Australian
Competition &
Consumer
Commission

MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008

Report

November 2007

CONTENTS

List of abbreviations and terms

2G	Second Generation
3G	Third Generation
AAPT	AAPT Limited
AAR	Allens Arthur Robinson
ABS	Australian Bureau of Statistics
ACCC	Australian Competition and Consumer Commission
Access Economics	Access Economics Pty Limited
ACMA	Australian Communications and Media Authority
Act	Trade Practices Act
ARPU	Average Revenue Per User
bps	Bits Per Second
BSC	Base Station Controller
BSS	Base Station Subsystem
BTS	Base Transmission Station
BULRIC	Bottom-Up Forward Looking Long Run Incremental Cost
CAPEX	Capital Expenditure
CBD	Central Business District
CBP	Countervailing Bargaining Power
CCC	Competitive Carriers' Coalition
CDMA	Code Division Multiple Access
C-I-C	Commercial-In-Confidence
cpm	Cents Per Minute
CPP	Calling Party Pays
CRA	Charles River Associates
DGTAS	Domestic GSM Terminating Access Service
DSG	Digital Signal Groups
EBITDA	Earnings Before Interest, Taxation, Depreciation and Amortisation
EPMU	Equi-Proportional Mark-Up
EU	European Union
FAC	Facilities Access Code
FCC	Fixed and Common Costs
FL-LRIC	Forward Looking Long-Run Incremental Cost
FTM	Fixed-To-Mobile
GAAP	Generally Accepted Accounting Principles
GIS	Geographical Information System
GMSC	Gateway Mobile Switching Centre

GSM	Global System for Mobiles
GSM 2G	Second Generation of Global System for Mobile Communications
GSM 3G	Third Generation of Global System for Mobile Communications; the generic term used for the next generation of mobile communications systems
HLR	Home Location Register
H3GA	Hutchison 3G Australia Pty Ltd
HSDPA	High-Speed Downlink Packet Access
HTAL	Hutchison Telecommunications (Australia) Limited
Hutchison	Together HTAL and H3GA
IN	Intelligent Network
IT	Information Technology
LRIC	Long Run Incremental Cost
LSS	Line Sharing Service
LTIE	Long-term Interests of End Users
Macquarie Telecom	Macquarie Telecom Pty Ltd
MHz	Megahertz
MJA	Marsden Jacob and Associates
MNO	Mobile Network Operator
MNP	Mobile Number Portability
MSC	Mobile Switching Centre
MSR	Mobile Services Review
MST	Minimal Spanning Tree
MTAS	Mobile Terminating Access Service
MTM	Mobile-To-Mobile
NES	Network Externality Surcharge
NSS	Network Subsystem
Ofcom	Office of Communications (United Kingdom), formerly Oftel
OPEX	Operating Expenditure
OPTA	Onafhankelijke Post en Telecommunicatie Autoriteit (The Netherlands)
Optus	Optus Mobile Pty Limited and Optus Networks Pty Limited
PMTS	Public Mobile Telecommunications Service
POA	Postal Area
POI	Point of Interconnection
PowerTel	PowerTel Limited
PSTN	Public Switched Telephone Network
PwC	PricewaterhouseCoopers
RAF	Regulatory Accounting Framework
RAPM	Regulatory Accounting Procedure Manual
R-B	Ramsey-Boiteux

RFT	Request for Tender for the Provision of Expert Telecommunications Sector Consultancy Services to the Australian Competition and Consumer Commission, 31 March 2006
RKR	Record Keeping Rule (Rule 5)
SDH	Synchronous Digital Hierarchy
SingTel	Singapore Telecommunications Limited
SIO	Services in Operation
SLA	Statistical Local Areas
SMS	Short Message Service
SNPT	Strategic Network Planning Tool in the WIK Model
STP	Signalling Transfer Point
TELRIC	Total Element Long Run Incremental Cost
Telstra	Telstra Corporation Limited
TIO	Telecommunications Industry Ombudsman
TPA	Trade Practices Act
Tribunal	Australian Competition Tribunal
TRX	Transceivers
TSLRIC	Total Service Long-Run Incremental Cost
TSLRIC+	Total Service Long-Run Incremental Cost plus a mark-up to account for a contribution to organisational-level common costs
UK	United Kingdom
ULLS	Unconditioned Local Loop Service
US	United States of America
VLR	Visitor Location Register
VMS	Voicemail System
Vodafone	Vodafone Australia Limited
WACC	Weighted Average Cost of Capital
WIK	WIK-Consult GmbH
WIK Model	WIK Mobile Network and Cost Model

Currency contained in this report is Australian dollars unless otherwise stated.

1. Indicative Prices for the Mobile Terminating Access Service (MTAS)

The proposed price-related terms and conditions of 9 cpm for the period 1 July 2007 to 31 December 2008 are applicable to the MTAS provided on both second generation (2G) and third generation (3G) networks (i.e. the price is technology neutral) and reflect an upper-bound estimate of the total service long-run incremental cost plus a mark-up (TSLRIC+) for the supply of the MTAS for the period after 30 June 2007.[1]

The WIK Mobile Network and Cost Model (WIK Model) Version 1.2 estimates suggest the cost of the supply of the MTAS for an efficient operator unconstrained by an existing network structure in an Australian context. These efficient cost estimates, which when adjusted for traffic and further adjustments to contextualise the WIK Model for Australian conditions (as outlined in Annexure A.2.2.1) result in a range of **6.1 cents per minute (cpm)** to **6.6 cpm**.

The Commission is cognisant that there are certain constraints that mobile network operators (MNOs) face that may be appropriate to consider in a policy context to establish indicative prices for the MTAS. The Commission notes that some of these constraints are already reflected in the policy parameters informing the efficient cost estimates derived from the WIK Model; with the scorched-earth efficient operator estimates resulting in a range of 4.9 cpm to 5.2 cpm (where no adjustments have been made).

Further, in moving from 12 cpm which has previously been established as the conservative upper-bound estimate of supply of the MTAS from international cost benchmarking analyses to a more referable efficient cost estimate for Australia, the Commission considers there will be no adverse impact on the MNOs' legitimate business interests by moving directly to a price of 9 cpm from 30 June 2007. This is reflected through 9 cpm being above the estimate of 7.8 cpm for smaller operators given in this report.[2] At this time the Commission considers that 9 cpm is a useful indicative price that is broadly consistent with the statutory criteria. The Commission will maintain the indicative price of 9 cpm for the period 1 July 2007 to 31 December 2008.

Before considering further reducing the MTAS rate below 9 cpm the Commission will consider any comments in relation to the additional documentation provided with the WIK Model together with other evidence including but not limited to the recently incurred costs and networks deployed by MNOs in Australia, noting the Australian Competition Tribunal's (the Tribunal) comments in respect of these issues:

> [The modelling approach adopted by Optus] relieved Optus, to a certain extent, from establishing the efficiency of the costs of the assets used in its network design but it still left open the need to establish the efficiency of the network design and configuration itself.
>
> The approach taken by Optus to present, through CRA, a top-down model was not controversial. The Commission was content to accept Optus' top-down exercise. It appeared to be accepted, and we accept, that a bottom-up model based upon a hypothetical efficient operator may not, having regard to the time and costs involved, be feasible. The Commission's complaint was that Optus

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1 Other corroborative evidence such as efficient cost estimates, international benchmarking and pricing paths can be found in Annexure A2.

2 Refer to table A.3-1 in Annexure A.3.1.2 on page 57 of this report.

had not adjusted its costs sufficiently, or put forward material, to satisfy the Commission that Optus' costs were costs that an efficient operator would incur, based on TSLRIC or FL-LRIC formulations.

Although there is merit in the proposition that a firm in a competitive market has an incentive to be efficient and to incur costs efficiently, there is still a need for the Commission (and, on review the Tribunal), to be satisfied, having regards to the matters set out in s 152 AH and the objectives in s 152 AB of the Act that the firm's costs are efficiently incurred. In general terms, an operator in a competitive market should have more of an opportunity to establish the efficiency of its recently incurred costs by reference to its actual costs than a monopolist or dominant operator such as Telstra in *Telstra Corporation Limited* [2004] AcompT4. [3]

The Commission includes the following price-related terms and conditions in the *MTAS Pricing Principles Determination* for the MTAS referable to the period 1 July 2007 to 31 December 2008:

Table 1-1: Proposed price-related terms and conditions

Time period	cpm
1 July 2007 – 31 December 2008	9

The Commission will provide further guidance for the period beyond 31 December 2008 at an appropriate juncture. The Commission notes that in making any future pricing determinations, that it will consider a range of factors as set out in this report and that it will continue to consider efficiently incurred costs of MNOs with reference to actual costs consistent with the Tribunal's comments.

[3] *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116-118].

2. Background to the MTAS Regulation

2.1. The Declared Service

On 30 June 2004, the MTAS for voice services terminating on all digital mobile telecommunications networks was declared. The declaration for the MTAS expires on 30 June 2009.

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 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 1-1 below.

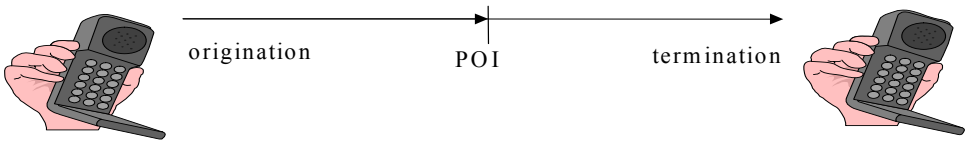

Figure 1-1 – Termination, origination and the POI

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 1-2 below. In this example, Telstra purchases access to Hutchison's MTAS in order to provide a call from a Telstra fixed-line end-user to a Hutchison mobile end-user. Telstra would then bill its directly-connected consumer for providing a FTM call service.

