableness of this term. .

Termination due to SAOs

Clause 6.10(i) allows Optus to immediately terminate the Services Agreement or supply of the DGTAS if Optus has grounds for refusing to supply the DGTAS to the

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400 Telstra submission, p. 8.
401 Hutchison submission, p. 19.
402 Telstra submission, p. 8.

access seeker in accordance with sections 152AR(4) and (9) of the Act. In summary, section 152AR(4) provides limits on the obligation to supply an active declared service to the extent to which the imposition of the obligation (if any) would have the effect of:

- preventing an existing service provider from obtaining a sufficient amount of the service to meet the provider's reasonably anticipated requirements;
- preventing the access provider from obtaining a sufficient amount of the service to be able to meet the access provider's reasonably anticipated requirements;
- preventing a person from obtaining, due to a pre-request right, a sufficient level of access to be able to meet the person's actual requirements; and
- depriving any person of a protected contractual right.

Section 152AR(9) of the Act does not impose an obligation on an access provider if there are reasonable grounds to believe that:

- the access seeker would fail, to a material extent, to comply with the terms and conditions on which the access provider complies with that obligation; and
- the access seeker would fail to protect the integrity of the telecommunications network or safety of individuals working on or using the network or facility.

Telstra submits that the exceptions to the SAOs do not permit an access provider to terminate a contract in this manner. Rather, they permit an access provider to be partially exempt from the SAOs to the extent necessary to deal with the circumstances listed in those subsections and allow an access provider to refuse an order for the supply of a service where those circumstances arise.

Sub-sections 152AR(4) and (9) of the Act provide exceptions to the SAOs in such a way that they do not appear to necessarily completely absolve an access provider from the obligations that may arise under section 152AR. This would seem to depend upon the circumstances with which the access provider is confronted and the reason for why the obligation might not apply. For instance, under section 152AR(4) of the Act, an access provider may still be required to provide access to a declared service, to the extent that it is able, even though an access provider must honour a pre-request right in order for a third party to meet its actual requirements. In other words, the mere existence of a pre-request right does not provide grounds for the complete non-supply of a service. Under section 152AR(9), a particular obligation might cease where an access seeker would or might fail to comply with that obligation, but other obligations may nevertheless continue to apply.

The Commission believes that clause 6.10 (i) is not worded in such a way that accurately reflects the possible effect of subsections 152AR (4) and (9) of the Act, and therefore termination of a service may be imposed when it is not necessarily statutorily supported. As a result, the Commission has significant doubts about the reasonableness of this term.

Billing and settlement

Payment of invoices

Clause 9.5(a) requires, *inter alia*, that an access seeker pay an invoice in full within 21 days following the date of invoice. Hutchison believes that this requirement is unreasonable and inconsistent with industry practice. Hutchison believes a 30 day payment period to be reasonable.[403] The Commission notes that 30 days appears to be the industry practice. The Commission will generally be guided by industry norms and practices in assessing whether a term is 'reasonable'. As a result, the Commission has significant doubts about the reasonableness of this term.

11.2.4. Non-price terms and conditions not specified in the *Undertaking*

A notable feature of the Undertaking is that it is not intended to be comprehensive and therefore does not specify all the terms and conditions that will govern the relationship between Optus and the access seeker. Accordingly, there are a number of matters that are not addressed within the Undertaking itself. Apart from that, the Commission notes that the Undertaking relies on a range of secondary material that was not submitted to the Commission with the Undertaking at the time it was lodged in late December 2004. Nevertheless, it is clear that these secondary documents will partly govern the access arrangements. The Commission briefly discusses this aspect of the Undertaking.

Services Agreement

Clause 2 – 'Terms of Supply' of Schedule 3 makes the supply of the Optus DGTAS subject to the terms of the 'Services Agreement'. 'Services Agreement' is defined to mean the agreement under which Optus agrees to provide the Optus DGTAS to the access seeker which will include the terms of Schedule 3 of the Undertaking as well as other additional terms negotiated and agreed between the parties or determined by Commission arbitration.

Interconnect, Ordering and Forecasting Procedures

Clause 5.1 of Schedule 3 provides, *inter alia*, that Optus will only be required to provide the Optus DGTAS to the access seeker to the extent that the access seeker has complied with the 'Interconnect, Ordering and Forecasting Procedures' in respect of the DGTAS. The 'Interconnect, Ordering and Forecasting Procedures' mean the 'Interconnect, Ordering and Provisioning Procedures' specified by Optus from time to time.

Dispute resolution

Clause 9.11 provides that the parties will use their reasonable endeavours to resolve billing disputes in accordance with the Dispute Resolution Procedures. Further, an access seeker must not commence legal proceedings or other dispute resolution proceedings in relation to the provision of billing information prior to the completion of the Dispute Resolution Procedures processes (clause 9.14).

The Dispute Resolution Procedures are confined to the billing and settlement procedures. There appears to be no provision for the application of the Dispute

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[403] Hutchison submission, p.19.

Resolution Procedures in other circumstances where dispute may arise, such as in the case of suspension or termination events.

The Commission has no knowledge of how disputes will be resolved as they must be agreed between the parties subsequent to acceptance of the Undertaking or presumably, in the absence of agreement, following arbitration determination by the Commission.

Carrier Interconnect Manual

Clause 12 of Schedule 3 provides, *inter alia*, that the parties will perform their rights and obligations under the Services Agreement strictly in accordance with the 'Carrier Interconnect Manual'.[404]

QOS Standards

Clause 5.2 requires Optus to ensure that the carriage of communications conforms to the applicable QOS Standards. QOS Standards means the agreed quality of service standards set out in the Carrier Interconnect Manual.

Operations and Maintenance Procedures

Similarly, clause 13.3 obliges the parties to manage their networks and restore their carriage services as soon as reasonably practical in accordance with the 'Operations and Maintenance Procedures'. 'Operations and Maintenance Procedures' refers to the operations and maintenance procedures specified by Optus from time to time.

Commission request for further information

On 19 August 2005, the Commission wrote to Optus pursuant to section 152BT of the Act, seeking further information from Optus in relation to the above matters, and specifically requesting that it be furnished with any manual, procedures and other such information that may exist relevant to the Undertaking.[405]

Optus responded to the Commission's request for further information by stating that:

> All the terms and conditions that are not specified in the Undertaking will be negotiated separately between the parties, with the Commission's role being limited to the arbitration of disputes that may arise from such negotiations.
>
> This includes secondary documents such as the *Interconnect, Ordering and Forecasting Procedures*, *Carrier Interconnect Manual* and the *Operations and Maintenance Procedures* identified in the Commission's letter of 19 August 2005 and which are cross referred to in the Optus Undertaking.[406]

As a result, no further documents were supplied to the Commission pursuant to the information request of 19 August 2005.

The Commission understands from this response that, at this time, there is no Services Agreement in existence and that the Services Agreement envisaged under clause 2 of Schedule 3 of the Undertaking is to be negotiated between Optus and an access seeker at the appropriate time.

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404 Carrier Interconnect Manual means that compilation of documents and procedures relevant to interconnection prepared by Optus, including (a) the Interconnect, Ordering and Forecasting Procedures; (b) the Operations and Maintenance Procedures; and (c) technical procedures.

405 Letter from Commission to Optus, 19 August 2005

406 Optus, Letter to ACCC, 20 September 2005, p. 8.

The Commission understands that there is no 'Interconnect, Ordering and Forecasting Procedures', 'QOS Standards', 'Carrier Interconnect Manual', and Operations and Procedures Manual in existence at this time and that such procedures, standards and manuals are to be developed by Optus and/or agreed between Optus and an access seeker at the appropriate time.

11.3. Conclusion on non-price terms and conditions

The Commission notes Optus's comments, in its letter to the Commission of 20 September 2005 and further submission in response to the draft decision, that it currently provides its DGTAS to a large number of access seekers under existing agreements that reflect the wider set of terms and conditions not specified in the Undertaking, including the secondary documents. Further, Optus submits that it has not had difficulties in settling terms with access seekers and that, on the whole, the aforementioned terms are not especially contentious.[407]

The Commission notes this, but makes some general observations in relation to the form of the Undertaking. The Undertaking does not attempt to deal with the full range of non-price terms and conditions of access. Further, there are a number of documents which will govern the access relationship, but for which the terms and conditions need to be negotiated.

This means that a large proportion of the non-price terms and conditions that will govern the supply of the Optus DGTAS are unknown and will not be known until after the Undertaking comes into effect (should the Commission accept the Undertaking). Further, it means that there is potential reliance on the Commission arbitrating some terms of access.

Despite this, as Optus has correctly observed, it is entitled under the statutory regime to submit an undertaking that does not stipulate all the terms and conditions of access. Further, the Commission is required to assess whether the terms and conditions specified in the Undertaking are reasonable.[408]

That said, the Commission notes that it is unlikely that certain proposed non-price terms and conditions as discussed in this chapter would be adopted by the Commission in any MTAS arbitration determination.

Having had regard to the reasonableness criteria in section 152AH of the Act, the Commission considers that there is significant doubt that a number of the non-price terms and conditions in the Undertaking are reasonable. Further, the Commission has noted concerns with other aspects of the non-price terms and conditions for which it believes there is some scope for improvement.

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407 Optus, Letter to ACCC of 20 September 2005, p. 8.
408 Section 152BV(2)(d)

12. Overall conclusion as to the reasonableness of the Undertaking terms and conditions

After detailed consideration of the price and non-price terms and condition contained in the Undertaking, and having had regard to the relevant criteria in the Act, the Commission has reached the view that that price terms and conditions are not reasonable, and that certain non-price terms and conditions are not reasonable.

13. Consistency with the standard access obligations (SAOs)

Under section 152BV(2)(b) of the Act, the Commission must not accept an undertaking unless it is satisfied that it is consistent with the SAOs that are applicable to a carrier or CSP. The SAOs become applicable when an access provider supplies a declared service to itself or others. These obligations were referred to above in section 3.2.2. The purpose of this provision is to ensure that an undertaking at least meets the basic level of access obligations that would normally apply to the provider of the declared service, but for the undertaking.

This chapter assesses whether Optus's Undertaking is consistent with the SAOs applicable to Optus through its proposed supply of the DGTAS. Section 13.1 outlines the Commission's approach to assessing consistency with the SAOs, while section 13.2 contains the actual assessment.

13.1. Approach to assessing consistency with the SAOs

The Act does not specify any particular approach for assessing whether an undertaking is consistent with the SAOs applicable to an access provider. Notwithstanding this, the Commission finds it useful to adopt the following approach:

- identify those SAOs that are applicable to a particular access provider; and
- assess whether the proposed undertaking is consistent with the applicable SAOs. This assessment may involve consideration of whether the terms and conditions raise any inconsistencies with the applicable SAOs. If the terms and conditions are not found to be inconsistent with the SAOs, the Commission is likely to regard the undertaking as being consistent with the applicable SAOs.

The Commission's view is that the meaning of the word 'consistent' in section 152BV(2)(b) is that it takes its ordinary and natural meaning. The Commission believes that the ordinary and natural meaning of *"consistent with"* is that there be some uniformity and adherence to the thing in question but, that there is no requirement for exact or complete correspondence. The Commission, therefore, in applying this test to the relevant subject matter will not be requiring that a matter be precisely in accordance with the applicable SAOs, but rather, there be at least a reasonable level of conformity with the obligation.

For an obligation to be consistent with the applicable SAOs, it must be consistent with all the obligations imposed on the access provider. The SAOs are aggregated to determine consistency under section 152BV(2)(b). In this context, the Commission is not concerned with the reasonableness of the terms and conditions of the Undertaking as required under section 152BV(2)(d), as this was the subject of a separate consideration in Chapters 10 and 11 of this report.

In this assessment, the Commission has especially considered whether the *non*-price terms and conditions specified in the Undertaking are consistent with each of the applicable SAOs. The Commission considers that the price terms and conditions contained in the Undertaking are more relevant to an assessment of reasonableness.

13.2. Assessment

13.2.1. The applicable SAOs

The Act requires that there be consistency between the proposed undertaking and the applicable SAOs. This raises the issue of determining what are the SAOs applicable to Optus arising out of this Undertaking.

The Explanatory Memorandum to the Trade Practices Amendment (Telecommunications) Bill 1996 explains that:

> The *applicable standard access obligations* are those obligations set out in proposed s. 152AR that are applicable to the carrier or provider making the access undertaking. A standard access obligation may not be applicable because of an exemption … or because the carrier or carriage service provider does not supply the declared service concerned.[409]

The Commission notes that Paragraph C of the Background to the Undertaking stipulates that

> The Undertaking specifies certain terms and conditions on which Optus undertakes to comply with the Applicable Standard Access Obligations in respect of the Optus DGTAS. Additional terms and conditions relating to the supply of, and interconnection with, the Optus DGTAS are to be negotiated and agreed between Optus and individual Access Seekers prior to the supply of the Optus DGTAS.

In the Interpretation section of the Undertaking, *Applicable Standard Access Obligations* means:

> … the standard access obligations set out in Schedule 4.

Schedule 4 refers to three *Applicable Standard Access Obligations*. They are:

Optus will:

(a) supply the Optus DGTAS to the Access Seeker in order that the Access Seeker can provide Carriage Services; and

(b) take all reasonable steps to ensure that the technical and operational quality of the Optus DGTAS or that part of the Optus DGTAS, is equivalent to that which Optus provides to itself; and

(c) take all reasonable steps to ensure that the Access Seeker receives, in relation to the Optus DGTAS or that part of the Optus DGTAS, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which Optus provides to itself.