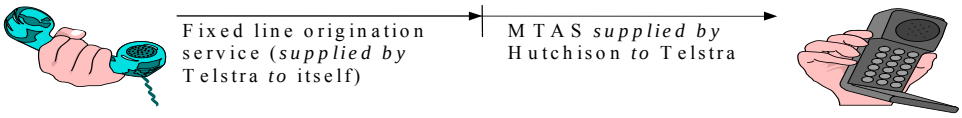

Figure 1-2 - Use of the MTAS to supply a FTM call

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 2G global system for mobiles (GSM) or code division multiple access (CDMA) network, a two and a half generation (2.5G) or a 3G mobile network.[4]

2.2. MTAS Declaration and MTAS Pricing Principles Determination

The current exercise of developing a bottom-up cost model has been part of an extensive consultation process which began with the *Mobile Services Review* commencing in 2003.[5]

This consultation process informed the *MTAS Pricing Principles Determination* for the period 1 July 2004 to 30 June 2007 which expired on 30 June 2007.

To support future pricing principles determinations for the MTAS to 30 June 2009[6], WIK-Consult GmbH (WIK) was engaged to develop a bottom-up cost model to inform the Commission about the estimated efficient cost of supply of the MTAS in an Australian context using a total service long-run incremental cost (TSLRIC) conceptual framework.

2.3. MTAS developments since 1 July 2004

Since 1 July 2004 the MTAS has become one of the most litigated and arbitrated single telecommunications access service in Australia. Three of the four mobile network operators (MNOs) have also submitted undertakings for the MTAS.

A brief outline of the regulation activity to this point in time is provided below.

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

[5] Australian Competition and Consumer Commission (ACCC), *Mobile Services Review – Mobile Terminating Access Services: Final Decision on Whether or not the Commission Should Extend, Vary or Revoke its Existing Declaration of the Mobile Terminating Access Service*, (*MTAS Final Report*), June 2004.

[6] This date is when the MTAS, as a declared service, is due to expire on.

2.3.1. Arbitrations

The Commission has had 37 MTAS disputes notified since July 2004. A complete list of disputes notified to the ACCC is contained in Annexure A.9.

The Commission has issued 18 final determinations and 19 interim determinations.

The Commission has currently 8 MTAS disputes outstanding.

From published interim determinations the following prices have been made:

- 18 cpm (2005)[7]
- 15 cpm (2006)[8]
- 12 cpm (2007)[9]

The prices made are consistent with the price-related terms and conditions outlined in the *MTAS Pricing Principles Determination*.

2.3.2. Ordinary access undertakings proposed by MNOs

Optus DGTAS undertaking

On 23 December 2004 Optus Mobile Pty Limited and Optus Networks Pty Limited (together 'Optus') lodged an ordinary access undertaking for the supply of its domestic GSM terminating access service (DGTAS) with the Commission. The DGTAS relates to a 'subset' of the declared MTAS because it only covers services on GSM networks (such as Optus's 2G network).

The Optus undertaking proposed a 'target' price for the DGTAS of 17 cpm for the calendar year 2007. The target price was constructed using a mark-up on Optus's forward-looking long-run incremental cost (FL-LRIC) for the supply of the DGTAS comprising 'fixed and common costs' based on Ramsey-Boiteux (R-B) pricing principles and a 'network externality surcharge' (NES) based on a model developed by Charles River Associates Pty Ltd. (CRA) for Optus. A gradual adjustment to the target price was intended to occur over a three-year period from 2005 to 2007, in which the price for the MTAS would fall from 19.25 cpm to 17 cpm.

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[7] ACCC, *Interim Determination: Access Dispute Between AAPT Limited (Access Seeker) and Optus Networks Pty Limited and Optus Mobile Pty Ltd (Access Provider)*, 28 October 2005; ACCC, *Interim Determination: Access Dispute Between Hutchison 3G Australia Pty Ltd (Access Seeker) and Optus Networks Pty Limited, Optus Mobile Pty Ltd and Optus Vision Pty Ltd (Access Provider)*, 5 August 2005; ACCC, *Interim Determination: Access Dispute Between Hutchison Telecommunications (Australia) Limited (Access Provider) and Optus Networks Pty Limited, Optus Mobile Pty Ltd and Optus Vision Pty Ltd (Access Provider)*, 5 August 2005; ACCC, *Interim Determination: Access Dispute Between PowerTel Limited (Access Seeker) and Optus Networks Pty Limited and Optus Mobile Pty Ltd (Access Provider)*, 14 July 2005; ACCC, *Interim determination: Access Dispute Between Hutchison 3G Australia Pty Limited (Access Seeker) and Vodafone Pty Limited (Access Provider)*, 14 July 2005; ACCC, *Access Dispute Between AAPT Limited (Access Seeker) and Vodafone Network Pty Limited (Access Provider)*, 14 July 2005; ACCC, *Interim Determination: Access Dispute Between Primus Telecommunications Pty Ltd (Access Seeker) and Vodafone Network Pty Limited (Access Provider)*, 2 August 2005; and ACCC, *Interim Determination: Access Dispute Between PowerTel Limited (Access Seeker) and Vodafone Pty Limited (Access Provider)*, 15 July 2005.

[8] ibid.

[9] ACCC, *Interim Determination: Access Dispute Between Telstra Corporation Limited (Access Seeker) and Optus Mobile Pty Limited (Access Provider)*, 18 December 2006.

On 8 November 2005 the Commission released its draft decision to reject the Optus undertaking and on 3 February 2006 the Commission released its final decision to reject the Optus Undertaking on the basis that the Commission could not be satisfied that these terms were reasonable.

Optus applied to the Tribunal for review of the Commission's decision. The Tribunal affirmed the Commission's decision in this matter.

Vodafone ordinary access undertaking

Vodafone initially lodged an ordinary access undertaking for the supply of its MTAS on its GSM network on 26 November 2004, this was subsequently withdrawn and Vodafone resubmitted a new undertaking on 23 March 2005.

The undertaking proposed an adjustment path from a price of 19.38 cpm in 2005 to a 'target' price for the MTAS of 16.15 cpm for 2007, with a proposed 'FTM pass-through safeguard.' The proposed price of 16.15 cpm for 2007 for the supply of the MTAS was based on 2002-03 data, which was subsequently revised using 2003-04 data.

The framework for the Vodafone model developed by PricewaterhouseCoopers (PwC) was a top-down fully allocated cost (FAC) model to arrive at these 'target' prices.

The FTM pass-through safeguard required access seekers (where relevant) to reduce average retail price for FTM calls terminating on Vodafone's GSM network or compensate Vodafone with a 'Pass-Through Rebate.'

The Commission released its draft decision to reject the Vodafone Undertaking on 22 December 2005.

On 31 March 2006, the Commission issued a final decision to reject the Vodafone 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 Trade Practices Act (the Act).

Vodafone applied to the Tribunal for review of the Commission's decision. The Tribunal affirmed the Commission's decision in this matter.

Hutchison ordinary access undertakings

On 7 October 2005, Hutchison lodged six ordinary access undertakings under Division 5 Part XIC of the Act with the Commission. The undertakings covered the provision of the MTAS on both Hutchison's 2G and 3G networks.

Hutchison proposed differential pricing for the supply of the MTAS based on the call origination:

- the single rate undertakings for Hutchison's proposed a price of 12 cpm for mobile-to-mobile (MTM) calls of 12 cpm if certain reciprocal arrangements and transit traffic conditions were met for the period to 31 December 2007;
- the dual rate undertakings proposed a dual rate for the supply of the MTAS: a price of 12 cpm for MTM calls (if the rate was provided reciprocally and certain transit traffic conditions were met) and an alternative or 'fall back' rate of 21 cpm, if either of the conditions for a 12 cpm price were not met for the period to 31 December 2007; and

- the Non-Public Mobile Telecommunications Service (Non-PMTS) undertakings proposed a price of 18 cpm for the supply of MTAS for FTM calls and calls originating from international networks for the period to 30 June 2006.

Hutchison requested that the Commission consider accepting the undertakings in combination or individually.

On 23 June 2006, the Commission released its final decision to reject the Hutchison Undertakings, on the basis that the price-related terms and conditions for the dual rate and Non-PMTS undertakings were not reasonable and the non-price terms and conditions for all the Undertakings (including the single rate undertakings) were not reasonable.

Optus DGTAS 2007 undertaking

In February 2007, Optus submitted an undertaking for assessment by the Commission for a price of 12 cpm relevant to the period 1 July 2007 to 31 December 2007. The Commission released a draft decision rejecting the undertaking on 21 June 2007. The Commission released its final decision rejecting the undertaking on 28 November 2007.

2.3.3. Federal Court Review

Vodafone instituted proceedings in July 2004, challenging the power of the Commission to include prices in its pricing principles determination for the mobile termination service. Vodafone also argued that the prices set out in the Commission's pricing principles determination should not apply to 3G mobile networks.

Vodafone's challenge was rejected by the Federal Court in September 2005. Justice Edmonds found that the Act 'does empower the Commission, if it decides to exercise the discretion vested in it by that provision, to specify a price or prices as part of its … determination.'[10] It was noted that such specification of prices are indicative only.

Justice Edmonds also upheld the Commission's decision that the price-related terms and conditions should apply equally to the supply of the service on 2G and 3G networks.

2.3.4. Outcomes arising from the regulatory and judicial processes

These regulatory and judicial processes over the last four years (commencing with the *Mobile Services Review* in 2003) have afforded an opportunity for the Commission to extensively consult with industry across a broad range of policy, methodological and empirical issues, in the context of cost models developed for an Australian context.

These processes in the main have been considered in public fora, and the Commission considers that the industry is well aware of the Commission's view on a range of issues in relation to cost models. The Commission's view about these methodological and empirical issues has been affirmed on multiple occasions by other bodies such as the Tribunal.

The Commission's approach to access pricing has been considered by the Tribunal. Key areas affirmed by the Tribunal include the:

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[10] *Vodafone Australia Limited v Australian Competition and Consumer Commission*, [2005], FCA, 16 September 2005, at [69].

- appropriateness of a bottom-up TSLRIC framework for efficient cost-base pricing for the MTAS. While cost models distinct from TSLRIC+ models, such as the models developed by Vodafone and Optus, are not unreasonable, it is generally not in the long-term interests of end-users (LTIE) to depart from TSLRIC pricing and further that access prices should reflect and not exceed forward-looking efficient costs;[11]
- recognition as stated in the Optus Undertaking and Vodafone Undertaking Decisions[12] as well as affirmed by the Tribunal that alternative model approaches may also be appropriate if it can be established that the actual costs incurred by an MNO are efficient;[13]
- support for the relevant markets as identified by the Commission, especially for the Commission's conclusion in the *MTAS Final Report* that there is a separate monopoly market for the supply of the MTAS on each MNO's network;[14] and
- lack of empirical support for the 'waterbed' effect in an Australian context with the Tribunal noting that:

  > Whatever the relevant markets may be, mobile termination is not a service that is purchased directly by consumers. It is an intermediate input purchased at a wholesale level by one operator from another operator. How the prices of intermediate inputs relate to the prices of final goods purchased directly by consumers is somewhat unclear.[15]

- difficulty in accurately accounting for externalities and including a NES;[16] and the inappropriateness of R-B pricing to allocate organisational level costs compared with an equi-proportionate mark-up.[17]

In this way, the Commission considers that the current consultation on the WIK Mobile Network and Cost Model (WIK Model) is not a 'one-off' or isolated consultation process, but is part of this continuous engagement with the industry about mobile cost models that commenced in 2003 with the *Mobile Services Review*. As outlined below, the Commission considers that this consultation process about the WIK Model will continue into the future with specific and further consultation about the *MTAS Pricing Principles Determination* for the period 1 July 2007 to 31 December 2008 and other relevant regulatory processes. Interested parties have been provided with additional documentation (such as the Technical Specification

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11 *Application by Vodafone Network Pty Ltd & Vodafone Australia Limited* [2007] ACompT 1, 11 January 2007, at [44].

12 Refer to the discussion about the appropriateness of different model frameworks in ACCC, *Optus's Undertaking with Resect to the Supply of its Domestic GSM Terminating Access Service (DGTAS) Final Decision*, (*Optus Undertaking Decision*), February 2006, pp.29-30., and ACCC, *Assessment of Vodafone's Mobile Terminating Access Service (MTAS) Undertaking, Final Decision, Public Version*, (*Vodafone Undertaking Decision*), March 2006, pp.29-32.

13 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116-118].

14 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [209].

15 ibid., at [85].

16 ibid., at [288-91].

17 ibid., at [242].

Manuals[18] and User Guide[19]) and further access periods to the WIK Model in these processes.

This regulatory activity has brought significant benefits to end-users and industry participants. For example, industry participants required to purchase the MTAS have all been the beneficiaries of lower input costs, reflected in prices that are more closely aligned with the efficient cost of the service.

However, the reduction in MTAS prices has not been uniformly welcomed by industry. Some MNOs are net recipients of MTAS revenue which means that these MNOs terminate more calls on their networks than they terminate on other networks. A fall in the price of the MTAS over time has, and will result in, all other things being equal, lower MTAS revenues for these MNOs, but which may of course be offset by a higher volume of calls. At this point, the Commission notes that lower MTAS revenues are inevitable as MTAS prices (cpm) fall and converge to the TSLRIC+ of supply, but this in itself does not necessarily result in financial impacts contrary to the legitimate business concerns of MNOs. To date there is no substantiation of overall adverse financial impacts except lower MTAS revenues resulting from the price decrease, which are being offset by a larger volume of calls. These lower MTAS revenues for MNOs have coincided with lower input costs for all MNOs and fixed-line and integrated carriers that purchase the MTAS. In addition, investment in mobile infrastructure has continued since 2004. These issues are explored in detail in Annexure A.1.

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[18] WIK, *Specification of the Strategic Network Planning Tool GSM-Connect for Implementing the WIK Mobile Network and Cost Model Manual* and WIK, *Specification of the Cost Module of the WIK Mobile Network and Cost Model.*

[19] WIK, *WIK Mobile Network and Cost Model Version 1.2 User Guide*.

3. Principles applied to MTAS Pricing

3.1. Concept of the efficient operator

The Commission has consistently considered that the appropriate costs to recover when determining the costs of supplying the MTAS are likely to be those of an efficient operator. This is because, in an effectively competitive market, it could be expected that prices would reflect an efficient level of costs.[20]

The Commission is not required for the purposes of setting a price for the supply of the MTAS to establish a definitive stance about the market share of the hypothetical operator. The Commission notes that it has taken a flexible approach in determining an appropriate market share for a hypothetical operator by presenting two scenarios with market shares of 25 per cent and 31 per cent. The Commission considers these scenarios provide a range of market shares that can be use to establish a range of referable TSLRIC+ estimate of the supply of the MTAS in an Australian context.

The Commission has outlined previously that the question of efficient operator may encompass scenarios that could be achievable by all MNOs such as an achievable minimum efficient scale; say a 25 per cent market share given the presence of four existing carriers,[21] or 31 per cent, based on the achievable share of the three 2G carriers (Telstra, Optus and Vodafone) after removing Hutchison's overall market share of approximately 7 per cent, as it is an operator that only provides standalone 3G services.[22]

The concept of an efficient operator has two implications in the context of the WIK Model. The first is that the network of a hypothetical operator will not necessarily duplicate precisely that of an actual mobile network and will reflect the best-in-use technology currently deployed.

The second is that the hypothetical operator will incur the efficient costs of providing a service rather than the actual costs necessarily incurred by MNOs. The cost difference derives from both the nature of the networks actually deployed compared to an optimised network and differences in cost between actual cost and efficient cost that may be present; which may be influenced, for example, by the business strategies employed by the individual MNOs, differences in pricing within multinational groups and cross subsidisation of certain services vis-à-vis other services provided by MNOs.

Various scenarios presented in the WIK Model could reflect that of a hypothetical efficient operator. Consideration of what market share that best represents the minimum efficient scale achievable by all MNOs is appropriate. At present, there is no general consensus from interested parties about the market share that should be achievable by all MNOs to reflect that of a hypothetical operator. Parties have

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20 ACCC, *Assessment of Vodafone's Mobile Terminating Access Service (MTAS) Undertaking, Final Decision, Public Version*, (*Vodafone Undertaking Decision*), March 2006, pp. 33-34.

21 ibid.

22 Hutchison Telecommunications (Australia) Limited, *2004 Annual Results – Presentation*, 15 February 2005, p. 4, Accessible from: <http://www.hutchison.com.au/hutchison2004/hutchison2004staging/object/attachment/docs/ACF5D.pdf>, p. 4, Viewed on: 10 September 2007.

submitted that a market share of 25 per cent is either too high or too low for the Australian context. However, there is almost uniform agreement that a stand-alone operator scenario should apply.

The Commission notes that the Tribunal did not consider a convincing case had been made in the Vodafone Undertaking Decision review that achievable scale and scope translates into a 25 per cent market share.

> It is relevant that an efficient new entrant – even, if realistic markets are envisaged, a hypothetical one- would not itself have immediate access to the economies of scale and scope that might be achievable overtime.[23] No evidence was presented regarding minimum efficient scale in this industry. It is possible that in the long run, four operators, each with a 25% market share, is not a sustainable outcome.[24]

This suggests that a higher market share benchmark is contemplated by the Tribunal and therefore a lower market share benchmark which would result in a conservative (higher) estimate of the efficient cost of the MTAS, such as a 25 per cent benchmark, is reasonable. The Tribunal's concerns about a lack of knowledge about economies of scale and scope have also been addressed through the development of the WIK Model. In its conclusion the Tribunal left the issue of the efficient operator open stating it did not consider it was necessary for it to reach a conclusion on what is the benchmark of an efficient operator by reference to which an MNO's costs are to be assessed for their efficiency, especially in the absence of information before it about the minimum efficient scale in the Australian mobile industry segment.[25]

The Commission notes Optus's and Vodafone's submissions on the market share of the hypothetical operator, the achievability of market share and whether the hypothetical operator should be a new entrant. Vodafone correctly quotes the Tribunal when it says:

> In the present proceedings, we do not consider that a convincing case has been made that "achievable" translates into a 25% market share. [26]

But it also states that

> Whether each of the four operators in a market could achieve a 25 per cent market share ignores questions about how the market is defined. Do all operators aspire to service the whole market? What if some prefer market niches? Should a business plan based on serving only a particular geographic area be ruled out?[27]

In addition the Tribunal also commented that:

> to determine the issue of an appropriate benchmark operator in terms of scape and scope, that is, size or market share, materials supporting the proposed approach would be needed. It would be necessary to have regard to market realities.[28]

One of those market realities would need to reflect that there has been no new 2G entrant into the Australian Mobile market since 1993 as submitted by Optus.[29]

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23 *Application by Vodafone Network Pty Ltd & Vodafone Australia Ltd*, [2007], ACompT 1, at [72].

24 ibid., at [82].

25 ibid., at [79-84].

26 ibid., at [80].

27 ibid., at [80].

28 ibid., at [83].

Hutchison is a niche player and only provides 3G services, where as the WIK Model is modelling a 2G hypothetical operator. These market realities will all likely have a significant bearing on the market share appropriate for the hypothetical efficient operator.

Vodafone in providing their submissions on this issue also fail to reflect the Tribunal's concluding comments which is that:

> other aspects of Vodafone's cost models and in relation to the Pass Through Safeguard, ***it is not necessary for us to reach a concluded view*** on what is the benchmark of an efficient operator by reference to which an MNO's costs are to be assessed for their efficiency.[30] (emphasis added)

The Tribunal has explicitly stated is has not concluded on this issue at present and this issue is open to further consideration.

For this reason, the Commission considers that the approach adopted in the WIK Model is reasonable, and that a range of market shares can be employed to provide a reasonable range of TSLRIC+ estimates of supply of the MTAS in Australia.

3.2. Technological neutrality for the MTAS

The declaration for mobile terminating access (voice) services is technologically neutral such that it covers terminating access services on 2G (including CDMA), 2.5G and 3G networks.

In June 2004, the pre-existing service description for the declared voice mobile termination service from 2G/GSM networks was extended to encompass services on 2.5G and 3G networks. In the *MTAS Final Report*, the Commission considered that:

> in the absence of evidence to the contrary, the nature of the supply of 3G voice services is largely the same as the supply of 2G voice services with bottleneck characteristics.[31]

And further:

> For the purposes of this inquiry, the Commission believes it is appropriate to broaden the eligible service to include termination of voice services on 2.5G and 3G mobile networks.[32]

One of the key conclusions of the *WIK Report* is that the use of 2G technology would represent the best available option for providing 2G services in certain circumstances. These circumstances are outlined in detail the *WIK Report*.[33]

The Commission has maintained that the efficient cost of delivery of the MTAS should not be impacted by the network over which it is carried.