13.2.2. Service to be supplied

The Commission notes that the Undertaking relates to a service that is narrower in scope than the declared MTAS service.[410] Schedule 1 to the Undertaking sets out the service description for the Optus DGTAS which is:

> …an access service for the carriage of voice calls from a Point of Interconnection, or potential Point of Interconnection, to a B-party directly connected to the Optus GSM network.

As such, the Undertaking does not include voice calls terminating on Optus's WCDMA (3G) network.

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[409] Parliament of the Cth of Australia – Trade Practices Amendment (Telecommunications) Bill 1996 Explanatory Memorandum at page 57.

[410] Optus submission, p. 7.

The applicable SAO in respect of the supply of a declared service is set out in section 152AR(3)(a) of the Act. It provides that, if requested to do so by an access seeker, an access provider must supply an active declared service to the access seeker in order that the access seeker can provide carriage and/or content services.

Schedule 4, clause (a) as set out above would appear to be the Applicable Standard Access Obligation in the Undertaking relevant to this matter.

As noted above, the Optus DGTA is a subset of the declared service. The Commission is of the view that an access provider can give an access undertaking in relation to a subset of a declared service. Conversely, an access seeker could seek access to all or a subset of a declared service. If the Undertaking were to be accepted in its present form by the Commission, Optus would remain under an obligation to provide access to that part of the declared service not covered by the Undertaking. Access would be subject to commercial agreement or failing that, arbitration by the Commission.

Further, even though an undertaking can pertain to part of a declared service, the terms and conditions of the undertaking, which includes the service description, are still subject to a reasonableness test.

The Commission notes that Optus is offering to supply the Optus DGTAS by virtue of clause 3.1 of the Undertaking, which provides that during the period of the Undertaking, in relation to the applicable SAOs, Optus undertakes to the Commission, to supply the Optus DGTAS as specified in Schedule 1 as described above.

To the extent that Optus gives an undertaking for the supply of a declared service, albeit part of a declared service, in purported compliance with the obligation under section 152AR(3)(a) to supply the declared service, the Commission is satisfied that this part of the Undertaking is consistent with the applicable SAO.

13.2.3. Technical and operational quality of the service to be supplied

The applicable SAO in respect of the technical and operational quality of the service to be supplied is set out in section 152AR(3)(b) of the Act, which provides that an access provider must takes all reasonable steps to ensure that the technical and operational quality of the service supplied to the access seeker is equivalent to that which the access provider provides to itself.

Schedule 4, clause (b) noted above would appear to be the Applicable Standard Access Obligation in the Undertaking relevant to this matter.

The Commission also notes that Clause 3.1 of Schedule 3 to the Undertaking provides that:

> 3.1 In supplying the Optus DGTAS, Optus will treat the Access Seeker on a non-discriminatory basis as required by the Applicable Standard Access Obligations, including but not limited to, if requested by the Access Seeker:
>
> (a) taking all reasonable steps to ensure that the technical and operational quality of the Optus DGTAS supplied to the Access Seeker is equivalent to that which Optus provides to itself; and
>
> (b) taking all reasonable steps to ensure that the Access Seeker receives, in relation to the Optus DGTAS supplied to the Access Seeker, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which Optus provides to itself

Apart from the above general non-discrimination principle, the Undertaking does not contain any specific provisions about how Optus will give effect to the obligation to provide technical and operational quality of service on a non-discriminatory basis. The Commission notes, however, that there is no obligation on Optus to specify the precise terms and conditions on which it will implement the principle.

It is further noted that under clause 3.2, the Undertaking stipulates that the non-discrimination principle is intended to promote the LTIE, and is intended to be implemented in a way which will promote the LTIE by removing obstacles to access seekers gaining access to the service. Further, the principle does not limit the access seeker's ability to request superior or lesser relevant aspects of the service to that which Optus provides to itself, noting however, that Optus is not bound by such request.

To the extent that Optus gives an undertaking to provide equivalent technical and operational quality of service to that which it provides itself in purported compliance with section 152AR(3)(b) of the Act, the Commission is satisfied that this part of the Undertaking is consistent with the applicable SAO.

13.2.4. Fault detection, handling, rectification and timing of the service to be supplied

The applicable SAO in respect of fault detection, handling, rectification and timing of the service to be supplied is set out in section 152AR(3)(c) of the Act. This provides that an access provider must takes all reasonable steps to ensure that the access seeker receives, in relation to the supplied service, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself.

Schedule 4, clause (c) noted above would appear to be the Applicable Standard Access Obligation in the Undertaking relating to this aspect of the service.

The non-discrimination principle under Schedule 3, clause 3.1(b) addresses the obligation to provide fault detection, handling, rectification and timing of an equivalent degree.

Apart from that, the Undertaking does not contain any specific provisions in relation to fault detection, handling, rectification and timing of the service.

The Commission notes the matters in section 13.2.3 above and concludes that to the extent that section 152AR(3)(c) of the Act imposes an obligation on Optus to provide equivalent fault detection, handling, rectification and timing of services to that which it provides itself, the Commission is satisfied that the Undertaking is consistent with this SAO.

13.2.5. Interconnection

The Commission notes that the Undertaking would appear to be in relation to the provision of a service that requires the interconnection of facilities.

For instance, Clause 5 of Schedule 3 to the Undertaking provides, *inter alia*, that Optus will only be required to provide the Optus DGTAS to the Access Seeker to the extent that the Access Seeker has complied with the Interconnect, Ordering, and Forecasting Procedures in respect of the Optus DGTAS. Further, Part D – 'Manuals and Technical Agreements' refers, *inter alia*, to the Carrier Interconnect Manual.

Clause 14 to Schedule 3 of the Undertaking outlines the handover arrangements that are to apply between Optus and access seekers for the supply of the Optus DGTAS. This includes the requirement that access seekers will handover calls from their networks to the Optus GSM network to a point of interconnection (POI) nearest to the calling number.

The nature of the Undertaking and the service concerned suggests to the Commission that section 152AR(5) is an applicable SAO for the purposes of supplying the declared service.

Section 152AR(5) of the Act relevantly provides that:

> If an access provider owns or controls one or more facilities; the access provider must, if requested to do so by a service provider:
>
> - permit interconnection of those facilities with the facilities of the service provider to allow the service provider to supply carriage services and/or content services;
> - take all reasonable steps to ensure that:
> (i) the technical and operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself; and
> - take all reasonable steps to ensure that the service provider receives, in relation to the interconnection, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself.

The Commission considers that the Undertaking permits the interconnection of Optus's facilities with those of an access seeker, based on certain terms and conditions (i.e. price and non-price) in order that an access seeker can procure a sub-set of the declared service – in this case, voice termination on Optus's GSM network.

The Commission notes that Optus has not specified in its Undertaking that the SAO relating to interconnection of facilities under section 152AR(5) is an applicable SAO for the purposes of the Undertaking.

On 19 August 2005, the Commission wrote to Optus seeking further information from Optus as to why Optus had chosen to not treat section 152AR(5) as an applicable SAO under Schedule 4 of the Undertaking, given that the Undertaking appeared to deal with the interconnection of facilities.[411]

Optus responded to the Commission's request for further information about the applicable SAOs in respect of interconnection by stating, *inter alia*, that:

> The Optus Undertaking is in respect of the Optus Domestic GSM Terminating Access Service, an access service that is a declared service under the Mobile Services Review.
>
> Optus acknowledges that access seekers may need to obtain interconnection services that are separate from the access service supplied under the Optus Undertaking. In such event, the supply of interconnection services may be subject to separate prices and terms and conditions that are separately negotiated between the parties. The SAOs that apply to the supply of such interconnection services will be the SAOs under section 152AR(5). Those prices, terms and conditions and SAOs that apply to the supply of the interconnection services may be additional to the terms and conditions of the access service set out in the Optus Undertaking. This may include additional prices for interconnect services, such as ports and capacity charges.[412]

[411] Letter from the Commission to Optus, 19 August 2005, p. 4.
[412] Optus, Letter to the Commission, 20 September 2005, p. 9.

It would appear from this response that Optus does not consider the Optus DGTAS to be an interconnection service and therefore does not attract the SAOs applicable to interconnection under section 152AR(5). Optus appears to view interconnection services as separate from the service supplied under the Undertaking and in such case, if there is a need for interconnection services, additional terms and conditions will apply. The interconnection SAOs will then apply only to those services.

In summary, the Commission notes the obligation under section 152AR(5) of the Act to be that if an access provider owns or controls one or more facilities, the access provider must, if requested to do so by a service provider, permit interconnection of those facilities with the facilities of the service provider for the purpose of enabling the service provider to be supplied with active declared services.

The Commission considers that Optus owns or controls one or more facilities and that interconnection of those facilities with the access seeker's facilities is required in order for the active declared service to be supplied. In short, there must be an interconnection of facilities in order to supply the Optus DGTAS. The SAO is not principally concerned with interconnection services as such, but rather, is concerned with the interconnection of facilities to allow the provision of the declared service.

Accordingly, in relation to interconnection, the Commission considers that section 152AR(5) of the Act is a SAO applicable to Optus for the purposes of the Undertaking. Therefore, in the Commission's view, the Undertaking must be consistent with the obligations to permit interconnection of its facilities and to take all reasonable steps to ensure that technical and operational quality and timing is of an equivalent standard; and ensure that (in relation to the interconnection), there is fault detection, handling and rectification of an equivalent standard.

The Commission notes that the Undertaking permits interconnection of Optus's facilities with those of the access seeker for the purpose of enabling carriage services to be supplied in accordance with the obligation arising under section 152AR(5)(c).

The Commission further notes that the Undertaking is silent in relation to terms and conditions pertaining specifically to technical and operational quality and timing of interconnection and fault detection handling and rectification. Although, arguably, the non-discrimination clause 3.1(a) and (b) of Schedule 3 covers the interconnection obligation that arises through the provision of the Optus DGTAS and the application of section 152AR(5).

Even if the Undertaking is silent in this respect, and even though the Commission considers the interconnection SAOs to be applicable to Optus, this does not of itself make the Undertaking inconsistent with the applicable SAOs. As noted earlier, the Commission interprets consistency to mean broad conformity with the thing in question and tests consistency by whether or not the terms and conditions are inconsistent with the applicable SAOs.

In conclusion, the Commission considers section 152AR(5) of the Act to be an applicable SAO and although this is not noted specifically in the Undertaking, the Commission is satisfied that the Undertaking is consistent with the SAOs applicable to Optus's interconnection of facilities obligations.

13.2.6. Provision of billing information

Section 152AR(6) and (7) of the Act provides that if an access seeker uses a declared service supplied by an access provider, the access provider, if requested to do so by

the access seeker, must give the access seeker billing information in connection with the supply of the declared service. Further, the billing information must be given at such times or intervals, and in such manner and form, and set out such particulars, as ascertained by the Trade Practice Regulations (the Regulations). This is a SAO that applies to providers of declared services generally.

Regulation 28S of Division 2 of the Regulations sets out the nature of the billing information required to be provided pursuant to section 152AR(7) of the Act. Generally, the Regulations provide that billing information must be given at the times agreed and in a manner and form agreed and must include the number from which the call was made, the time the call started, the duration of the call and certain other particulars. The Commission notes that the billing obligations arising under sections 152AR(6) and (7) of the Act are not listed as Applicable Standard Access Obligations within Schedule 4 of the Undertaking. Nevertheless, Optus does give an undertaking in relation to the provision of 'Billing Information' which is contained in clause 10 of Schedule 3 as follows:

> Subject to section 276 and 291 of the Telecommunications Act, Optus will provide the Access Seeker with the Billing Information in respect of the Optus DGTAS.

'Billing Information' is defined in the Undertaking to mean:

> Billing Information comprises the billing information required to be provided by Optus to the Access Seeker under the regulations made pursuant to sections 152AR(6) and (7) of Part XIC of the TPA or in the absence of such a regulation applicable to the Optus DGTAS, such billing information as is agreed between the Parties.

The Commission considers that the SAOs as set out in sections 152AR(6) and (7) are SAOs applicable to Optus in relation to the Undertaking. The Commission is satisfied that the Undertaking is consistent with the applicable SAOs in respect of Optus's billing obligations under the Act.

13.2.7. Conclusion

While the terms and conditions in the Undertakings do not specify in any detail the extent to which the Undertaking meets the various access obligations, none of the terms and conditions appear inconsistent with any of the relevant SAOs.

In meeting the applicable SAOs, the non-discrimination principle expressed in clause 3 of Schedule 3 is critically important to the Undertaking. The SAOs essentially require provision of the declared service and additional supporting services to an equivalent standard to that which Optus provides to itself. This is to allow an access seeker to fairly compete in terms of the provision of the service to be supplied. Overall, Optus, through the Undertaking, agrees to provide the requisite level of service in respect of the matters applicable to it. Accordingly, the Commission is satisfied that the Undertaking is consistent with the SAOs that are applicable to Optus as an access provider of the DGTAS pursuant to section 152BV(2)(b) of the Act.

14. Decision on the Optus Undertaking

Pursuant to section 152BV(2)(a)(i) and (ii) of the Act, the Commission has published the Undertaking and invited submissions on it. Further, the Commission has considered the submissions received in forming its views on the Undertaking.

Pursuant to section 152BV(2)(b) of the Act, the Commission is satisfied that the Undertaking is consistent with the SAOs that are applicable to Optus.

Pursuant to section 152BV(2)(d) of the Act, the Commission **is not** satisfied that the terms and conditions specified in the Undertaking are reasonable for the reasons outlined in this report.