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29 Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 17.

30 *Application by Vodafone Network Pty Ltd & Vodafone Australia Limited* [2007] ACompT 1, 11 January 2007, at [84].

31 ACCC, *Mobile Services Review – Mobile Terminating Access Service: Final Decision on Whether or not the Commission Should Extend, Vary or Revoke its Existing Declaration of the Mobile Terminating Access Service*, (*MTAS Final Report*), June 2004, p. 22.

32 ibid., p. 23.

33 WIK, *Mobile Termination Cost Model for Australia - Report for the ACCC*, January 2007 (*WIK Report*), p. 144.

Other regulators have adopted a similar approach. For example, the Onafhankelijke Post en Telecommunicatie Autoriteit (OPTA) in the Netherlands has used a 'cost-orientated' 2G price as a reference point for the cost of a termination service on a 3G network.[34] In contrast, Ofcom, which differentiates the termination price over 2G and 3G networks has also indicated that, in the United Kingdom, it is a market-specific factor – the inflated costs of the initial 3G spectrum licences[35] – as the source of this price difference.[36] Spectrum costs are not a relevant factor in an Australian context and the Commission notes the European Commission's views as to whether the United Kingdom has appropriately dealt with these issues of spectrum in arriving at a mobile termination price on 3G networks, by including these 3G spectrum costs which are inflated in today's terms.[37]

The Commission notes that Vodafone's submission on the Draft Report relating to the MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 (*Draft Report*) discusses Ofcom's approach to this issue. However, Vodafone's submission fails to demonstrate how the regulatory approach or findings in a UK context are relevant to the Australian market.[38] The approach taken by Ofcom not only sets prices for the MTAS based upon the technology an operator uses but also upon its current market share.[39] The Commission is uncertain of how this approach would result in providing incentives for operators to adopt best-in-use technology.

Further, both Telstra and Optus either currently, or have plans to, operate 3G networks in the spectrum used for their respective 2G (CDMA and GSM respectively) networks.[40] Therefore it is expected that an efficient 3G operator would use similar spectrum to that of a 2G operator in an Australian context. This is likely to result in an Australian MNO providing 3G services having similar spectrum costs, as a whole, to an efficient MNO currently using the spectrum for 2G services in the long-run; with

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34 Onafhankelijke Post en Telecommunicatie Autoriteit (OPTA), *Summary Notification Form Relating to a Draft Decision of the Commission of the Independent Post and Telecommunications Authority in the Netherlands with Respect to the Implementation of Price Control Obligations on the Relevant Markets for Voice Call termination on Individual Mobile Networks*, 21 June 2006, p. 5.

35 Ofcom, *Mobile Call Termination Statement*, 27 March 2007, Annex 14, pp. 286-308.

36 Ofcom has approached the issue of 3G termination costs inconsistently with the EU Commission's technologically-neutral definition of 2G and 3G termination. It has imposed different rates for termination of calls on 2G/3G networks and the single 3G network. It states that this approach to 3G termination has not been followed by any other EU regulator. See Ofcom, *Mobile Call Termination Statement*, 27 March 2007, p. 12.

37 Letter from the European Commission, to Ofcom, dated 22 November 2006. Accessible from: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1628&format=HTML&aged=0&language=EN&guiLanguage=en>, Viewed on: 23 April 2007. The Commission notes that Vodafone has misinterpreted these comments in its submission responding to the *Draft Report*, this is discussed in Annexure A.3.1.1.

38 This is discussed in detail in Annexure A.3.1.1.

39 Ofcom, *Mobile Call Termination Statement*, 27 March 2007, Annex 20, pp. 404-408.

40 Telstra Corporation Limited, *Telstra's Turbo-charged, Nationwide Mobile Broadband Network Goes Live*, Media Release, 6 October 2006, Accessible from: <http://www.telstra.com.au/abouttelstra/media/mediareleases_print.cfm?ObjectID=38377>, Viewed on: 6 June 2007 and Huawei, *Optus Partners with Huawei to Deliver Australia's First UMTS900 Network Trial*, 16 April 2007, Accessible from: <http://huawei.com/news/view.do?id=3605&cid=42>, Viewed on: 6 June 2007.

any additional spectrum being held in the higher frequencies for the same purposes spectrum is held in the 1,800 MHz band for 2G services. As a result, the cent per minute cost outcome is unlikely to be affected by spectrum costs in Australian context unlike in the UK.

The Commission considers that the conclusions drawn from both the *WIK Report* and the *Draft Report* in respect of the delivery of voice services on 3G networks are reasonable and that the use of a 2G benchmark for the establishment of a cost for the supply of the MTAS on 3G networks is appropriate.

3.3. Neutrality concepts for different sources of originating calls

The *Access Pricing Principles Guide* first established that, while the pricing principles do not imply that all access seekers should pay the same access price, differential access pricing can reduce competition and discourage investment.[41] For example, the *Access Pricing Principles Guide* stated that preferential access pricing between a limited group of network operators can have the effect of discouraging entry of more efficient operators. The incentive for the access provider to discriminate against competitors can inhibit efficient entry and competition in those markets.[42]

The Commission's practice in access pricing (whether for fixed-line or mobile services) has been to price termination at the same level, irrespective of the origination of the traffic.

In the *MTAS Final Report*, the Commission reviewed whether it is appropriate for the MTAS declaration to apply to all calls to mobile networks, irrespective of the type of network they originate on, or whether it is appropriate for the declaration only to apply in relation to FTM services.[43]

The Commission concluded that the presence of asymmetric traffic flows between mobile operators indicates there may still be an incentive for MNOs to raise the price they charge each other for termination of voice calls above their underlying cost of production – irrespective of whether this is for the completion of FTM or MTM calls. Further, the Commission considered that, given this incentive exists, it was appropriate that the service description should apply equally to termination of FTM and MTM calls.[44]

Since the release of the *MTAS Final Report*, the Commission has had further opportunity to consider the relevance of origination as a factor in influencing the efficient price of supply of the MTAS. Except for the case of the Hutchison undertakings, this origination neutrality has not been a major issue in either fixed-line or mobile access pricing processes conducted by the Commission.

In its undertakings, Hutchison proposed a differential price for the supply of the MTAS based on where the call originated. The Commission concluded in that matter that there was no evidence provided by any party to support a differential rate,

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41 ACCC, *Access Pricing Principles – Telecommunications – A Guide*, (*Access Pricing Principles Guide*), July 1997, p. 15.

42 ibid.

43 ACCC, *MTAS Final Report,* June 2004, p. 26.

44 ibid., p. 27.

considering that the efficient cost for supply of the MTAS on the terminating network was unlikely to be a function of where the call originated.[45]

3.4. The TSLRIC framework for pricing of the MTAS

TSLRIC is the incremental or additional cost the firm incurs in the long run in providing a specified volume of the service, assuming the scale of all of its other production activities remain unchanged. Alternatively, it is the cost the firm would avoid in the long run if – everything else being equal – it ceased to provide the service. As such, TSLRIC represents the costs the firm necessarily incurs in providing the service and captures the value of society's resources used in its production.[46]

TSLRIC is interpreted by the Commission as a forward-looking measure of costs which means that the referable costs are those of the most efficient means possible and commercially available.[47] In practice this often means basing costs on the best-in-use technology and production practices available today and valuing inputs using current prices. It includes the costs an efficient carrier would necessarily incur in providing the service, or alternatively the costs that would be avoided if the service was no longer provided in the long run.[48]

The Commission has previously outlined why it preferred to establish access prices such as the MTAS with reference to the TSLRIC.[49] These reasons are summarised below:

1. it encourages competition in telecommunications markets by promoting efficient entry and exit in dependent markets;
2. it encourages economically efficient investment in infrastructure and provides the appropriate incentives for future investment in decisions by access seekers to 'build' or 'buy';
3. in the long run TSLRIC based pricing provides for the efficient use of existing infrastructure, promoting allocative efficiency in the use of infrastructure;
4. it provides incentives for access providers to minimise the costs of providing access by using the most efficient technology commercially available today and best-in-use technology compatible with the existing network design;
5. by allowing efficient access providers to fully recover the costs of producing the service, it promotes the legitimate business interests of the access provider; and
6. it protects the interests of persons who have rights to use the declared service.[50]

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45 ACCC, *Hutchison's Undertakings with Respect to the Supply of its Mobile Terminating Access Service (MTAS) Final Decision,* (*Hutchison Undertakings Final Decision*), June 2006, p. 23.

46 ibid.

47 ibid., p. 29.

48 ibid., p. 38.

49 ibid., pp. 29-30.

50 ibid.

3.5. Organisational-level cost mark-ups using of the Equi-proportionate mark-up (EPMU) approach

Non-network common costs are organisational-level costs incurred in the provision of all of the firm's services that not attributable to any particular service. Stated alternatively, they are not incremental to a particular service in the sense that they are not avoided if the firm does not produce the service. However, they are incremental in the sense that they would need to be incurred by an efficient firm if the service was provided on a stand-alone basis. An efficient multi-product firm would have the expectation of recovering, in some manner, these common costs. As a result it would be expected that the prices of the firm's services (including prices for access) incorporate some contribution to these costs.[51]

As common costs are not directly attributable to the production of any one service, the allocation of these costs across services is somewhat arbitrary. There is a range of possible methods of allocating common costs.[52]

The criteria that need to be satisfied include:

1. the total costs of providing the service should not exceed the stand-alone costs;
2. common costs should not be 'over-recovered';
3. common costs must be common to (shared by) the declared service and not unduly allocated to that service; and
4. the inclusion of common costs (incorporated into the access price) in the internal transfer price of a vertically-integrated firm.[53]

The Commission is of the view that the TSLRIC should include a portion of organisational-level common costs, as represented by the TSLRIC+ approach.

The approach preferred by the Commission to the allocation of organisational-level costs is the EPMU over directly attributable costs. This involves measuring the directly attributable costs of each service within the group and allocating the common costs based on each service's proportion of the total directly attributable costs.[54]

For many reasons the EPMU is considered preferable to other approaches for the allocation of organisational-level costs, in particular the overwhelming information requirements of the alternatives. The Commission has also drawn attention to the need to devise efficient mark-ups for *all* services simultaneously, whereas the actual application is only to the regulated service while prices of other services sharing the common costs find their own level. The EPMU approach has been accepted by most regulators around the world.[55]

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51 ACCC, *Access Pricing Principles Guide*, p. 39. Failing to account for these common costs could violate the legitimate business interests of the access provider, reduce incentives to maintain and invest in infrastructure, and distort the choice of technology towards technologies with low common costs.

52 ibid., p. 39.

53 ibid., p. 40.

54 ibid., p. 39.

55 ACCC, *Optus's Undertaking with Respect to the Supply of its Domestic GSM Terminating Access Service (DGTAS) Final Decision*, (*Optus Undertaking Decision*), February 2006, pp. 85-7; see

The Tribunal has made several comments about the use of an EPMU including: that regulators prefer the EPMU approach[56] and that it is incorrect to say that applying an EPMU is an over-cautious reaction to uncertainty regarding elasticities[57] and has concluded:

> The body of expert economic material is persuasive of the proposition that consistent with accepted economic theory and principles, it is not appropriate to use the R-B[58] pricing principles to determine the allocation of FCCs[59] to an MTAS.[60]

The Commission notes that Analysys submits that using an EPMU approach is in line with that used by most regulators[61] and that no further submissions were received relating to the reasonableness of setting the EPMU at ten per cent.[62]

3.6. Network externality surcharge (NES)

The Commission maintains that no NES should apply to the MTAS in an Australian context. As the Commission has outlined, for example in the *Optus Undertaking Final Decision*, it considers that, while the concept of a network externality has intuitive appeal for some telecommunications services, it also considers that a surcharge on termination to fund subscription subsidies is inappropriate in relation to the supply of the MTAS in current Australian circumstances.[63]

The Commission's reasons for not including a NES are given in section 2.6[64] of the *Draft Report* and those are that:

- the empirical importance of network externalities is likely to be low or non-existent in a highly mature market such as Australia;
- individuals (and to some extent MNOs) have a number of methods other than subsidies funded out of the above-cost charges for the MTAS to ensure these external benefits are internalised (considered in consumption decisions);

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also: *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [236] see also: Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), 6 August 2007, p. 16.

56 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [236].

57 ibid., at [240].

58 Ramsey-Boiteux.

59 Fixed and common costs.

60 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [242].

61 Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), 6 August 2007, p. 29.

62 The Commission's views relating to the magnitude of the EPMU are discussed in Annexure A.6.9 of this report.

63 ACCC, *Optus Undertaking Decision*, February 2006, pp. xiii and 92-93.

64 ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report)*, pp.17-18.

- MNOs are able to target late subscribers through the use of specially designed retail packages, this would reduce the need for subsidies;
- a number of issues related to network externalities would need to be considered, for example some of the issues noted in Telstra's submission on the *WIK Report*[65]; and
- that there are other externalities that are present, such as the call-receipt externality that suggest a subsidy to termination rather than a tax.

The Commission does not consider that Vodafone's empirical evidence of a network externality meets the benchmark set by the Tribunal for the reasons provided in Annexure A.8.1.

Further, the Commission recognises that there are externalities other than the network externality that appear to suggest a subsidy to termination rather than a tax. For example, consideration of the FTM call-receipt externality (enjoyed by mobile subscribers receiving calls from fixed-lines) suggests that FTM calls should be encouraged, rather than discouraged by above-cost pricing of termination.

3.7. Application of pricing principles to the WIK Model

The Commission has expressly stated in the RFT that it was seeking a model that 'would provide a tool for the assessment of the efficient costs of providing termination by hypothetical operators under different circumstances.'[66]

WIK's interpretation of the RFT requirements was that a bottom-up approach models network and cost structures for a hypothetical MNO that is not constrained by technology, systems, and architectural decisions of the past. The WIK Model adopts a scorched-earth approach to the network design component, which deploys best-in-use technology that has proven its operational feasibility and is cost-effective. The resulting optimised network structure may not necessarily reflect the structure of any operator actually operating in the market.[67] This is particularly true as radio-communications technology (a key input for a mobile network) is constantly evolving, resulting in increased efficiencies in providing coverage to end-users.

3.7.1. Implementation of TSLRIC+

The WIK Model uses TELRIC to implement a TSLRIC+ estimate of the supply of the MTAS in Australia. The Commission considers that the usage of TELRIC+ to estimate efficient costs may vary depending upon the regulated service for previously stated reasons.[68] The Commission's view in relation to the implementation of a TELRIC approach specific to Telstra's ULLS Monthly Charge Undertaking and

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65 Telstra Corporation Limited, *Submission in Response to the ACCC's Discussion Paper on the WIK Mobile Network and Cost Model to Inform the MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*, (Telstra Submission on *WIK Report*), March 2007, pp. 35-36.

66 ACCC, *Request for Tender for the Provision of Expert Telecommunications Sector Consultancy Services to the Australian Competition and Consumer Commission*, 31 March 2006, p. 3.

67 WIK, *WIK Report*, p. 118.

68 ACCC, *Draft Report*, pp. 110 - 111.

particular model is contained in its decision on Telstra's ULLS Monthly Charge Undertaking,[69] which has been more recently affirmed by the Tribunal.[70]

3.7.2. Cost parameterisation and network design

As outlined, the Commission has reviewed and analysed several cost models developed by MNOs in Australia since July 2004. The consultation about and analysis and review of these models represents over three years of extensive consultation with the industry about modelling issues and the principles that underpin the Commission's approach to estimating the MTAS in the context of developing an engineering and economic cost model. Furthermore, the Commission's review of these models has been affirmed by the Tribunal in two separate decisions.

This consultation concerning model frameworks and related conceptual issues commenced with the *Mobile Services Review* in 2003.

Cost parameterisation

With the release of the *MTAS Final Report* in June 2004, the Commission formally signalled that a bottom-up cost model could be used to support regulatory processes (refer to section 2.2 for details).

To support Optus's undertaking (2004) CRA adopted a FL-LRIC framework for an economic cost model to estimate a cost of supply of the DGTAS by Optus. While the Commission considers that FL-LRIC and TSLRIC are broadly consistent cost concepts. The Tribunal affirmed that an access price based on an FL-LRIC approach 'depending upon the construct of that approach' may be reasonable.[71] The model developed for Optus proposed mark-ups for common costs (using allocation methods based on Ramsey-Boiteux principles) and a NES. These mark-ups did not reflect the efficient costs of providing the MTAS service and represented premiums above the reasonable price for recovering investment costs.

The model developed by CRA was considered a top-down model based on Optus's historical accounting information for 2003-04; the forward-looking aspect of the model reflects that these costs were re-valued to reflect current costs.[72]

The model developed by PwC to support Vodafone's undertaking (2005) reflected a fully allocated cost (FAC) model or top-down approach. In its assessment of the PwC model the Commission indicated that a top-down FAC model, such as developed for Vodafone, would at best, for conceptual and practical reasons and only if properly populated, produce an upper-bound estimate for the efficient cost of supplying the MTAS. It also indicated that the PwC model would lead to an overstatement of the 'forward-looking efficient economic costs' of Vodafone providing the MTAS.[73]

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69 ACCC, *Assessment of Telstra's ULLS Monthly Charge Undertaking – Final Decision (Public Version)*, August 2006.

70 Telstra Corporation Ltd (No 3) [2007] ACompT 3, in particular at [329-373]. The Tribunal handed down its decision on 17 May 2007 to affirm the Commission's decision of 25 August 2006 to reject Telstra's proposed price for the Unconditioned Local Loop Service.

71 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [108].

72 ACCC, *Optus Undertaking Decision*, February 2006, p. 28.

73 ACCC, *Vodafone Undertaking Decision*, March 2006, pp. 29-30.

In examining both models, the Commission considered that a properly specified top-down model can be used to inform the cost of providing the MTAS, but concluded that both models would provide an upper-bound of these efficient costs.[74]

Throughout three years of consultation, analysis and review of these models the Commission's position on cost models has been well documented, widely publicised and affirmed by decisions of the Tribunal. For example, in its Vodafone decision the Tribunal indicated that while costs models distinct from TSLRIC+ models are not unreasonable, it is generally not in the LTIE to depart from TSLRIC pricing for regulated access services and that access prices should reflect and not exceed forward-looking efficient costs.[75]

> We do not consider that a fully allocated cost model, as distinct from a TSLRIC+ model is, of itself, unreasonable having regard to the matters specified in s 152AH and the objectives set out in s 152AB. We accept that in *Re Seven Network* (No 4) (2004) 187 FLR 373 at 410, the Tribunal expressed the view that it would generally not be in the long-term interests of end-users to depart from TSLRIC pricing where access is regulated. However, we would repeat the observation of the Tribunal in *Telstra Corporation Limited* (supra) at par [63]:
>
> > In this area of analysis there is no one correct or appropriate figure in determining reasonable costs or a reasonable charge. Matters and issues of judgement and degree are involved at various levels of analysis.
>
> Nevertheless, we still consider that in general terms the prices in access undertakings should reflect and not exceed forward looking efficient economic costs: *Telstra Corporation Limited* (supra) at par [46].

The Tribunal affirms this position that alternative model approaches may also be appropriate if it can be established that the actual costs incurred by an MNO are efficient.[76]

These two statements together reflect the Tribunal's support for the use of forward-looking efficient costs or a bottom-up approach to estimating costs that inform access prices.

The Commission maintains that while limitations may exist in practice, an appropriate method for estimating the costs of the most efficient operator in supplying the MTAS is using a bottom-up model, to generate a TSLRIC+ estimate (incorporating an equi-proportionate mark up or EPMU approach for common costs).

The WIK Model is parameterised with efficient costs and is therefore is considered a bottom-up cost model. However, in some cases the parameterisation of the WIK Model has needed to factor in data availability and limitations.

There are also some issues that influence cost estimates, such as the weighted average cost of capital (WACC), which have led to the parameterisation of the WIK Model for an Australian regulatory context as discussed in Annexure A.8.2.