Pursuant to section 152BV(2)(e), the Commission notes that the expiry time of the Undertaking occurs within three years of the date on which the Undertaking comes into operation.

Accordingly, as the Commission is not satisfied that the terms and conditions in the Undertaking are reasonable, the Commission's decision is that the Undertaking be rejected.

Appendix 1 – List of submissions received

Submissions to the discussion paper

Telstra Corporation Limited

Telstra, *Submission in response to the ACCC Discussion Paper: Optus's Undertaking in respect of the Domestic Digital Mobile Terminating Access Service,* May 2005.

Virgin Mobile

Virgin Mobile (Australia) Pty Ltd, Submission, 25 May 2005.

AAPT Limited

Joshua Gans, *A Critique of the Statement of Professor Jerry Hausman on Mobile Termination Pricing: A Report on behalf of AAPT,* May 2005.

AAPT, *An Economic Critique of the Submission by Charles River Associates (CRA),* June 2005.

AAPT, *Submission by AAPT Ltd to the ACCC, Understanding the Optus Termination Model,* June 2005.

Slimtel Pty Ltd

Slimtel, *Submission to ACCC, on Optus's Undertaking and Submission on Fixed to Mobile Termination charges,* 15 March 2005.

Competitive Carriers Coalition

Martin Cave and Charles Chambers, *Commentary on the Optus and Vodafone Undertakings in Relation to the Domestic Digital Mobile Terminating Access Service,* 3 June 2005.

Hutchison Telecommunications (Australia) Pty Ltd and Hutchison 3G Australia Pty Ltd.

Hutchison, *Optus's undertaking in relation to the domestic digital mobile terminating access service, Submission by Hutchison Telecommunications (Australia) Limited and Hutchison 3G Australia Pty Limited,* May 2005.

Gibson Quai-AAS, Comments *on the ACCC Discussion Paper on Optus' Undertaking in relation to the Domestic Digital Mobile Terminating Access Service,* 3 June 2005.

Marsden Jacob Associates, *Comments on Discussion , Optus' Undertaking in relation to the Domestic Digital Mobile Terminating Access Service: A report prepared by Marsden Jacob Associates for Allens Arthur Robinson,* 23 May 2005.

Vodafone Australia Limited

Frontier Economics, *The Waterbed Effect, A Report Prepared for Vodafone,* July 2005.

Frontier Economics, *Response to ACCC discussion papers on the access undertakings lodged by Optus and Vodafone, A Report prepared for Vodafone Australia,* September 2005.

Submissions to the draft decision

AAPT

AAPT, *The Long-Term Interests of End Users (LTIE) Test & Comparing Optus' Pricing Options*, January 2006.

Competitive Carriers Coalition

The Competitive Carriers Coalition, *Submission to the ACCC Draft Decision on Optus' Undertaking with respect to the supply of its DGTA Service*, 9 December 2005.

Optus

Optus, *Submission to the ACCC in response to its draft decision on Optus' MTAS access undertaking*, 23 December 2005.

Telstra

Telstra, *Submission in response to the ACCC's Draft Decision – Optus Undertaking in respect of the Domestic Digital Mobile Terminating Access Service*, December 2005.

Virgin Mobile Australia

Virgin Mobile Australia, *ACCC Draft Decision on Optus MTAS Undertaking*, 29 November 2005.

Vodafone Australia Limited

Vodafone Australia, *Response to the ACCC's Draft Decision in relation to Optus's access undertaking for the MTAS*, 25 November 2005.

Appendix 2: List of documents the Commission examined in reaching its final decision

Note: This is a preliminary list in draft format. A complete list of relevant documents will be released by the Commission shortly.

OPTUS MOBILE TERMINATING ACCESS SERVICE UNDERTAKING SECTION 152CGA STATEMENT

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
9/12/2004	Presentation	Mobile terminating access (MTA) service undertaking	Optus	ACCC
0-5-2004	Report	Mobile services as jointly produced products: concepts and empirics	n/e/r/a	Optus
0-4-2004	Report	Existence and exercise of market power in mobile termination	n/e/r/a	Optus
20/12/2004	Final Report	International benchmarking of mobile termination charges - an update	Charles River Associates (Asia Pacific)	Optus
22/12/2004	Final Report	Pricing mobile termination in Australia	Charles River Associates (Asia Pacific)	Optus
17/12/2004	Statement	Statement of Jerry Hausman	Massachusetts Institute of Technology	Optus
0-12-2004	Submission	Domestic GSM Terminating Access Service Undertaking	Optus	ACCC
23/12/2004	Letter	DGTA service undertaking	Optus	ACCC
23/12/2004	Ordinary Access Undertaking	Ordinary access undertaking to the ACCC under Div 5 of Pt XIC of the TPA 1974 (Cth)	Optus	ACCC
24/12/2004	Email	DGTA undertaking - commercial in confidence	Optus	ACCC
13/01/2005	Letter	SingTel Optus Pty Ltd's (Optus') ordinary access undertaking in relation to the domestic mobile terminating access service	ACCC	Optus
21/01/2005	Email	DGTA service undertaking - public versions	Optus	ACCC
0-12-2004	Submission	Optus submission to ACCC on Domestic GSM Terminating Access Service Undertaking	Optus	ACCC
20/12/2004	Final Report	International Benchmarking of Mobile Termination Charges - An Update	Charles River Associates (Asia Pacific)	Optus

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
22/12/2004	Final Report	Pricing Mobile Termination in Australia	Charles River Associates (Asia Pacific)	Optus
17/12/2004	Statement	Statement of Jerry Hausman	Massachusetts Institute of Technology	Optus
28/01/2005	Letter	MTAS Undertaking - request for further information under s 152BT of the TPA (Cth)	ACCC	Optus
28/01/2005	Presentation	ACCC discussion on current regulatory issues	Optus	ACCC
4/02/2005	Article	Optus warns of slowing growth despite strong 3Q	Communications Day	
25/02/2005	Discussion Paper	Optus' undertaking in relation to the Domestic Digital Mobile Terminating Access Service	ACCC	
25/02/2005	News Release	ACCC issues discussion papers on access undertakings lodged by Optus, Vodafone for mobile terminating access service	ACCC	
28/02/2005	Email	DGTA service imputation test reports	Optus	ACCC
0-2-2005	Report	Imputation tests: selected retail services downstream to DGTA	Optus	ACCC
0-2-2005	Report	Imputation tests: selected retail services downstream to DGTA	Optus	ACCC
4/03/2005	Facsimile Letter	Information request relating to Optus' DGTA service undertaking	Optus	ACCC
--	Electronic Information - on CD	Three Mathematica files - code of Rohlfs model (the CRA model)	Optus	ACCC
--	Electronic Information - on CD	Optus cost calculation - estimates the inputs to CRA model	Optus	ACCC
--	Electronic Information - on CD	WACC calculation - input into Optus cost calculation spreadsheet	Optus	ACCC
--	Electronic Information - on CD	NERA welfare analysis	Optus	ACCC
15/03/2005	Email	Submission re Optus' recent undertaking and submission on GSM fixed to mobile termination charges	Slimtel Pty Ltd	ACCC
15/03/2005	Submission	Domestic GSM terminating access service undertaking (December 2004) - public version	Slimtel Pty Ltd	ACCC
21/03/2005	Letter	Optus domestic GSM terminating access service (DGTA) undertaking - statement of Jerry Hausman	ACCC	Optus

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
22/03/2005	Email	(Access to confidential submissions)	Optus	ACCC
30/03/2005	Email	Martin Cave - possible MTAS work	Macquarie Telecom	ACCC
31/03/2005	Letter	Optus domestic GSM terminating access service DGTA undertaking - statement of Jerry Hausman	Optus	ACCC
25/03/2005	Statement	In response to ACCC letter of 21 March 2005	Massachusetts Institute of Technology	ACCC
0-3-2005	Presentation	SingTel Optus Regulatory Update	Optus	
1/04/2005	Letter	Clarification on information outlined in the "SingTel Optus Regulatory Update" in the context of Optus's DGTA undertaking	ACCC	Optus
1/04/2005	Article	Hutchison 3G: EBITDA+ this year?	Communications Day	
4/04/2005	Facsimile Letter	(Optus' responses to questions in ACCC's letter of 1 April 2005)	Optus	ACCC
4/04/2005	Facsimile Letter	Information request in relation to Optus' DTA service undertaking	Optus	ACCC
5/04/2005	Email	DGTA undertaking confidentiality	Optus	ACCC
5/04/2005	Email	Confidential submission	Optus	ACCC
7/04/2005	Facsimile Letter	Optus mobile terminating access undertaking	Optus	ACCC
7/04/2004	Article	SMS traffic, volume and revenue	CommsWorld	
11/04/2005	Email	Confidentiality undertakings for Optus MTAS undertaking	ACCC	AAPT
12/04/2005	Email	Optus MTA agreement	Telstra	ACCC
13/04/2005	Facsimile Letter	Consultation period in relation to Optus' mobile terminating access service (MTAS) undertaking	ACCC	Optus
4/05/2005	Email	MTAS undertaking: request for further information	Allens Arthur Robinson	Gilbert & Tobin / Optus / ACCC
3/05/2005	Email	Optus pre-paid purge causes one-off decline	Communications Day	ACCC
10/05/2005	Email	MTAS undertaking : request for further information	Allens Arthur Robinson	Optus / ACCC
16/05/2005	Email	MTAS undertaking : request for further information	Allens Arthur Robinson	Optus / ACCC
18/05/2005	Email	Optus undertaking in relation to the domestic digital mobile terminating access service - AAPT submission	AAPT	ACCC

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
0-5-2005	Report	A critique of the statement of Professor Jerry Hausman on mobile termination pricing - on behalf of AAPT Ltd	Core Research	AAPT
18/05/2005	Email	MTAS undertaking : request for further information	Allens Arthur Robinson	Optus / ACCC
19/05/2005	Email	Optus' MTAS access undertaking	Allens Arthur Robinson	Optus / ACCC
23/05/2005	Facsimile Letter	DGTA undertaking: request for information	Optus	Allens Arthur Robinson / ACCC
26/05/2005	Email	Virgin Mobile submission on Optus MTAS undertaking	Virgin Mobile (Aust)	ACCC
25/05/2005	Submission	Optus MTAS undertaking (public version)	Virgin Mobile (Aust)	ACCC
25/05/2005	Submission	Optus MTAS undertaking	Virgin Mobile (Aust)	ACCC
25/05/2005	Email	Telstra's submission on Optus DGTA undertaking	Telstra	ACCC
0-5-2005	Submission	Response to ACCC discussion paper: Optus' undertaking in respect of the Domestic Digital Mobile Terminating Access Service (public version)	Telstra	ACCC
0-5-2005	Submission	Response to ACCC discussion paper: Optus' undertaking in respect of the Domestic Digital Mobile Terminating Access Service	Telstra	ACCC
27/05/2005	Email	Telstra's submission on Optus DGTA undertaking (attaching Telstra's public version of its submission at doc 62)	ACCC	Optus
27/05/2005	Email	Virgin Mobile submission on Optus MTAS undertaking (attaching Virgin Mobile's public version of its submission at doc 59)	ACCC	Optus
27/05/2005	Email	Hutchison submission on Optus MTAS undertaking	Allens Arthur Robinson	ACCC
27/05/2005	Letter	Optus MTAS undertaking	Allens Arthur Robinson	ACCC
--	Curriculum Vitae		Marsden Jacob, Aust	ACCC
--	Annexure	Annexure A: Statutory factors to which the Commission must have regard when assessing the reasonableness of the undertaking	Allens Arthur Robinson	ACCC
0-5-2005	Submission	Optus' undertaking in relation to the domestic digital mobile terminating access service. Submission by HTAL and H3GA	Allens Arthur Robinson	ACCC
23/05/2005	Comments on Discussion Paper	Optus' undertaking in relation to the Domestic Digital MTAS : a report prepared by Marsden Jacob Associates for Allens Arthur Robinson	Marsden Jacob, Aust	ACCC

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
31/05/2005	Article	Virgin Mobile: ACCC is hurting our revenues	Communications Day	
3/06/2005	Email	Optus' MTAS undertaking dated 23 December 2004	Allens Arthur Robinson	ACCC
3/06/2005	Letter	Optus' MTAS undertaking	Allens Arthur Robinson	ACCC
0-6-2005	Comments on Discussion Paper	Comments on the ACCC discussion paper on Optus' undertaking in relation to the domestic digital MTAS	Gibson Quai-AAS	ACCC
--	Curriculum Vitae		Gibson Quai-AAS	ACCC
7/06/2005	Email	Optus DMTAS undertaking	ATUG	ACCC
8/06/2005	Email	Undertakings submission	Competitive Carriers' Coalition	ACCC
8/06/2005	Letter		Competitive Carriers' Coalition	ACCC
3/06/2005	Report	Commentary on the Optus and Vodafone undertakings in relation to domestic digital MTAS (public version)	Quotient UK / Warwick Business School UK	Competitive Carriers' Coalition
9/06/2005	Email	Final Optus Termination Model_DH linked model.xls	AAPT	ACCC
9/06/2005	Termination Model	Final Optus Termination Model_DH linked model.xls	AAPT	ACCC
9/06/2005	Email	Submission to the ACCC on the Optus and Vodafone mobile termination undertakings	Quotient Associates	ACCC
3/06/2005	Report	Commentary on the Optus and Vodafone Undertakings in relation to domestic digital MTAS	Quotient UK / Warwick Business School UK	ACCC
17/06/2005	Email	Qs	AAPT	ACCC
17/06/2005	Email	Undertakings submission (attaching the C-I-C Cave/Chambers submission at doc 82)	ACCC	Optus
17/06/2005	Email	Submission to ACCC - Understanding Optus Mobile Termination Model (Confidential); Final Optus Termination Model_DH linked model (Confidential); covering letter 17 June	AAPT	ACCC
17/06/2005	Letter	Optus domestic GSM terminating access service undertaking	AAPT	ACCC
0-6-2005	Submission	Understanding the Optus termination model	AAPT	ACCC
--	Termination Model	Final Optus termination model_DH linked model	AAPT	ACCC