Network design

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74 ACCC, *Optus Undertaking Decision*, p. 30; and ACCC, *Vodafone Undertaking Decision*, p. 30.

75 *Application by Vodafone Network Pty Ltd & Vodafone Australia Limited* [2007] ACompT 1, 11 January 2007, at [44].

76 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116-118].

Either a scorched-earth or a scorched-node approach can be used to optimise network design. The scorched-node approach assumes a network that reflects current network structure in terms of number and location of nodes. On the other hand, a scorched-earth approach assumes that the network is redesigned to optimise the number and location of network nodes.

Deciding whether a scorched-earth or a scorched-node approach was appropriate for undertaking decisions was not considered by the Commission. For the cost models provided in support of undertakings, it was assumed that both Vodafone and Optus used their own networks to populate the number of elements used for cost calculation. The Commission then assessed whether it could consider that the cent per minutes cost being generated by the cost model was reasonable. As a result the Commission did not have a position on either approach until the Commission decided to develop a cost model for the purposes of potentially informing the 2007 Pricing Principles Determination.

The WIK Model replicates an optimised network for a hypothetical efficient operator under certain assumptions about market penetration and population coverage. As indicated, this is a scorched-earth approach to network design. In this way the WIK Model is not intended to represent the actual deployment of any mobile network operator's network in Australia. In general, many of the issues raised by interested parties in respect of network design relate to the actual network deployed by each MNO, not that of a hypothetical efficient operator. These issues are dealt with in the *Draft Report* Annexure A.4. and A.8.3 in detail.

In some instances, MNOs have raised common and consistent issues relating to differences in the attainable network deployed in an Australian context by MNOs and that of the network of an efficient operator as deployed in the WIK Model.

The Commission considers that the use of a scorched-earth approach to network design is consistent with examining the costs of an efficient operator providing the MTAS in Australia:

> This modelling approach relieved Optus, to a certain extent, from establishing the efficiency of the costs of the assets used in its network design but it still left open the need to establish the efficiency of the network design and configuration itself..[77]

However, the Commission has discretion over calibration of the network in the WIK Model to contextualise the WIK Model for Australian conditions to enhance the applicability of the WIK Model for an Australian regulatory context. The Commission has outlined in the *Draft Report* Annexure A.1 and A.3, and in Annexure A.4 of this report, the relevant network elements where finer calibration is appropriate in an Australian operating and regulatory context and summarises the modifications made to the WIK Model to account for these two sets of factors in Annexure A.2.2.1 The Commission notes that no submissions subsequent to the *Draft Report* from interested parties has criticised the Commission's approach taken to calibrate the WIK Model.

Interested parties have chosen to focus on the pure scorched-earth approach rather than the approach taken by the Commission, which began with a pure scorched-earth model that was then calibrated for Australian conditions. The Commission views this approach as reasonable and the WIK Model itself provides for the attributes of a

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[77] *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116].

network that reflect 'the efficiency of the network design and configuration'[78], alluded to by the Tribunal. New submissions on this issue are dealt with in Annexure A.8.3 of this report.

3.8. 'Waterbed' effect

The 'waterbed' effect refers to the extent to which regulated reductions in access prices such as the MTAS results in increases in retail prices, which includes the price of outgoing mobile calls and subscription or fixed contract and handset prices. For further discussion on the 'waterbed' effect see ACCC, *Optus Undertaking with respect to its Domestic GSM Terminating Access Service (DGTAS) Final Decision*, February 2006, Appendix 5.

Some MNOs made strong cases in support of their undertakings[79] that lower input prices associated with the supply of the MTAS would have the opposite effect: retail prices would not fall and may actually increase to compensate for lower MTAS revenues. The so-called 'waterbed' effect and lack of pass-through in markets such as in which FTM services are provided were proposed as countervailing forces that would reduce any of the benefits that could flow through to consumers and business users emanating from lower MTAS prices.

Vodafone submitted to the Commission, during the 2003 Mobile Services Review, that the 'waterbed' effect may apply to the United Kingdom but not to an Australian context due to the presence of integrated operators.

> Given the existence of integrated carriers … Vodafone does not expect that there will be a corresponding increase in retail prices to mobile customers if there were significant regulated reductions in mobile termination prices. … [T]his will impact Vodafone's revenue by approximately $c-i-cM per annum. This is a straight hit to the profitability of Vodafone.[80]

The Commission notes that as there continue to be two integrated operators in the Australian market the conditions conducive to a 'waterbed' effect are less likely to exist.

Vodafone submits that the Commission misquoted the Tribunal's position on the 'waterbed' effect in the Optus decision.[81] The Commission notes that the Tribunal noted in its decision that it was somewhat unclear how the prices of intermediate inputs related to the price of final goods purchased directly by consumers.[82] As discussed below, the Commission considers that reductions in the regulated MTAS price have caused the average price of final goods to decrease rather than increase.

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78 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116]

79 ACCC, *Optus Undertaking Decision*, February 2006, pp. 219-226.

80 Vodafone, *Mobile Services Review - Letter from Vodafone to the Commission*, 9 October 2003, paragraphs 6.3-6.4.

81 Vodafone Australia Limited, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, pp. 25-26.

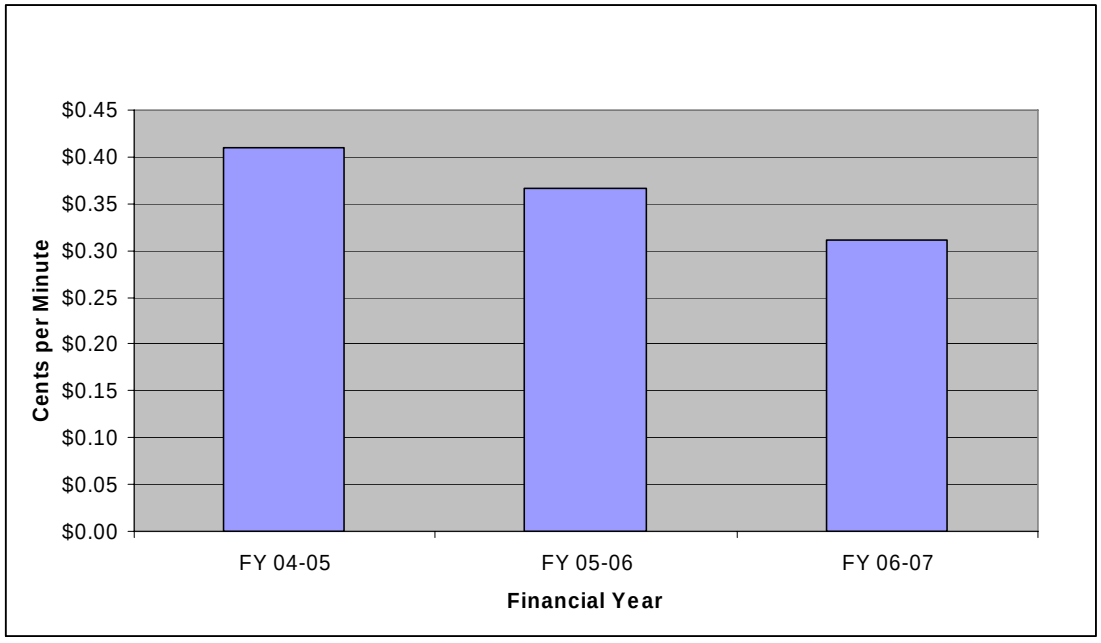
82 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [209].

There has been no evidence of the so-called 'waterbed' effect existing in Australia. The submission made by Vodafone on the existence of robust empirical evidence of the 'waterbed' effect[83] is discussed in Annexure 8.4, as it does not provide reliable evidence on the existence of a 'waterbed' effect in Australia. Instead of retail mobile prices increasing and handset or subscription subsidies being eliminated due to a fall in the MTAS rates, there has been a decrease in retail prices for mobile outbound calls and an increase in the level of handset subsidies accompanying the fall in the MTAS rates. This suggests that the opposite than the 'waterbed' effect has been occurring.

i. Average retail price reductions are occurring without pass-through mechanisms:

Figure 3-1 illustrates that Telstra's average access fee and call charge revenue per minute does not provide evidence of the 'waterbed' effect:

Figure 3-1 Telstra Average Access and Call Charge Revenue/Minute[84]



Telstra's average call rates have fallen from 41cpm for the full year ended 30 June 2005 to 31.0 cpm[85] for the full year ended 30 June 2007, coinciding with a fall in the MTAS from 21 cpm to 12 cpm.

Similarly, Optus's 30 June 2007 quarter results indicate that total revenue increased by 8 per cent from 31 March 2006.[86] There is no information to suggest that this increase in revenue is a result of increasing retail mobile rates bought about by the

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83 Vodafone Submission on *Draft Report*, pp. 4, 24 and 26.

84 Average cent per minute charges calculated using: Telstra Corporation Limited and Controlled Entities, Financial Results for the Year Ended 30 June 2007, pp. 23-24., and Telstra Corporation Limited and Controlled Entities, Financial Results for the Year Ended 30 June 2005, pp. 15-16.

85 ACCC, *Draft Report*, p. 25.

86 SingTel, *Management Discussion and Analysis of Financial Condition, Results of Operations and Cash Flows for the First Quarter Ended 30 June 2007*, p. 6.

'waterbed' effect, but rather this increase in revenue is mainly attributable to an increase in subscribers which grew by 3.8 per cent between June 2006 and June 2007.[87]

Optus's 30 June 2007 quarter results also illustrate that minutes of use per user per month grew at a faster rate than average revenue per user per month, implying decreasing revenue per minute, continuing the trend from the 30 June 2007 quarter compared to previous quarters and the previous year ended 30 June 2007.[88] This is also indicative of lower, not higher, retail mobile rates.

ii. Real price reductions in mobile services

The Commission has noted a number of broad trends in post-paid and prepaid plans examined in the Division 12 report examining the financial year ended 30 June 2006.

The average (real) price paid for mobile services has fallen, as reflected by the price indexes for mobile services.[89]

Since 2003-04 the decline in the overall prices for reported mobile services has fallen by 18.6 per cent, reflecting a fall of 18.8 per cent in GSM prices. This represents a large fall in prices for GSM post-paid contracts of around 24 per cent, and a fall of 6.4 per cent for GSM pre-paid contracts.[90]

iii. Handset subsidies are increasing not decreasing

Only Telstra and Hutchison report financial information on the value of handset subsidies.