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
21/06/2005	Email	Public submission	ACCC	AAPT
16/06/2005	Article	Interview: Virgin Mobile Australia Plans 3G Launch for 07	Dow Jones Newswires	
21/06/2005	Email	Hutchison undertaking submissions - public versions	Allens Arthur Robinson	ACCC
31/03/2004	Report	Management discussion and analysis of financial condition and results of operations for the fourth quarter and year ended 31 March 2004	SingTel Optus	
0-5-2004	Research Paper	Australian cellular 2004-2008 forecast and analysis: upwardly mobile	IDC	
31/03/2004	Article	The SingTel's results for the quarter and year ended 31 March 2004	home.singtel.com/news_centre	
22/06/2005	Email	Final Optus termination model_DH linked model.xls	AAPT	ACCC
--	Termination Model	Final Optus termination model_DH linked model.xls	AAPT	ACCC
22/06/2005	Email	(Mathematica model)	AAPT	ACCC
--	Spreadsheet	Revised version of CRA model.xls	AAPT	ACCC
--	Spreadsheet	Simplified Rohlfs using excel interface.nb	AAPT	ACCC
--	Spreadsheet	Simplified Rohlfs using excel interface.txt	AAPT	ACCC
--	Spreadsheet	Output Year 3.xls	AAPT	ACCC
--	Spreadsheet	Output Year 1.xls	AAPT	ACCC
--	Spreadsheet	Output Year 2.xls	AAPT	ACCC
23/06/2005	Article	UK academics criticise mobile termination undertakings	Communications Day	
22/06/2005	Article	Telecommunications sector commentary : Hutchison's 2 turns up the heat ... again	Goldman Sachs JBWere	
30/06/2005	Email	Attaching confidential submission on Optus MTAS undertaking	AAPT	ACCC
0-6-2005	Submission	An economic critique of the submission by Charles River Associates (CRA)	AAPT	ACCC
0-6-2005	Appendix A to submission	Production Cost Concepts	AAPT	ACCC
0-6-2005	Appendix B to submission	Ramsey-Boiteux Pricing	AAPT	ACCC
30/06/2005	Article	Mobile phone production accelerates in the second quarter	iSuppli Corporation : Applied Market Intelligence	

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
6/07/2005	Article	Telcos mean business with free broadband and phone credits	The Australian	
0-7-2005	Report	The waterbed effect - a report prepared for Vodafone	Frontier Economics	
8/07/2005	Facsimile Letter	Frontier Economics report on "The Waterbed Effect"	Vodafone Australia	ACCC
12/07/2005	Facsimile Letter	Information request in relation to Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	SingTel Optus
12/07/2005	Facsimile Letter	Engagement of consultant to assist the ACCC assessment of Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	Virgin Mobile (Aust)
12/07/2005	Facsimile Letter	Engagement of consultant to assist the ACCC assessment of Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	Competitive Carriers' Coalition
12/07/2005	Facsimile Letter	Engagement of consultant to assist the ACCC assessment of Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	Telstra Corp Ltd
12/07/2005	Facsimile Letter	Engagement of consultant to assist the ACCC assessment of Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	H3GA & HTAL
12/07/2005	Facsimile Letter	Engagement of consultant to assist the ACCC assessment of Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	AAPT
12/07/2005	Facsimile Letter	Engagement of consultant to assist the ACCC assessment of Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) Service	ACCC	Valaiti Pty Ltd
12/07/2005	Facsimile Letter	Assessment of arguments in relation to Ramsey-Boiteux and Network Externality Surcharges submitted by Optus in support of its domestic GSM terminating access (DGTA) Service ordinary access undertaking	ACCC	SingTel Optus
13/07/2005	Email	(Re public submission)	AAPT	ACCC
0-6-2005	Submission	Understanding the Optus Termination Model	AAPT	ACCC
14/07/2005	Facsimile Letter	Optus' DGTA undertaking - appointment of expert	Telstra Corp Ltd	ACCC
19/07/2005	Email	Confidentiality deed agreement between Analysys and the ACCC	Optus	ACCC
19/07/2005	Confidentiality Undertaking	In favour of the Optus group companies	SingTel Optus	ACCC
19/07/2005	Email	FW: Confidentiality deed agreed between Analysys and the ACCC	ACCC	Analysys Consulti

DATE	TYPE	TITLE	FROM	TO
				ng Ltd
--	Confidentiality Undertaking	In favour of the Optus group companies	ACCC	Analysys Consulting Ltd
27/07/2005	Facsimile Letter	Information request under s152BT in relation to Optus' undertaking with respect to its "Domestic GSM Terminating Access (DGTA) service	ACCC	SingTel Optus
8/08/2005	Email	Optus submission - DGTA service undertaking	Optus	ACCC
27/06/2005	Submission	Reply to Professor Gans Jerry Hausman, Professor of Economics, MIT	Optus	ACCC
8/08/2005	Email	Information request relating to Optus' DGTA service undertaking	Optus	ACCC
8/08/2005	Letter	Information request in relation to Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) service	Optus	ACCC
2005	Cost Model	Information request in relation to Optus' undertaking with respect to its Domestic GSM Terminating Access (DGTA) service	Optus	ACCC
9/08/2005	Email	Optus MTAS undertaking: public version of Hutchison's submission	Allens Arthur Robinson	Gilbert & Tobin / ACCC / HTAL & H3GA
9/08/2005	Letter	Optus MTAS undertaking: confidential information	Allens Arthur Robinson	Gilbert & Tobin / ACCC
10/08/2005	Facsimile Letter	Information request under s152BT in relation to Optus' Domestic GSM Terminating Access (DGTA) service undertaking	ACCC	Virgin Mobile (Aust)
10/08/2005	Facsimile Letter	Information request under s152BT in relation to Optus' Domestic GSM Terminating Access (DGTA) service undertaking	ACCC	Competitive Carriers' Coalition
10/08/2005	Facsimile Letter	Information request under s152BT in relation to Optus' Domestic GSM Terminating Access (DGTA) service undertaking	ACCC	AAPT
10/08/2005	Facsimile Letter	Information request under s152BT in relation to Optus' Domestic GSM Terminating Access (DGTA) service undertaking	ACCC	Allens Arthur Robinson
10/08/2005	Facsimile Letter	Information request under s152BT in relation to Optus' Domestic GSM Terminating Access (DGTA) service undertaking	ACCC	Valaiti Pty Ltd
10/08/2005	Facsimile Letter	Information request under s152BT in relation to Optus' Domestic GSM Terminating Access (DGTA) service	ACCC	Telstra Corp Ltd

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
		undertaking		
12/08/2005	Email	Re: Confidentiality Agreement	Valaiti Pty Ltd	ACCC
12/08/2005	Email	Optus MTAS undertaking - confidential information re Hutchison	Gilbert & Tobin	Allens Arthur Robinson
16/08/2005	Email	Optus' DGTA service undertaking	Optus	ACCC
0-8-2005	Submission	Optus' DGTA service undertaking	Optus	ACCC
16/08/2005	Research Paper	Hutchison Telecommunications (Aust) Ltd : not yielding to the competition	Citigroup Research	
17/08/2005	Article	Hutchison losses down	Communications Day	
19/09/2005	Facsimile Letter	Optus domestic GSM terminating access service (DGTA) undertaking - further information request under section 152BT of the Trade Practices Act 1974	ACCC	SingTel Optus
23/08/2005	Email	Optus' MTAS undertaking : confidential information	Allens Arthur Robinson	Gilbert & Tobin / ACCC
24/08/2005	Email	Optus undertaking - confidentiality	Gilbert & Tobin	Allens Arthur Robinson
25/08/2005	Facsimile Letter	Optus Domestic GSM Terminating Access service (DGTA) undertaking - further information request under s152BT of the TPA 1974	ACCC	SingTel Optus
1/09/2005	Facsimile Letter	Extension of decision-making period for the Optus DGTA service access undertaking	SingTel Optus	ACCC
7/09/2005	Facsimile Letter	Extension of decision-making period for the Optus DGTA service access undertaking	SingTel Optus	ACCC
13/09/2005	Facsimile Letter	Response to information requests under s152BT of the Act	ACCC	SingTel Optus
20/09/2005	Email	Information request on Optus' DGTA service undertaking	Optus	ACCC / Optus
20/09/2005	Letter	Further information request relating to Optus' DGTA undertaking	Optus	ACCC
20/09/2005	Appendix	Optus' response to the issues raised by the ACCC in its letter to Optus of 19 August 2005	Optus	ACCC
26/09/2005	Letter	Further information request relating to Optus' DGTA undertaking	Optus	ACCC
4/10/2005	Email	Optus undertaking - option 2 question	Optus	ACCC

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
2/11/2005	Email	Confidential information re DGTA service undertaking	ACCC	Optus
9/11/2005	Email	Analysys final report - Optus (confidential).pdf; WIK final report	ACCC	Optus
14/10/2005	Report	Analysys review of the mobile terminating access service cost model submitted by Optus (confidential). Final report for the ACCC	Analysys Consulting Ltd	ACCC
3/11/2005	Report	Mobile terminating access service: network Network externality and Ramsey pricing issues (consultancy report to the ACCC in relation to Optus' and Vodafone's undertakings in relation to the domestic digital MTAS) - containing confidential information to both Vodafone and Optus	ACCC	Optus
21/11/2005	Email	Confidential information re: DGTA service undertaking (and attaching version of WIK report which obscures Vodafone c-i-c information)	ACCC	Optus
3/11/2005	Report	MTAS : Network externality and Ramsey pricing issues (consultancy report to the ACCC in relation to Optus's and Vodafone's undertakings in relation to the domestic digital MTAS) - containing confidential information	wik-Consult	ACCC
8/11/2005	Article	ACCC draft decision that Optus undertaking prices for mobile terminating access service are unreasonable	ACCC	
0-11-2005	Draft Decision	Optus' undertaking with respect to the supply of its domestic GSM terminating access (DGTA) service (c-i-c version)	ACCC	
0-11-2005	Draft Decision	Optus' undertaking with respect to the supply of its domestic GSM terminating access (DGTA) service (published, public version)	ACCC	
25/11/2005	Email	Optus MTAS undertaking	Vodafone Australia	ACCC
25/11/2005	Letter	MTAS - Optus access undertaking draft decision [facsimile version of letter also attached]	Vodafone Australia	ACCC
24/11/2005	Note	Note regarding the appropriateness of the ACCC quoting PwC in its draft decision on the Optus undertaking [facsimile copy also attached]	Price Waterhouse Coopers	Vodafone Australia
15/10/2004	Paper	Ramsey Pricing vs. EPMU for regulation of firms operating in competitive and non-competitive markets : presented at conference on the economics of electronic communication markets		Vodafone Australia
29/11/2005	Submission	Response to ACCC draft decision on Optus MTAS undertaking	Virgin Mobile (Aust)	ACCC
29/11/2005	Submission	Response to ACCC draft decision on Optus MTAS undertaking (public version)	Virgin Mobile (Aust)	ACCC
29/11/2005	Email	Email to Commission	Phillips Fox	ACCC
1/12/2005	Facsimile	Timing of Optus' response to the draft decision on the	Optus	ACCC

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
	Letter	DGTA access undertaking		
4/12/2005	Email	Email to Commission	Phillips Fox	ACCC
5/12/2005	Email	Email to Commission	Phillips Fox	ACCC
5/12/2005	Draft Review of ACCC Draft Decision	Advice to Commission	Phillips Fox	ACCC
7/12/2005	Submission	In response to the ACCC's draft decision	Telstra	ACCC
7/12/2005	Email	Order for Services December 2005	ACCC	Phillips Fox
7/12/2005	Order for Services	Order for Services December 2005	ACCC	Phillips Fox
13/12/2005	Email	Optus' submission on the Commisson's draft decision to reject the Optus DGTA undertaking	ACCC	Optus
13/12/2005	Email	Optus submission - draft decision of ACCC on Optus' DGTA undertaking doc	Optus	ACCC
13/12/2005	Submission	Optus submission to the ACCC in response to its draft decision on Optus' MTAS access undertaking ["correct " version, with amendments to section 7.4 - is at doc 184]	Optus	ACCC
9/12/2005	Email	Submission ACCC Optus undertaking draft decision Dec 05 - final	Competitive Carriers' Coalition	ACCC
9/12/2005	Submission	The ACCC draft decision on Optus' undertaking with respect to the supply of its domestic GSM terminating access (DGTA) service	Competitive Carriers' Coalition	ACCC
13/12/2005	Email	Optus submission - draft decision of ACCC on Optus' DGTA undertaking	Gilbert & Tobin	ACCC
21/12/2005	Submission	Optus submission to the ACCC in response to its draft decision on Optus' MTAS access undertaking [replaces version at doc 180 following amendments to section 7.4]	Gilbert & Tobin	ACCC
12/01/2006	Article	Did mobile termination price cuts force the Virgin Mobile sale?	Communications Day	
18/01/2006	Email	Optus MTAS undertaking submission [confirming that there is nothing in Telstra's submission at doc 175 re ACCC's draft decision that is c-i-c]	Telstra	ACCC
21/11/2005	Letter	[Seeking a four week extension of the 29 Nov 2005 deadline in which to respond to the Commission's draft decision]	Optus	ACCC

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
07/1999	Report	Telecommunications services – Declaration Provisions: A Guide to the Declaration Provisions of Part XIC of the *Trade Practices Act,* July 1999	ACCC	
2000	Report	Collection and Use of Information, 2000	ACCC	
22/05/2002	Report	A model of prices and costs of mobile network operators; report for Oftel	Rohlfs, J	Oftel
16 and 17/07/2003	Conference Paper	TSLRIC Conference	PricewaterhouseCoopers	
07/2000	Report	A report on the assessment of Telstra's undertaking for the domestic PSTN originating and terminating access services	ACCC	
05/2003	Submission	Submission to Australian Competition and Consumer Commission on model price terms and conditions for PSTN, ULLS and LCS	Optus	ACCC
1981	Article	Fixed costs, sunk costs, entry barriers and sustainability of monopoly (*The Quarterly Journal of Economics*; 96)	W.J. Baumol and R.D. Willig,	
10/02/2005	Letter	[Re: RAF accounts for the 2002/03 financial year – document number 23 on the Vodafone MTAS undertaking file M2004/389-02]	Vodafone	ACCC
31/03/2004	Discussion Paper	Management discussion and analysis of financial condition and results of operations for the 4th quarter and year ended 31 March 2004	SingTel Optus	
-	Report	Different views of Oftel and MNOs on network common costs [document now located on Ofcom website]	Oftel	
19/05/2005	Newspaper article	Australian mobiles market competitive? You must be kidding (Christian Guerra)	Goldman Sachs JBWere, Telecommunications Sector Commentary	
06/2003	Submission	Submission to Australian Competition and Consumer Commission on Mobile Services	Optus	ACCC
04/2004	Article	The competitiveness of mobile telecommunications industry across the European Union	Grzybowski, L Mimeo, Munich Graduate School of Economics	

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
15 and 16/10/2004	Article	Ramsey pricing –v- EPMU for regulation of firms operating in competitive and non-competitive markets (presented at conference on The Economics of Electronic Communications Markets, Toulouse)	J Sandbach	
12/07/2002	Report	Ramsey pricing – response to a letter of July 4	Oftel	
	Report	Management discussion and analysis of financial condition and results of operations 2002-03, 2003-04, 2004-05	SingTel Optus	
26/06/2003	Article	Price regulation of mobile termination: promoting competition and investment in telecommunications (a report on behalf of Hutchison Telecommunications)	CoRE Research	Hutchison
2003	Article	Entwurf einer Vollziehungshandlung gemäß § Abs. 1 TKG 2003	Telekom-Control-Kommission	
13/08/1946	Article	The marginal cost controversy	R. Coase, Economica	
1989	Article	R. Braeutigam, Optimal policies for natural monopolies:	R. Schmalensee and R. Willig (eds), Handbook of Industrial Organization, Volume II, Elsevier 1989, Chapter 23	
06/2005	Report	Telecommunications Market Indicator Report	ACCC	
2003	Report	Report to the Prime Minister by the Exports and Infrastructure Taskforce and a statement by the Australian Competition Tribunal in *Re: application by GasNet Australia (Operations) Pty Ltd* [2003] ACompT 6		
2000	Legal decision	*Sydney Airports Corporation* (2000) 156 FLR 10		
2004	Legal decision	*Seven Network Ltd* [2004] ACompT 11		
06/05/2005	Article	Credit Suisse First Boston	Australian Telecommunications	

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
10/12/2004	Media release	ACCC not to oppose 3G radio access network sharing	ACCC	
19/09/2005	Article	http://blogs.theage.com.au/malcontent/archives/2005/09/optus_profit_wa.html	The Age newspaper	
30/06/2005	Report	Full year end results and operations review year ended 30 June 2005	Telstra Corp Ltd	
2005	Explanatory Memorandum	Explanatory Memorandum to Telecommunications Legislation Amendment (Competition and Consumer Issues) Bill 2005		
2000	Article	Telecommunications, The Internet, and the Cost of Capital in I. Vogelsang and B.M. Compaine (eds.), *The Internet Upheaval*, MIT Press, 2000		
03/2004	Submission	Telstra's Undertaking for Domestic PSTN Originating and Terminating Access, Unconditioned Local Loop Service and Local Carriage Service	SingTel Optus	ACCC
16/01/2001	Submission	Submission to the Australian Competition and Consumer Commission's Draft Report: Review of Retail Price Controls	Cable & Wireless Optus	ACCC
Undated	Cost Model	Mathematica Outputs – Year 1 - original CRA model with one assumption changed by the ACCC. Cross reference: p.108 of the final Optus undertaking decision	Optus	ACCC
Undated	Cost Model	Mathematica Outputs – Year 1 – original CRA model	Optus	ACCC
06/2004	Final Decision	Mobile Services Review Mobile Terminating Access Service	ACCC	
	Report	Market Indicator Report : 2001-02, 2003-03, 2003-04	ACCC	
30/09/1999	Report	Access Undertakings – A Guide to Part IIIA of the *Trade Practices Act* 1974	ACCC	
		Trade Practices Act 1974		

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
	Report	Regulatory Accounting Framework Reports 2002-03, 2003-04, 2004-05	Telstra	
	Report	Full Year End Results and Operations Review 2002-03, 2003-04, 2004-05	Telstra	
	Reports	Regulatory Accounting Framework Reports 2002-03, 2003-04, 2004-05	Optus	
04/2003	Discussion Paper	Mobile Services Review	ACCC	
03/2004	Draft Report	Draft report on whether or not the ACCC should extend vary or revoke its existing declaration on the MTAS	ACCC	
06/2004	Final Report	Final report on whether or not the ACCC should extend vary or revoke its existing declaration on the MTAS	ACCC	
25/06/2004	Report	Examination of Mobile Termination Costs (Confidential)	Analysys Consulting Ltd	ACCC
06/2003	Submission	(6 page document)	Optus	ACCC
06/2003	Submission	(81 page document)	Optus	ACCC
14/08/2003	Report	Regulation of mobile call termination charges: International approaches	Charles River Associates (Asia Pacific) Pty Ltd	
05/2004	Submission		Optus	ACCC
05/2004	Submission	Efficient use of mobile infrastructure and investment	Optus	ACCC
05/2004	Submission	Mobile termination charge glide path	Optus	ACCC

DATE	TYPE	TITLE	FROM	TO
03/2005	Report	Modelling welfare maximising mobile terminating rates	Frontier Economics	Vodafone
22/03/2005	Report	The fully allocated cost (FAC) of services on Vodafone Australia's GSM Network	PriceWaterhouseCoopers	Vodafone
20/10/2005	Report	The fully allocated cost (FAC) of services on Vodafone Australia's GSM Network – model update incorporating data for the financial year ended 31 March 2004	PriceWaterhouseCoopers	Vodafone
	Cost Model	[prepared for Vodafone using 2002-03 and 2003-04 data]	PriceWaterhouseCoopers	Vodafone
1996	Explanatory Memorandum	Explanatory memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996		
07/2004	Guide	Access Pricing Principles – Telecommunications : A guide	ACCC	
2000	Report	Collection and use of information	ACCC	
	Website	'Short Message Service', Wikipedia at http://en.wikipedia.org/wiki/short_message_service		
23/03/2005	Undertaking	MTAS Undertaking	Vodafone	ACCC
		http://www.optus.com.au/portal/site/aboutus/menuitem.813c61701cee5a14f0419f108ac7a0/?vgnextoid=0c02a0473e7b8010VgnVCM10000029867c0aRCRD&vgnextchannel=44b4ce4b55728010VgnVCM10000029867c0aRCRD&vgnextfmt=default		
14/12/2004	Media release	ACCC not to oppose 3G radio access network sharing	ACCC	
2000	Article	G. Hubbard, and W.H. Lehr, 'Telecommunications, The Internet, and The Cost of Capital', in I. Vogelsang and B.M. Compaine (eds.), The Internet Upheaval, MIT Press, 2000. An earlier draft of this paper is available at http://www.gsb.columbia.edu/faculty/ghubbard/Papers/HubbardLehr_TPRC_Dec99.pdf		

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
03/2005	Report	SingTel Optus Regulatory Update made to Australian Stock Exchange	SingTel Optus	
1927	Article	A Contribution to the Theory of Taxation	F.P. Ramsey Economic Journal 37, pp 47-61	
1956	Article	'Sur la Gestion des Monopoles Publics Astrient á L'Equilibre Budgetaire', Econometrica 24, 1956, pp 22-40. As the original article is in French, W. J. Baumol and D.F. Bradford had the paper translated into English, and the citation for this is: M. Boiteux, 'On the Management of Public Monopolies Subject to Budgetary Constraints',	M Boiteux Journal of Economic	
1980	Article	An Analysis of Fully Distributed Cost Pricing in Regulated Industries' [makes the point that the R-B prices can be derived for an allowed profit constraint that is greater than zero on p 189 in footnote 14, and on p 193 in footnote 17]	R. Braeutigam, Bell Journal of Economics, 11, 1980, pp. 182-96	
2005		P. Joskow, 'Regulation of Natural Monopolies' Draft available at: http://econ-www.mit.edu/faculty/download_pdf.php?id=1086	A.M. Polinsky and S. Shavell (eds.), Handbook of Law and Economics, Elsevier Science B.V, forthcoming, 2005.	
09/1992	Article	N. Attenborough, R. Foster and J. Sandbach, 'Economic Effects of Telephony Price Changes in the UK'	n/e/r/a Topics, London, p 8	
04/1993	Article	N. Attenborough, 'Regulation of Competitive Telecommunications Markets'	n/e/r/a Topics 12, London, pp. 6, 14	
1994	Article	W. Baumol and J. Sidak, 'Toward Competition in Local Telephony'[However, in the Commission's view, Baumol and Sidak incorrectly proceed to conclude that this will still result in appropriate mark-ups]	MIT Press and AEI, p 40	
28/03/2003	Report	Economic Analysis of Fixed-to-Mobile Call Termination Charges	Charles River Associates (B. Mitchell and P. Srinagesh),	BellSouth International
Undated	Article	S. Liebowitz. and S. Margolis, 'Network Externalities (Effects)'	(http://www.utdallas.edu/~liebowit/palgrave/network.html. p.1	

DATE	*TYPE*	*TITLE*	*FROM*	*TO*
1986	Article	L. Perl, 'The Consequences of Cost-Based Telephone Pricing'	J. Mitchell (ed.) Telecommunications and Equity Policy Research Issues, North-Holland, Amsterdam	
11/04/2002	Paper	M. Armstrong, 'Call Termination on Mobile Networks'		Often
09/2002	Discussion Paper	D. Maldoom, 'Caller-called Party Interaction: Implications for Call Termination'. Discussion Paper No 02/03	DotEcon London	
29/11/2004	Report	Jerry A Hausman, 'Economic Analysis of Regulation of CPP'		
11/2005	Article	The Waterbed Effect: A Comment on Frontier Economics	Andrew Wait	Competitive Carrier Coalition Inc
10/2003	Final Determination	Model Price and Non Price Terms and Conditions	ACCC	

Appendix 3: Ramsey-Boiteux pricing

A3.1 Theoretical origins

R-B pricing derives its origins from the work by F.P. Ramsey[413] in 1927 and M. Boiteux[414] in 1956, who established similar results from addressing different economic problems. Ramsey's seminal paper, titled *A Contribution to the Theory of Taxation*, investigated how to minimise the loss in consumer surplus when raising a given amount of tax revenue using distortionary taxes. In the introduction to this paper, Ramsey states that:

> The problem I propose to tackle is this: a given revenue is to be raised by proportionate taxes on some or all uses of income, the taxes on different uses being possibly at different rates; how should these rates be adjusted in order that the decrement of utility may be a minimum?[415]

Boiteux, meanwhile, examined the socially-optimal price for a public enterprise monopoly when marginal-cost pricing fails to provide cost recovery. As he noted in the introduction, his paper was:

> … left with the problem of determining how to amend the marginal cost pricing rule when the firm is subjected to a budgetary condition incompatible with the decision rule.[416]

Hence, as noted in AAPT's submission, the name 'R-B' pricing in the context of utility pricing acknowledges the work of Ramsey, who established the initial rule (i.e. the 'Ramsey Rule' for taxation), and Boiteux, who independently derived the same result in the context of cost recovery for a public utility.

A3.2 The 'Ramsey-Boiteux' (R-B) pricing rule

In short, the R-B pricing rule is concerned with determining the most efficient way for a multi-product firm to recover common costs of production, given that it engages in linear (one-part) pricing.

To explain the R-B pricing rule, consider a simplified situation where an MNO offers only two services: origination and termination. Further, assume that in providing these two services, an MNO incurs two types of costs – costs which are 'directly attributable' to each service and other costs that are 'common' to both services.[417] Moreover, assume that consumer demand is more sensitive to price changes for origination compared to termination (i.e. the own-price elasticity of demand for origination is greater than that for termination).

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413 F.P. Ramsey, 'A Contribution to the Theory of Taxation', *Economic Journal* 37, 1927, pp. 47-61.

414 M. Boiteux, 'Sur la Gestion des Monopoles Publics Astrient á L'Equilibre Budgetaire', *Econometrica* 24, 1956, pp 22-40. As the original article is in French, W. J. Baumol and D.F. Bradford had the paper translated into English, and the citation for this is: M. Boiteux, 'On the Management of Public Monopolies Subject to Budgetary Constraints', *Journal of Economic Theory* 3, 1971, pp. 219-40.