Handset subsidies for Telstra have not declined since 2004, notwithstanding changes to accounting treatment over time, which Telstra explains as 'attributable to a rise in the take up of handsets on subsidised plans as well as higher average subsidies offered.'[91] Handset subsidies for Hutchison for the half-year ended June 2007, have approximately doubled compared to the half-year ended June 2006. This has been attributed to 'the underlying growth in acquisitions as well as the increase in retention activity undertaken by the Company'.[92]

iv. Conclusion on the empirical substantiation of the 'waterbed' effect

The Commission considers that these trends of lower average retail prices (including lower FTM prices) and the increase in handset subsidies demonstrate that the converse of the 'waterbed' effect has been in operation.

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87 ibid, p. 41. It is unclear from the information that the Commission has available to it publicly as to the extent of this increase is attributed if at all to Virgin Mobile subscribers.

88 SingTel, *Management Discussion and Analysis of Financial Condition, Results of Operations and Cash Flows for the First Quarter Ended 30 June 2007,* p. 41.

89 ACCC, *Changes in the Prices Paid for Telecommunications Services in Australia 2005-2006,* Report, p. 99.

90 ibid., p. 107.

91 Telstra Corporation Limited and Controlled Entities, Financial Results for the Year Ended 30 June 2007, p. 39.

92 Hutchison Telecommunications (Australia) Limited, *Half-Year Results - Appendix 4D and Press Release*, 30 June 2007, p. 8.

3.9. Retail FTM pass-through

In the *MTAS Final Report* the market in which FTM services are provided was considered one of the three relevant markets for the supply of the MTAS and the market which provided the most scope for manipulation, where prices above the TSLRIC+ of the supply of the MTAS could impede the promotion of competition.[93] Three years after the release of the *MTAS Final Report*, there is information to suggest that the reduction in MTAS rates has also been a factor in reducing retail FTM prices and that pass-through at the retail level has increased since 2004. The Tribunal has also confirmed that it considered the FTM market was not effectively competitive.[94]

It was contemplated by the Tribunal that as a consequence of lower MTAS rates, operators in the FTM market – and in particular Telstra – may obtain some degree of windfall gains from lower mobile termination charges. This is not sufficient in itself to justify charges for the supply of the MTAS higher than those based on efficient costs.[95]

Using data from Telstra's annual reports, Access Economics for the Competitive Carriers' Coalition (CCC) demonstrates that average FTM prices have fallen from 40.37 cents in 1999-00 to 33.20 cents in 2005-06. [96] This represents a retail price fall of close to 18 per cent since 1999-00. What is also telling about the analysis provided by Access Economics for the CCC is that the price decreases were relatively small in the period prior to 1 July 2004 when the Commission released the *MTAS Pricing Principles Determination*. In the period between 1999-00 and 2003-04, in which the Commission did not have any published information about indicative prices for the MTAS, the reduction in retail prices was a little over 6 per cent. This price fall has accelerated in the period 2003-04 to 2005-06, with a more than 12 per cent fall in retail FTM prices over a two year period, coinciding with a fall in wholesale input MTAS prices of 21 cpm to 15 cpm in access disputes arbitrated for the MTAS.[97] The decrease in average retail FTM prices, as presented by Access Economics for the CCC, for the financial year 2005-06, subsumes the absolute average FTM price reductions and percentage price falls in the period 1999-2000 to 2003-04.[98]

Access Economics for the CCC explains this phenomenon in the following way: 'where there was light handed regulation of the MTAS – there was very little decrease in Telstra's average FTM price per minute.'[99]

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93 ACCC, *MTAS Final Report*, pp. 26-28 and 119-25.

94 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [88].

95 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [89].

96 Calculated dividing reported FTM revenue by reported FTM minutes; see: Telstra Corporation Limited and Controlled Entities, *Annual Report 2004*, pp. 6 and 19; and Telstra Corporation Limited and Controlled Entities, *Annual Report 2006*, pp. 8-9.

97 ibid.

98 Access Economics submission for the CCC, p. 14.

99 ibid., p. 13.

In spite of Vodafone's submission to the contrary, the price-related terms and conditions contained in the *MTAS Pricing Principles Determination* seem to have had a positive effect on reducing the MTAS prices since July 2004 which have flowed through to both the retail mobile services market and the market in which FTM services are provided.

The Commission also considers that retail (FTM) price reductions are important, but just one indicator of improved competition in the relevant markets for the promotion of competition that are in the LTIE.

The Commission considers that there is retail FTM pass-through and that while there is debate as to the influence of lower MTAS rates on the full extent of this pass-through, there is strong support that the indicative price path in the *MTAS Pricing Principle Determination* through the regulatory processes that have occurred since 2004 have directly contributed to the FTM retail price reductions.

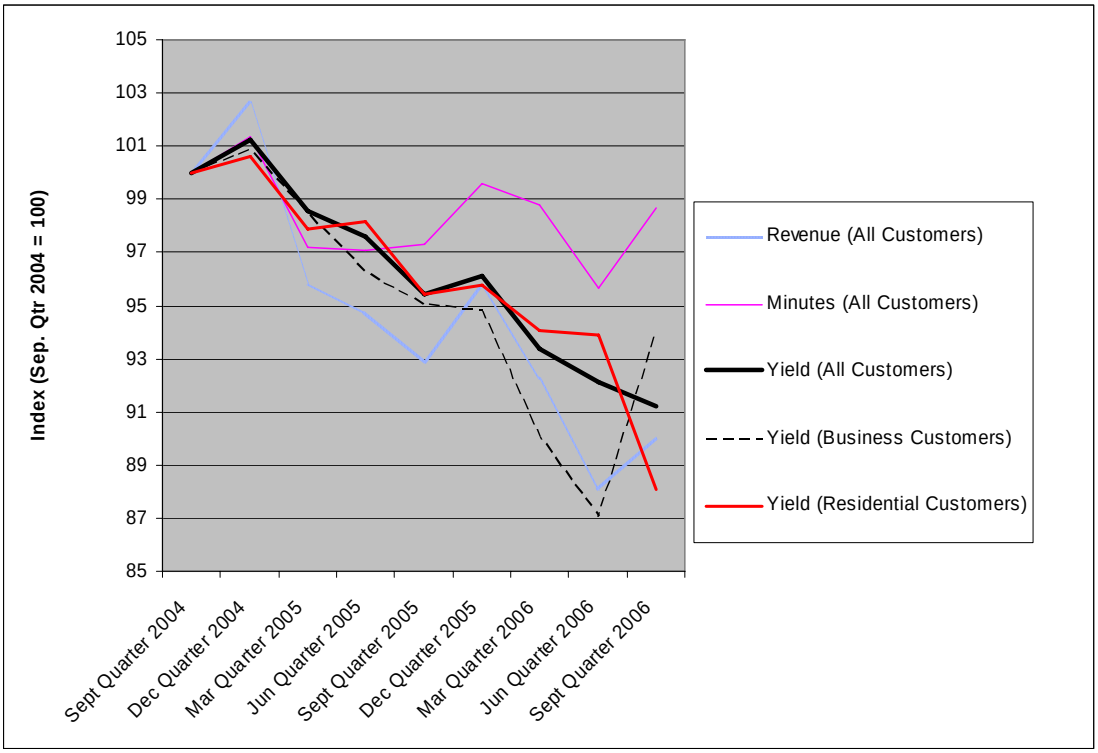
This has also been achieved without the need to mandate retail pass-through of any sort.

The Commission notes that while the reductions in FTM retail rates to date have been positive there is still opportunity for integrated operators such as Telstra and Optus to reduce retail FTM prices further particularly for residential end-users in line with reductions in MTAS. The Commission received further submissions on this issue and these submissions have been addressed in Annexure A.8.5.

The figure below highlights that while FTM retail prices for both business and residential users has fallen since 1 July 2004; business FTM rates remain 9 cpm to 10 cpm below residential FTM rates. Using quarterly imputation data for Telstra, residential rates have fallen from 43.4 cpm to 38.2 cpm (or 11.9 per cent) and the business FTM rates have fallen from 33.7 cpm to 31.7 cpm (or 6 per cent).[100]

[100] ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – September Quarter 2004*, December 2004, p. 9; and ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – September Quarter 2006*, December 2006, p. 12.

Figure 3-2: Telstra FTM – Revenue, minutes and yield by customer groups (indexed to September quarter 2004)[101]



3.10. Bundled fixed-line services

Vodafone submits information about the total price of the bundle of fixed-line services.

The Commission notes that average retail prices for the bundle of services including national long distance calls, international direct calls and fixed-to-mobile calls have fallen by 14.9 per cent over the period of 30 June 2004 to 30 June 2007. It is important to recognise that the fall in retail prices for this bundle of services is larger since June 2004 than in the preceding two-year period. Data for national long distance

[101] Sourced from ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – September Quarter 2004*, December 2004, p. 9; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – December Quarter 2004*, March 2005, p. 10; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – March Quarter 2005*, June 2005, p. 10; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – June Quarter 2005*, October 2005, p. 11; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – September Quarter 2005*, December 2005, p. 11; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – December Quarter 2005*, April 2006, p. 9; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – March Quarter 2006*, June 2006, p. 12; ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – June Quarter 2006*, September 2006, p. 9; and ACCC, *Quarterly Imputation Testing Reports Relating to the Accounting Separation of Telstra – September Quarter 2006*, December 2006, p. 12.

calls and international direct calls show a decline between 30 June 2002 and 31 December 2006 of 14 per cent and 15 per cent respectively.[102]

In respect of FTM prices, which are considered in more detail below under Retail FTM pass-through, the average FTM rates have decreased by 16 per cent between 30 June 2004 and 30 June 2007.[103]

The Commission notes Vodafone's submission primarily focuses on the increase in FTM margins that Telstra has experienced from 30 June 2004 to 30 June 2006. This does not negate the competitive benefits that have resulted from lower MTAS prices.