415 Ramsey, p. 47.

416 Boiteux, p. 219.

417 'Common-costs' in this context might include items such as 'IT expenses', 'sales and marketing expenses', 'central finance expenses' and 'general management expenses'. To some extent, some of these costs may not be obviously related to any particular service.

The problem in this instance is that pricing both services at their attributable (or marginal) costs will not raise enough revenue to cover total costs (which include common costs of production).

At its simplest, the R-B pricing rule suggests that the most efficient way to recover common costs is to price the service which has a relatively lower own-price elasticity of demand (i.e. termination) proportionately higher above its attributable or marginal cost than the service which has a relatively higher own-price elasticity of demand (i.e. origination). For this reason, it is sometimes referred to as the 'inverse elasticity pricing rule'. This is because the ratio of the proportionate mark-ups on attributable or marginal costs is the inverse of the ratio of the own-price elasticities of demand. Based on the R-B literature, it can be shown that, in principle, structuring prices in this way when seeking to recover common costs will result in a lower overall efficiency cost than if a uniform proportionate price increase was levied across the two services (i.e. if the services shared common cost recovery equally).

A second way of interpreting the R-B rule is in terms of the reduction in quantity demanded of each service. These quantities should be reduced by the same proportion; preserving the pattern of consumption prior to the R-B mark-ups being imposed. Intuitively, to reduce the service with a more inelastic own-price elasticity of demand by a given proportion must entail a greater proportionate increase in its price than is necessary to reduce demand for the service with the less responsive demand. Alternatively, a third way of presenting the rule is in terms of the addition to the deadweight loss from increasing the price of each service (i.e. the 'marginal deadweight loss'). In order to maximise consumer welfare for a given common cost recovery, prices should be adjusted until the marginal deadweight loss in the market for termination equals the marginal deadweight loss in the market for origination.[418]

There is, however, a limit to this rule. In relation to the above example, it can be shown that it will not be optimal to recover all common costs from termination alone, even though it is the service with the more inelastic own-price elasticity of demand. Rather, it will always be more optimal to allocate common costs across the two services. In this regard, WIK, notes that:

> As a result, it does not pay simply to fund all the fixed or common costs from a mark-up in the least elastic market but it is best to balance mark-ups in inverse proportion to their market elasticities.[419]

A3.3 Conditions required to ensure the optimality of R-B pricing

The previous sub-section provided a simple example of the intuition underpinning the R-B pricing rule. Importantly, however, the optimality of the R-B pricing rule is predicated on a number of assumptions and conditions. If these assumptions and conditions do not hold, it becomes less clear as to whether R-B pricing is necessarily the most efficient method for recovering common costs.

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[418] See W. Baumol and D. Bradford, 'Optimal Departures from Marginal Cost Pricing', *American Economic Review*, 60, June 1970, pp. 265-283, for an exposition of the three ways of presenting the basic rule.

[419] WIK, Final Report, p. 15.

A3.3.1 Normal profit constraint

In the simplified example considered above, the optimality of the R-B pricing rule was implicitly based on the assumption that there are 'normal economic profits' being made by the MNO across the markets for origination and termination. The concept of 'normal economic profit' refers to a situation where a firm is earning a level of profit just adequate to cover all costs of production, including all opportunity costs.[420] In the context of R-B pricing, this is sometimes referred to as the *normal profit constraint*.

If the normal-profit constraint is not satisfied, and an MNO is making some level of 'excess' economic profits (i.e. covering all costs plus opportunity costs with profits left over), then prices set according to the R-B pricing rule will not generate a socially-optimal outcome. In the first instance, this is because mark-ups on attributable costs will be set to effect the recovery of not only legitimate common costs (including common costs of production), but also 'excess' profits. On this issue, Braeutigam[421] contends that while the same pricing structure would emerge in this circumstance (i.e. higher mark-up on the attributable cost of termination, compared to origination), the overall *level* of prices would be higher. Further, and as noted by Joskow:

> … the structure, though not the level, of the R-B prices is the same as the prices that would be charged by an unregulated monopoly with an opportunity to engage in third-degree price discrimination.[422]

This suggests that whether the normal-profit constraint is satisfied is an important factor in assessing the *prima facie* appropriateness of the R-B mark-up in Optus's proposed Undertaking price terms.

A3.3.2 The necessity for monopoly power

The satisfaction of the normal-profit constraint is a necessary condition for optimal R-B pricing, however it is not necessarily a sufficient condition. This is because the R-B rule is dependent on prices being varied according to market demands, and these are not necessarily coincident with carrier-specific demands. To the extent that there is competition in the retail mobile market, MNOs will be forced to set prices according to their carrier-specific demands, rather than according to market demands. Carrier-specific demands will be more elastic than market demands; with the deviation from market demand being greater the more competitive is the market.

On this issue, WIK, has noted that:

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420 'Normal profit' is defined as when all resources employed by the firm are just earning their opportunity costs. In particular, when the financial capital and the entrepreneurial skills used by the firm are being compensated enough to keep them from leaving and going into some other line of productive activity, it is said that they are earning a normal profit. See R. Waud, P. Maxwell, A. Hocking, J. Bonnici and I. Ward, *Microeconomics*, (South Melbourne, Addison Wesley Longman Australia Pty Ltd), 3rd Edition, 1996, p. 182.

421 R.R. Braeutigam, 'An Analysis of Fully Distributed Cost Pricing in Regulated Industries', *Bell Journal of Economics*, 11, 1980, pp. 182-96, makes the point that the R-B prices can be derived for an allowed profit constraint that is greater than zero on p 189 in footnote 14, and on p 193 in footnote 17.

422 P. Joskow, 'Regulation of Natural Monopolies' in A.M. Polinsky and S. Shavell (eds.), *Handbook of Law and Economics*, Elsevier Science B.V, forthcoming, 2005. Draft available at: http://econ-www.mit.edu/faculty/download_pdf.php?id=1086.

> For profit-maximising firms this inverse elasticity rule refers to each firm's residual demand elasticities, which only coincide with the market elasticities in case of monopolies. The price structure in imperfectly competitive markets is therefore likely to differ from that of B-R prices.[423]

Given that R-B prices should be set according to market demands, *ergo*, the more competitive is the retail mobiles market, the more market prices are likely to diverge from R-B prices.

Attenborough, Foster and Sandbach recognised the difficulties presented by competitive markets for R-B pricing in a 1992 article:

> One difficulty in applying this to present day telecommunications markets is that the traditional Ramsey pricing analysis assumes one monopoly producer. In competitive markets (where company specific elasticities differ from total market elasticities), Ramsey pricing … may not be sustainable. [424]

Similarly, the implications of competition for R-B pricing have been considered by Baumol and Sidak:[425]

> 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.

Therefore, the R-B literature suggests that, were market forces in the mobile industry to result in normal-economic profits being made, they would tend to do this with an excessive price for mobile termination and deficient prices for retail services, as compared with the socially optimal R-B configuration.

A3.3.3 Inclusion of all relevant services that give rise to common costs

In the simplified example, the two relevant services were mobile origination and termination. Therefore, to the extent that these were the only two services contributing to common costs, this was the correct specification of the R-B framework. In reality, however, an MNO is likely to supply a multitude of services that give rise to common costs. These include 'subscription', 'origination', 'termination', 'on-net' and mobile data services such as SMS and GPRS.

The correct approach would be to include all services that give rise to common costs in the R-B framework. If certain relevant services are excluded from the R-B framework, those services that are included will, other things being equal, bear a greater than appropriate portion of common costs.

A3.3.4 Knowledge of elasticity estimates

The simple example also implicitly assumed that the relevant own-price (and cross-price) elasticities of demand for origination and termination were known, or could be estimated, with sufficient accuracy. In reality, however, and as indicated by a number of economists and regulators around the world, there are practical difficulties

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423 WIK, Final Report, p. 18.

424 N. Attenborough, R. Foster and J. Sandbach, 'Economic Effects of Telephony Price Changes in the UK', n/e/r/a Topics, London, September 1992, p. 8. See also N. Attenborough, 'Regulation of Competitive Telecommunications Markets', n/e/r/a Topics 12, London, April 1993, pp. 6, 14.

425 W. Baumol and J. Sidak, *Toward Competition in Local Telephony*, MIT Press and AEI, 1994, p. 40. However, in the Commission's view, Baumol and Sidak incorrectly proceed to conclude that this will still result in appropriate mark-ups.

associated with estimating the own and cross-price demand elasticities required to implement R-B pricing successfully. These difficulties appear to be one of the main reasons why R-B pricing has not previously been applied in practice in relation to mobile termination services. For example, Baumol and Sidak have noted that:

> The 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 firm should be permitted to charge for its products.[426]

Further, Baumol and Sidak note that, whilst marginal costs are difficult enough to estimate:

> … 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 data, and by delays that will prevent the firm from responding promptly and appropriately to evolving market conditions.[427]

Similarly, the US affiliate of CRA has warned of 'difficult and costly' data requirements; that resulting prices might be 'less efficient than the prices produced in a competitive market for retail mobile services'; and that 'they may not be appropriate in a dynamic and a competitive environment'. [428]

Further on this issue, in support of its own Undertaking with respect to the MTAS, Vodafone notes that:

> While regulators around the world have typically accepted the positive efficiency properties of Ramsey pricing and recognizing externalities when considering the appropriate price for the MTAS, they have generally decided not to explicitly incorporate them (and more so Ramsey pricing) into calculating a regulated price for the MTAS predominately on the basis of complexity and the lack of robust data. [429]

These perspectives suggest that the successful implementation of R-B pricing requires up-to-date and accurate knowledge about the own and cross-price elasticities of the relevant services. Even then, it is possible that the dynamics of a quasi-competitive market may overwhelm any attempt at accurate implementation.

A3.3.5 Single-part pricing

Another assumption of the simple analysis outlined above is that the entire burden of common cost recovery falls on 'single-part' linear prices rather than multi-part or non-linear ones.[430] Where some aspect of the pricing is unrelated to usage, some of the burden of common costs is taken away from usage, therefore reducing the required mark-ups. Therefore there is some question as to whether this is a realistic assumption in the case of mobile telecommunications markets, where prices are often

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426 Baumol and Sidak, *op. cit*. p. 38.

427 Baumol and Sidak, *op. cit.*, p. 39.

428 Charles River Associates (B. Mitchell and P. Srinagesh), *Economic Analysis of Fixed-to-Mobile Call Termination Charges*, prepared for BellSouth International, CRA No. 4021, 28 March 2003, p. 41.

429 Vodafone Australia, *Submission to the Australian Competition and Consumer Commission Access Undertaking MTAS*, 26 November 2004, p. 16.

430 Linear or single-part pricing is where the price per unit remains constant as the amount consumed varies. Non-linear or multi-part pricing is where the price varies as the amount consumed varies, most commonly where there is a component of the tariff structure that is invariant with the amount consumed.

set on a multi-part basis or are totally unrelated to usage (i.e. capped charging). This issue is discussed further in section 6.2.

A3.3.6 The recognition of relevant 'cross-price' effects

The simplified example considered above also implicitly assumed that there were no cross-price effects between origination and termination services. In other words, it assumed that a change in the price of origination did not affect the demand for termination (and *vice versa*). However, a more realistic scenario is one where the demand curves for these services are interdependent, or that a price change for one of the services will affect the demand for the other service to some extent. More broadly, there will be a myriad of inter-relationships between different mobile services and between mobile services and fixed-line services.

The R-B literature suggests that allowing for cross-price effects will change the optimal structure, and level, of R-B prices that should be applied to each service. In the case of the simplified example discussed above, if the two services are substitutes (e.g. an increase in the price of termination increases the demand for origination, and *vice versa*), the optimal R-B prices consistent with the recovery of common costs would be *lower* than if there were no cross-price effects. Alternatively, if the two services are complements, the optimal R-B prices consistent with the recovery of common costs would be *higher* than if there were no cross-price effects.[431]

Elasticity estimates which factor in both the own-price and cross-price effects are typically referred to as 'super-elasticities'.[432] The same intuition relating to the simple 'inverse-elasticity' rule carries over into the case where demand functions for each service are interdependent. In this case, the inverse-elasticity rule relates to the ratio of the proportionate mark-ups to the inverse ratio of the 'super-elasticities'.[433] The expression of the rule in terms of equal proportionate reductions in demand and the equation of the marginal deadweight losses carry over into these more complex circumstances.

This suggests that any serious attempt to implement an optimal R-B pricing structure should factor in the impact of cross-price effects between all mobile services, and further, between mobile services and complementary or substitutable services from other networks, such as the fixed-line network. Thus, WIK advises:

> … it was known from the beginning of the Ramsey pricing literature that this is legitimate only if the other industries are competitive … [and] independent in demand … Otherwise, adjustments have to be made. In the current case, interactions with the fixed network industry are potentially large, among others, because of increasing fixed-to-mobile substitution.[434]

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[431] The analysis of R-B pricing where there are non-zero cross-elasticities of demand is set out in Appendix B (B.3.2) of AAPT's submission. See also the exposition by WIK, 2.2.1.

[432] Where more that one price is changed simultaneously, the impact on demand of any one service will depend on the responsiveness of demand to its own price and the impact of other prices through substitutability and complementarity relationships. All of these price effects are captured by the 'super-elasticities'.

[433] In its exposition, CRA (*op. cit.*, pp. 45-46) has presented a different version of the super-elasticity formula than that of Rohlfs, that appears incorrectly to weight the different elasticities. See WIK Consult, *op. cit.*, footnote 11, p. 15.

[434] WIK Consult, *op. cit.*, 2.2.2.4, p. 27.

Appendix 4: Externality concepts

Externalities are a category of market failure that arise where acts of consumption or of production give rise to benefits or costs to other than the immediate consumer or producer and where these 'external' effects are not subject to a market transaction. This means that, in these circumstances, private decision makers will not consider any external effects in their own behavioural decisions, and therefore will result in too little of an activity with a positive external effect, and too much of an activity with a negative external effect.

Importantly, an 'externality' only exists where an external effect cannot be internalised through some means of market transaction – and not, more broadly, whenever an external effect is identified. In this regard, Liebowitz and Margolis argue that:

> Network effects should not properly be called network externalities unless the participants in the market fail to internalize these effects. After all, it would not be useful to have the term 'externality' mean something different in this literature than it does in the rest of economics. ... Although the individual consumers of a product are not likely to internalize the effect, ... the owner of a network may very well internalize such effects ... [and] they are no longer externalities.[435]

Although an examination of the literature reveals some ongoing definitional issues, there appear to be two main kinds of externalities relevant to telecommunications networks – 'network' externalities and 'call' externalities. These are discussed in turn below.

A4.1 Network externalities

'Network externalities' are thought to arise when existing telecommunications network subscribers (fixed and mobile) attribute some value to a new subscriber joining a telecommunications network. However, the private value placed on these subscriptions (i.e. the marginal subscriber's willingness to pay) does not take into account this external benefit to existing subscribers. For example, in the context of mobile networks, it is often argued that new subscribers bring benefits to existing subscribers because the expansion of the subscriber base increases the range of communication opportunities available to existing subscribers. That said, economic theory suggests that a marginal subscriber will only take into account the benefit he/she derives from subscription (i.e. calls made, calls received) and will not factor into their private valuation the external benefits that accrue to existing subscribers. The consequences of this situation are noted by WIK:

> In this case a person may not derive enough private benefits to cover the price of subscription even though economic welfare or social benefits would be enhanced if that person would join the network. In that case the number of subscribers or penetration would be below its (socially) efficient level.[436]

Two different types of 'network externalities' are often identified in the literature; the network 'usage' externality and the network 'option' externality. In the context of the mobile network example above, the 'usage' externality captures the benefit that existing subscribers (mobile and fixed) receive by being able to call, and receive calls from, new mobile subscribers. The existence (if not the value) of such a benefit can

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[435] S. Liebowitz. and S. Margolis, 'Network Externalities (Effects)', undated, p. 1. (http://www.utdallas.edu/~liebowit/palgrave/network.html.)

[436] WIK Consult, p. 37.

be observed via the change in the *volume* of FTM and MTM calls that are made by existing subscribers when a new subscriber joins a mobile network.

In contrast, the 'option' externality captures the benefit that existing subscribers (fixed and mobile) derive from having the option of calling new mobile subscribers, even if an existing subscriber never exercises that option. For example, an employer may gain some benefit if one of its employees purchases a mobile subscription on their own initiative, even if they never actually call that employee. The benefit could arise from simply the knowledge that in the case of an urgent situation, that employee can be contacted.

Because the network externality is often though to benefit both existing fixed and mobile subscribers, the following distinction can be made:

- *Mobile subscription network externality* – where existing mobile subscribers value the addition of new mobile subscribers because it gives them more communications possibilities; and.
- *Fixed-line mobile network externality* – where existing fixed subscribers value the addition of new mobile subscribers because it gives them more communications possibilities.

Despite the intuitive theoretical case for network externalities, some economists have questioned the relative importance of this affect. For example, in the context of fixed-line networks, Lewis Perl argued that:

> Thus, while there probably is a network externality associated with telephone service, taking it into account has little effect on the estimated gains from cost-based pricing … Because of the small size of the externality, its existence also has very limited effects on optimal pricing policy. associated with telephone service, taking it into account has little effect on the estimated gains from cost-based pricing.[437]

Moreover, and as discussed further below, given the linkages between fixed and mobile networks, there may also be network externalities associated with fixed subscription as well. This issue becomes more relevant given anecdotal evidence of an increasing trend of fixed-to-mobile substitution in Australia.

A4.2 Calling externalities

'Calling externalities' are thought to arise when the consumption of a telecommunications 'call' service generates benefits (or costs, in the case of unwanted calls) other than those experienced by the person paying for the call. To the extent that such external benefits are not internalised between the calling party and the called party, it is argued that call externalities may be generated.

A significant feature of telecommunications services is that they usually involve some means of communication between two (or more) individuals. Hence, consumption of the service is (generally) 'joint' and provides benefits for more than one consumer. While consumption is joint, a particular unit of the service (e.g. a phone call or an SMS) is often paid for by only one consumer. Under a Calling Party Pays (CPP) system, which operates in Australia, the person who initiates a call (the *calling* party)

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[437] L. Perl, 'The Consequences of Cost-Based Telephone Pricing' in J. Mitchell (ed.) T*elecommunications and Equity: Policy Research Issues*, North-Holland, Amsterdam, 1986, p. 240.

pays for it. This means that although the *called* party also receives benefits from the call, they do not generally contribute to the payment for that particular unit.

The recognition of this externality effect would suggest that an existing subscriber (fixed or mobile) places some value on the incoming calls they receive, which is independent or separate from the value placed on those calls by the calling party. To the extent that call externalities exist (i.e. are not fully internalised), therefore, this would suggest that the number of calls being made is less than would be efficient. As Armstrong and WIK have noted, such a situation may provide an *a priori* case for the subsidisation of termination/call charges to encourage increased call volumes.[438] That said, it should be noted that there is disagreement within the literature as to the relevance of this 'externality'. For example, some economists have emphasised the ability of the *calling* and *called* parties to internalise any external benefits that arise from the CPP billing system through bilateral calling arrangements or understandings. For example, Maldoom has noted that:

> Models of telecommunications demand generally assume that call externalities between the caller and the called party are internalised. Often, this situation arises as a result of regular, repeated communication. In such repeated bilateral calling relationships, calls in either direction may serve the purpose of communicating news … Where this call direction substitution occurs, subscribers have an indirect interest in the cost of being called.[439]

In line with this view, the Rohlfs 'base case' model which was utilised by Ofcom assumed that call externalities (they appear to have been termed 'usage' externalities by Rohlfs) were fully internalised. However, Rohlfs also noted that his model allows the user to examine the effects of small positive (uninternalised) call externality effects (i.e. by setting the relevant model parameters to 1.1) and that externalities of this magnitude 'significantly reduce the optimal usage prices and termination charges'.[440] On the extent to which call externalities are internalised, WIK states in its report to the Commission that:

> Indeed usual communication patterns and behaviour internalise a great deal of call externalities. Communication normally is not a one-way road. The more people communicate to each other, the more probable is the outcome that the number of calls from both sides is close to equal, which roughly internalises the externalities associated to their calls.[441]

That said, WIK also noted that for calls which are received from outside the called party's usual community of interest (i.e. family, friends and business relationships), call externalities may not be efficiently internalised.

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438 M. Armstrong, 'Call Termination on Mobile Networks', paper for Oftel, 11 April 2002.

439 D. Maldoom, 'Caller-called Party Interaction: Implications for Call Termination', DotEcon Discussion Paper No. 02/03, London, September 2002, pp. 2-3.

440 Jeffrey H. Rohlfs, 'A Model of Prices and Costs of Mobile Network Operators', paper for Oftel, Strategic Policy Research, 22 May 2002, p. 5.

441 WIK, Final Report, p.42.

Appendix 5: Note on the 'waterbed' effect

In support of their Undertakings, both Optus and Vodafone have submitted material on the issue of the extent to which prices for other mobile services (i.e. 'retail mobile services') would adjust in the event of a regulated reduction in MTAS rates.[442] This has been referred to as the 'waterbed effect'.[443]

For example, based on the advice of CRA, Optus submits that a complete (i.e. 100 per cent) 'waterbed effect' is likely to operate in the markets within which mobile services are provided in Australia. This is based on its view that there is effective competition in the retail mobile services market. Optus notes that its complete 'waterbed' assumption is consistent with that made by Ofcom in its consideration of MTAS prices. Moreover, CRA argues that, conceptually, even if the mobiles market were a monopoly, a substantial 'waterbed effect' would be expected as the reduction in MTAS prices would alter the profit-maximising level of mobile retail prices as each subscriber would no longer be as profitable as previously.[444]

Also, on behalf of Vodafone, Frontier has prepared a paper addressing this issue in the context of both the MTAS undertakings submitted by Optus and Vodafone.[445] It has also submitted a response to one of AAPT's submissions criticising Frontier's analysis.[446]

The underlying contention of Frontier's paper is that a profit-maximising MNO will increase the price of retail mobile services following a (regulated) reduction in the MTAS rate, regardless of the level of competition in the market for (retail) mobile services. In reaching this view, Frontier argues that complementarity in demand and supply of mobile services are such that a profit-maximising MNO will seek to maximise the combined total revenue it receives from *both* retail services and the MTAS – and as such, a fall in the MTAS rate will drive prices for retail mobile services up, in order for the MNO to maintain the same level of revenue (and similarly, profits).

Frontier submits that the level of competition in the (retail) mobile services market will affect the strength of the 'waterbed effect' – or the extent to which prices of retail mobile services may change as a result of a regulated reduction in the MTAS rate. In the case of perfect competition in the retail mobile services market, although it does not state this explicitly, Frontier appears to implicitly suggest that a 100 per cent 'waterbed effect' would operate in certain circumstances. In the case of a monopolist, Frontier argues that depending on whether 'linear' or 'constant elasticity' demand functions are assumed for FTM and retail mobile services, the 'waterbed effect' could be between 50 per cent to 'more than 100 per cent effective' in this case.[447]

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442 Vodafone submission, March 2005.

443 As CRA and Frontier note, this was termed the 'waterbed effect' by the Competition Commission in the UK and has subsequently been used in regulatory debates in other countries.

444 The CRA Report, p. 3.

445 See also Vodafone's letter of 8 July 2005, *Frontier Economics Report on 'The Waterbed Effect'*, which accompanied the Frontier Report when it was submitted in relation to the Optus DGTA undertaking.

446 Frontier Economics (Frontier), *Response to AAPT's Submission to the ACCC 'Estimates of Ramsey-Boiteux Mark-ups & Network Externality Effects*, A note prepared for Vodafone, November 2005.

447 Frontier, *The Waterbed Effect,* A Report prepared for Vodafone, July 2005, p. 13.

Vodafone and Optus consider that the 'waterbed effect' is a broadly accepted concept. The hypothesis, as stated by Frontier Economics, on behalf of Vodafone is that:

> [t]here is broad acceptance that a regulated reduction in mobile termination rates (MTRs) will affect the rates charged for other retail services such as mobile subscriptions and mobile originated services. [448]

Similarly, Optus claims that:[449]

> The waterbed effect is uncontroversial to most. It was accepted by the UK regulators and … by the New Zealand Commerce Commission … Hausman (2004) provides an algebraic proof …[450]

One of the key conclusions reached by Vodafone and Optus in this regard (based on the advice of their respective consultants) is that any analysis of the welfare effects of MTAS regulation should take into account the effect on welfare of changes in the prices of retail mobile services as well as the effect on welfare of a change in the price of FTM services.[451]

A5.1 The 'waterbed' assumption in the CRA and Frontier models

For the reasons outlined above, CRA assumes a complete (100 per cent) 'waterbed effect' in its model to determine the 'welfare-maximising' price of the DGTAS. Similarly, Frontier has considered it a 'reasonable approach to assume that in the case of the mobile services market in Australia, the waterbed will be 100 per cent effective'.[452] In other words, both Frontier and CRA assume that, in response to lost revenue due to a reduction in MTAS rates, an MNO will be forced to increase prices for retail mobile services to recover those lost revenues. The assumption of a 100 per cent 'waterbed effect' is apparently based on the premise that there is effective competition in the retail mobile market, and therefore, that an MNO is operating within a 'normal profit constraint' framework.

A5.2 Submitters' views

Telstra believes that Optus's assumption of a complete 'waterbed effect' is reasonable given that the mobiles market is workably competitive.[453]

Hutchison disagrees with Optus's assumption of a complete 'waterbed effect' and considers that any reduction in the profits that MNOs make on the MTAS will not lead to an equal reduction in the subscription subsidy. In support of this argument, Hutchison provides evidence from CitiGroup that Vodafone was not forced to compete away increased profits through decreased per-minute call rates when it removed its mobile subscription subsidies – in its view, strong evidence that the mobile market is not competitive and that the 'waterbed effect is not fully effective'.[454]

Hutchison also notes and adopts some of MJA's views on this issue, including that:

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448 Frontier, The Waterbed Report, p. 3.
449 Optus second submission, August 2005, p. 12. Reference to Jerry Hausman, *Statement of Jerry Hausman*, statement on behalf of Optus, 17 December 2004.
450 Jerry A Hausman, 'Economic Analysis of Regulation of CPP', 29 November 2004, p. 9.
451 Frontier, Waterbed paper, p. 16.
452 Frontier, Waterbed paper, p. 16.
453 Telstra submission, p. 20.
454 Hutchison submission, p. 34.

- an operator that is part of an oligopoly will not rebalance their charges by reducing the subscription subsidy if the profits they make on the MTAS are reduced. Only an effectively competitive retail market of a fully monopolised retail market ensures rebalancing. However, the incentives to rebalance in these two extreme scenarios differ. A reduction in the MTAS will not result in a full waterbed effect in the market is an oligopoly; and
- evidence from the UK is not conclusive as to the magnitude of the waterbed effect.[455]

AAPT submits that reading the initial submission by Frontier in conjunction with its subsequent 'Waterbed report' is problematic for two reasons. Firstly, in AAPT's view the 'waterbed effect' arguments made by Frontier in the 'Waterbed report' are sustained using a theoretical model that is 'inconsistent' with Frontier's model to derive welfare-maximising prices for the MTAS.[456] Secondly, in AAPT's view, Frontier's 'waterbed effect' analysis appears to confuse the distinct concepts of network externalities and complements which can potentially lead to problems with measuring the overall welfare impact of price changes.[457]

The CCC engaged its own expert to look at the issue.[458] The author of this report, Dr Andrew Wait makes a number of points about this debate.

Firstly, it is not necessarily the case that a decrease in MTAS rates will lead to an increase in prices for retail mobile services. Indeed, it is possible that increased FTM call volumes and/or increased product market competition arising from lower MTAS rates could 'counteract or even outweigh any incentive to increase mobile retail prices'.[459]

Secondly, referring to lower MTAS prices as an 'increase in costs' misses the crucial (and complicated) relationship between the number of incoming calls and the other services provided by an MNO, and other factors not considered by Frontier may be more important in determining retail mobile prices.

Thirdly, even if a reduction in MTAS rates leads to an increase in retail mobile prices, this does not suggest that the Commission should not reduce MTAS rates as this could still lead to overall welfare increase.[460]

Slimtel submits that the 'waterbed effect' as discussed in Optus's submission is difficult or impossible to accept given the strong competition for outgoing mobile rates. Also, if inbound charges are reduced for Optus, then it is unrealistic to contend that other components of the preselection bucket will be increased due to the fierce competition, especially from pre-paid calling card parties.[461]

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455 Hutchison submission, p. 34.
456 AAPT, submission on Ramsey-Boiteux and Network Externalities, p. 37.
457 AAPT, submission on Ramsey-Boiteux and Network Externalities, pp. 36-37.
458 Andrew Wait, *The Waterbed Effect: A Comment on Frontier Economics (2005)*, A report prepared for Competitive Carrier' Coalition Inc, November 2005.
459 Andrew Wait, p. 8.
460 Andrew Wait, pp. 3-4.
461 Slimtel submission, paragraph 13.

A5.3 The Commission's view

The issue of whether there will be any adjustments to prices for retail mobile services flowing from a change in the MTAS price involves analysing 'supply and demand' factors operating in the mobile industry. In analysing these effects, Optus and Vodafone refer to the 'waterbed' analogy and submit that this is a broadly accepted concept. Certain other parties have been less supportive.

In the Commission's view, consideration of market realities suggests that an MNO *might* increase one or more retail prices in response to a decrease in the MTAS charge, but only if it were profit maximising to do so. The Commission expects that an MNO like Optus will set prices for the MTAS and for retail mobile services according to profit-maximising principles, taking into account direct and indirect impacts on overall profits.

However, it is possible that the behaviour attributed by Optus in its support of the 'waterbed effect' would – if viewed as a general principle – be inconsistent with profit maximisation.

Prior to the regulation of the MTAS, theory suggests that the only reason why retail mobile service prices would be *reduced* by a profit-maximising MNO is if that action increased profits overall. In itself, reducing retail mobile prices has a negative primary impact on profits; most graphically in the form of the cost to the MNO of handset subsidies or reduced revenue from below-cost subscription fees. However, to the extent that this increased demand for mobile subscription, and also, increased the demand for FTM calling, it would, in turn, have the effect of increasing demand for MTAS services.

As long as MTAS services are priced above their underlying TSLRIC+, this will lead to greater MTAS profits.[462]

The profit-maximising MNO would trade-off this increase in MTAS profits with the loss in profits from selling subscription below cost.

Now consider what might happen were the MTAS charge to be reduced by regulatory action. Given this profit-maximising condition, it would be irrational *necessarily* to respond in the retail mobile services market with actions designed to restore aggregate revenue to its level prior to the reduction in the MTAS charge. This is because a profit-maximising MNO would likely, in addition to the direct impact on profits, consider the feedback effects in the market for FTM calling. For example, the attempt to retrieve revenue by increasing mobile subscription prices will be thwarted – at least in part – by losses in MTAS revenue as the demand for FTM calls decreases due to a decline in the number of mobile subscribers.

Given the Commission's view that the price of the MTAS remains above its TSLRIC+, there will be profit losses in the market within which the MTAS is supplied. The marginal loss in MTAS profits through an inward shift of the demand for the MTAS (which is a derived demand from FTM calls) *could* be greater than the marginal profit gain from increasing the subscription charge (such as by reducing any handset subsidy), and no retail price increase would occur.

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[462] Using self-explanatory notation, the marginal profit gain from increased termination is equal to: $\Delta\pi_{TERM}$ ΔQ_{TERM} x (P_{TERM} – $TSLRIC_{TERM}$).

Proponents of the waterbed effect depict it in terms of standard market reactions to changes in (incremental) costs, and infer that the Commission is out of line with this fundamental economic analysis. Thus, Professor Hausman, on behalf of Optus, contends that:

> … it would be an extremely inconsistent position … to assume that … FTM retail providers will pass on a portion of lower costs and yet to assume that competitive mobile providers … will not decrease the amount of their handset subsidies or increase their outgoing call price when their FTM call prices are decreased due to regulation.[463]

The Commission does not consider that there is an inconsistency. The reason for the reduction in the FTM price is that there is a reduction in a per-unit input cost (the MTAS charge), and standard market analysis predicts that some or all of this will be passed through in lower prices, with the amount of pass-through depending on the prevailing market form (e.g. monopoly or competition). In contrast, in the retail market there is no actual change in a per-unit input cost to act as a catalyst for a price adjustment. In this context, Professor Hausman appears to confuse an extraneous change in profits with a direct change in per-unit costs, and consequently draws an erroneous conclusion regarding the consistency of the Commission's position. In addition, Professor Hausman overlooks an input price change that actually does occur; leading to the need to qualify his analysis further. Specifically, a more complete analysis would consider that there is a change in a per-unit input cost of supplying off-net MTM calls, flowing from the reduction in the MTAS charge. This would lead, other things being equal, to a reduction in the off-net MTM retail price of up to the amount of the reduction in the MTAS charge.

Professor Hausman has also supplied an algebraic analysis of the effect on retail prices as an appendix to his statement,[464] and this has been cited approvingly by Frontier which claims that its own diagrammatic analysis is consistent with it. However, in the Commission's view, this algebraic analysis is not a completely accurate depiction of the circumstances facing a mobile carrier under the calling party pays (CPP) arrangement, and as described by Professor Hausman in the body of his report.

Professor Hausman's algebraic model presents demand for subscription as a function of the price of subscription (–), the price of outgoing calls (–) and the 'per call terminating charge' (–). However, under CPP the receiving party does not pay for incoming calls, so that term should not be part of the analysis. Instead, the demand for subscription should be related to the number of incoming calls. This would accord with Professor Hausman's depiction of the demand for subscription earlier in his statement:

> … a mobile subscriber would place a very high value (consumer surplus) on incoming calls since they are free. [footnote: Consumer value for a service is measured as the maximum they would be willing to pay to receive the service minus the amount they actually pay. If an amount paid is zero, the value will be higher ceteris paribus.]

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[463] Hausman Statement, paragraph 78. See also Michael Katz, *Competition, Efficiency, and the Long-Term Benefit of End-Users*, Report before the Commerce Commission, New Zealand, 30 November 2004, pp. 27-32. Hausman's and Katz's reports are both cited approvingly by Frontier (pp. 10-11).

[464] Hausman Statement, *op. cit.*, paragraph 89. There appears to be a typographical error in the signing of (A5) where 'the numerator is negative' should read 'the numerator is positive'.

In the Commission's view, this effect is not captured adequately by Professor Hausman's algebraic analysis.

Frontier claims that its diagrammatic analysis is consistent with Professor Hausman's algebraic analysis. In defining supply and demand complementarities Frontier states that:

> Products are said to be complements in demand when a consumer's willingness to pay to obtain the products is together greater than the willingness to pay for each of the products separately. … Complementarities in supply, or economies of scope exist when the costs to a firm of supplying both products are less than the costs associated with supplying the products separately. In some industries, complementarities in supply are such that firms will generally supply any single product as part of a bundle of goods. [465]

However, having defined complementarity appropriately, Frontier then sets out an asymmetric model of the complementarity between FTM calling and mobile subscription. Thus in Frontier's model an increase in the retail price (of subscription and/or MTM) will lead to a reduction in the number of subscribers and, therefore, a reduction in MTAS revenue; but an increase in the MTAS price (and thus a reduction in FTM calling) has no consequences for the demand for subscription. This is akin to arguing that an increase in the price of table knives will reduce the demand for table forks, but that an increase in the price of table forks will have no impact on the demand for table knives. If MTAS demand and retail mobile demand are indeed complements, the Commission would expect that an increase in the MTAS price would lead to a decrease in the number of FTM calls received by mobile subscribers, and therefore result in a shift downwards in the demand for mobile subscription, leading to a complementary fall in subscription.

This complementarity linkage appears to be absent from Frontier's analysis. This criticism of Frontier's analysis has been made by AAPT, that observes 'it has clearly not modelled a two-way effect'.[466] Frontier in its 'Response to AAPT' seems to misunderstand this criticism when it responds by characterising its diagrammatic analysis as:

> … merely a pictorial representation of part of the (algebraic) logic of Professor Hausman …[467]

However, while it is not properly developed, Professor Hausman's analysis does allow for a shift in the demand for subscription from an increase in the price of the MTAS, and Frontier's analysis does not – either explicitly or implicitly. Were it to be a feature of Frontier's analysis the demand curve for retail services would (as Frontier appears to recognise)[468] need to shift, not remain static. Frontier claims it did not do this because:

> The same logic can be translated into words as follows: If the Commission were to impose a decrease in the price of subscription which, in turn, would increase demand for (and the price of) incoming calls.
>
> It is true that we did not represent this latter logic in our Waterbed Report … because we did not consider it to be relevant to the considerations of the Commission.

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[465] Frontier Economics, *The Waterbed Effect*, A report prepared for Vodafone, July 2005, p. 5.

[466] See AAPT (*Estimates of Ramsey-Boiteux Mark-ups & Network Externality Effects*, submission to the ACCC, October 2005, p. 39.

[467] Frontier 'Response to AAPT', p. 13.

[468] Frontier 'Response to AAPT', p. 13 (last full paragraph).

While it is true that the Commission does not contemplate imposing limits on the price of subscription, this is irrelevant to the proper approach to assessing the full effects of a change in the MTAS charge, and the Commission believes that Frontier has not taken such an approach.

Moreover, Frontier's attempt to model the effects of a regulated reduction in the MTAS charge does not take into account the existence of both mobile-only and integrated fixed-line and mobile operators in the Australian market. In this regard, MNOs with different circumstances with respect to their balance of MTAS receipts and payments will not necessarily be affected in the same way. That is, it is possible that a MNO that is a 'net payer' of MTAS charges could actually benefit from a regulated reduction in MTAS charges. Such an MNO would not have an incentive or requirement to increase retail mobile prices in response to a regulated reduction in MTAS charges. In this circumstance, an MNO would not necessarily increase its total revenue from its mobile operations by increasing its retail mobile prices in response to a regulated reduction in MTAS charges.

In conclusion, the process that is termed the 'waterbed effect' is insufficiently developed by both Optus and Vodafone (and their respective consultants) to provide a substantial understanding of the effects of a change in the MTAS charge on retail mobile prices. The Commission holds this view for four main reasons.

Firstly, Frontier's analysis does not recognise that the reason why MNOs decrease subscription charges in the first place is to attract subscribers and, thus, increase profits from the MTAS. Otherwise, such subsidies would be illogical. While a lower MTAS charge remaining above cost may result in a lower loss of profit from a given increase in the subscription price, it will still likely be the case that MTAS profits will fall as a consequence of increasing the subscription charge.

Second, Frontier's analysis is partial. A full analysis would incorporate the symmetry of the complementarity between FTM calling and mobile subscription, thus recognising that an increase in the MTAS charge will reduce the attractiveness of mobile subscription by decreasing the volume of incoming calls received. As Professor Hausman's analysis infers, this will reduce the willingness to pay for subscription. In addition, the Frontier analysis does not appear to bring out the explicit welfare effects of the complex set of interactions following a change in the mobile subscription charge.

Third, neither the Frontier nor CRA analysis appears to incorporate the effect of other MNOs reducing their MTAS charges, thus allowing a reduction in the price of, and an increase in demand for off-net MTM calling. Other things being equal, this could be expected to flow through to a greater economic surplus from mobile subscription at its present price.

Finally, both the CRA and Frontier models' assume a full 100 per cent 'waterbed effect' without any adequate empirical evidence in support of this assumption. Indeed, Frontier notes that it is 'difficult to obtain empirical evidence from the mobile telecommunications industry about the extent to which the waterbed effect applies.[469] Frontier also notes that 'it is not aware of any study that has sought to isolate the impact of MTR regulation from the host of other factors affecting prices of retail

[469] Frontier, Waterbed paper, p. 11.

mobile services'.[470] In the Commission's view, even if the 'waterbed' proposition was accepted in this context, it is not necessarily clear that it would operate to such an extreme extent. In this regard, the Commission notes that CRA has provided evidence of retail price movements in the UK following a regulated reduction in the MTAS. However, the Commission agrees with MJA's view that such evidence is inconclusive, and further, considers that it is not sufficient to support the assumption of a complete 'waterbed effect'.

[470] Frontier, Waterbed paper, p. 11.