Vodafone submits that 'in the four years from 2003 to 2006, the revenue per minute from the bundle of fixed-line products has only decreased 0.1 cents[104].' The Commission has examined these data and calculates a fall of 0.3 cents for the bundle of fixed line products.

Furthermore, if Telstra's results for the half year ending 30 June 2007 are also included in this analysis, then the revenue per minute from the bundle of fixed-line products has decreased by 1.47 cents since 30 June 2003.[105]

The Commission also notes that increased competition in fixed-line services is also corroborated by Telstra's compliance with price control arrangements. In the financial year 2004-05 Telstra's weighted average price for the first basket of fixed-line services, as noted in the Commission's report to the Communications Minister, decreased 3.3 per cent.[106] This occurred in a period where Telstra could have charged 9.2 per cent higher weighted-avergae price for the fixed-line call basket than was actually charged and still met the price cap.[107] For the half-year ended December 2005 the revenue-weighted price for the same basket declined by 4.5 per cent.[108] This occurred in a period where Telstra could have charged 3.4 per cent higher than the actual revenue-weighted price it charged.[109] The fact that Telstra's FTM prices and revenue have decreased in recent years indicates that fixed-line services are increasingly subject to competition.

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102 Telstra Corporation Limited and Controlled Entities, *Annual Report 2004*, p. 6 and p. 19; Telstra Corporation Limited and Controlled Entities, *Annual Report 2007*, p. 8 and p. 11.

103 ibid.

104 Vodafone, *Submission to the Australian Competition and Consumer Commission: WIK Mobile Network and Cost Model and MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*, (Vodafone Submission on *WIK Report*), March 2007, p 4.

105 Telstra Corporation Limited and Controlled Entities, *Annual Report 2004*, p. 6 and p. 19; Telstra Corporation Limited and Controlled Entities, *Annual Report 2007*, p. 8 and p. 11.

106 ACCC, *Telstra's Compliance with the Price Control Arrangements: 2004-2005 – Report to the Minister for Communications, Information Technology and the Arts*, December 2005, p. 7.

107 ibid., p. 8.

108 ACCC, *Telstra's Compliance with the Price Control Arrangements: 1H 2005-06 – Report to the Minister for Communications, Information Technology and the Arts*, August 2006, p. 5.

109 ibid., p. 6.

4. Cost Model development and consultation since 2003

4.1. Regulatory Context

The Commission's decision to develop a bottom-up cost model builds on the international cost benchmarking analysis and the analysis of regulatory accounts (Regulatory Reporting Framework or Regulatory Accounting Framework (RAF) reports) that informs the *MTAS Pricing Principles Determination* for the period 1 July 2004 to 30 June 2007. In accordance with that determination, the conservative upper-bound estimate of supplying the MTAS, 12 cpm, is the indicative price as of 1 January 2007 to 30 June 2007. In the *MTAS Final Report* (June 2004), the Commission stated transparently and clearly that any reduction in pricing below 12 cpm could be supported by the development of its own bottom-up cost model:

> Given it (the Commission) has:
>
> - not developed a specific model to estimate TSLRIC+ in Australia at this time, and
> - concerns regarding the possible harm that might be caused by disrupting the business plans of MNOs if the Commission were to immediately reduce the price of the MTAS to TSLRIC+.
>
> The Commission believes a pricing principle that generates a gradual reduction in the price of the MTAS so that it reduces to a level that represents a closer association of price and the best measures the Commission has available to it of the TSLRIC+ of providing the service within Australia would be most appropriate under the Act at this time. The principles by which this price path should be determined are as outlined above.
>
> Over the longer term, however, the Commission wishes to stress that before it would reduce the price of the MTAS below the upper end of the range of best estimates available to it of the TSLRIC+ of providing the MTAS, the Commission would develop a more detailed estimate of the TSLRIC+ of providing the MTAS in Australia. This could be via developing a model to specifically model the TSLRIC+ of providing the MTAS in Australia, or via a detailed international benchmarking exercise that sought to make adjustments for all factors that drive the TSLRIC of providing the MTAS in different countries for Australia-specific factors.[110]

The development of a bottom-up cost model is considered an important and supplementary verification information to support the robustness and reliability of the international cost benchmarking and RAF data analyses that have informed the current 5 cpm to 12 cpm range for the estimate of costs and, in turn, supporting the indicative prices contained in the *MTAS Pricing Principles Determination* for the period 1 July 2004 to 30 June 2007.

The development of a bottom-up cost model has been the latest stage in an extensive consultation process which began with the *Mobile Services Review* in 2003. This broad consultation has continued, as mentioned in the context of processes associated with access undertakings proposed by three of the four carriers,[111] judicial review by the Federal Court concerning the *MTAS Pricing Principles Determination,* and merits

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[110] ACCC, *Mobile Services Review – Mobile Terminating Access Services: Final Decision on Whether or not the Commission Should Extend, Vary or Revoke its Existing Declaration of the Mobile Terminating Access Service*, (*MTAS Final Report*), June 2004, p. 211.

[111] Namely, Hutchison (Hutchison Telecommunications (Australia) Ltd and Hutchison 3G Australia Pty Ltd), Optus (Optus Networks Pty Ltd and Optus Mobile Pty Ltd) and Vodafone Australia Limited.

reviews by the Tribunal in respect of two access undertakings. There has also been consultation with individual access seekers and access providers in relation to determinations made by the Commission related to over 30 access disputes notified about the supply of the MTAS.

The issue of the Commission's consultation with industry in relation to general cost principles that underlie the Commission's approach to access pricing, cost models developed by MNOs, RAF data, and this latest phase specifically about the WIK Model is considered in further detail below.

4.2. Ongoing MNO Consultation specifically relating to cost models in an Australian context.

As outlined in section 4.3, the Commission has continually engaged with the industry in a series of public consultations framed by regulatory decisions about cost models since late 2004.

Since the release of the *MTAS Pricing Principles Determination* for the period 1 July 2004 to 30 June 2007 and the *MTAS Final Report*, two carriers (Optus and Vodafone) have attempted to support their MTAS pricing with the development of their own top-down cost models. In each case the Commission has assessed the models with advice from international consultants and has identified deficiencies in the modelling approach or methodology and the empirical inputs (parameters) of these models in an Australian context.

The following table outlines the timing and extent of consultation undertaken in relation to cost models submitted in support of the MTAS undertakings since 1 July 2004.

Table 4-1 – Vodafone and Optus Undertaking Public Consultation Processes

Process	Date	Consultation Time on cost models (weeks)
Vodafone		
Initial undertaking submitted	26 November 2004	
Discussion paper released. Six week period from the date Vodafone made confidential material available.	25 February 2005	N.A. as initial undertaking withdrawn
Second undertaking submitted	23 March 2005	
Discussion paper released. Six week period from the date Vodafone made confidential material available.	13 April 2005	N.A. as confidential material not submitted.
Commission acknowledges that confidential material made	6 July 2005	**6 weeks**

available by Vodafone		
Submissions on discussion paper due	17 August 2005	
Draft decision released	22 December 2005	**4 weeks**
Submissions on draft decision due	19 January 2005	
Final decision released	3 April 2006	
Optus		
Undertaking submitted	24 December 2004	
Discussion paper released	25 February 2005	**6 weeks**
Submissions on discussion paper due	25 May 2005	
Draft decision released	8 November 2005	**4 weeks**
Submissions on draft decision due (2 week extension later granted to parties)	29 November 2005 initially extended to mid December 2005	
Final Decision released	3 February 2006	
Total (consultation time)		**20 weeks**

It is important to recognise that the extensive review of both the Optus and Vodafone cost models since late 2004 and early 2005 has centred on many of the input parameters that inform the WIK Model.

The Commission considers these processes have been relevant to the recent WIK Model process, in informing the framework and parameters in the WIK Model.

4.3. Ongoing MNO Consultation about relevant costs in an Australian context

In addition to these public processes three of the four MNOs are required to report under the Record Keeping Rule (RKR) for the RAF.

This RKR requires Optus, Telstra and Vodafone (without any exemptions that may be operating) to provide half yearly reports about the relevant costs and revenues associated with the delivery of relevant regulated access and other non-regulated services.

As part of an ongoing process of continual improvement of the RAF data the ACCC examines the reliability and robustness of the underlying allocation of costs across different services.

Notwithstanding any recent issues that the ACCC may have in relation to the allocation of costs across different services or whether these costs are efficient cost measures, particularly as services other than voice termination may now be included in these data reported, the underlying RAF data provide an important and confirmatory source of data about the actual costs incurred by MNOs that relate to the MTAS. These data serve as a basis for establishing the upper-bound of the total cost of, and especially costs of individual classes of network elements relevant to, the supply of the MTAS.

These RAF data sources also informed the range of estimates of 5 cpm to 12 cpm that support price-related terms and conditions contained in the *MTAS Pricing Principles Determination* for the period 1 July 2004 to 30 June 2007.

4.4. Economic Cost Model Project

4.4.1. Tender Process and Consultant Selection

On 31 March 2006, the ACCC released a request for tender (RFT) seeking the services of a consultant to construct a bottom-up cost model with specific economic and engineering parameters for estimating the cost of providing the MTAS in Australia.[112]

The RFT was publicly released and available on the ACCC's website from 31 March 2006 to 5 May 2006. The RFT has been provided to MNOs, on request, as it was not available on the ACCC's website after 5 May 2006 (when the tender closed). The RFT is available as Appendix 2 to the *WIK Report* and is currently available on the ACCC's website.[113]

Submissions for the RFT closed on 5 May 2006.

WIK was selected on the basis of merit against the relevant selection criteria in this open tender process.

4.5. WIK Model Development

WIK was engaged in June 2006 and has worked to develop a bottom-up cost model.

A draft report was issued by WIK to the ACCC on 22 December 2006.

A final report was provided to the ACCC on 16 January 2007 and was released publicly on 1 February 2007.

4.5.1. Industry Consultation in the lead up and after the consultation period on the WIK Model

To date the ACCC has:

- extended invitations at the end of July 2006 to each of the four MNOs, to meet with WIK and the ACCC;
- held a meeting either in person or by telephone with three of the four MNOs in Australia in September 2006. WIK was present at two of these meetings, arising

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[112] ACCC, *Request for Tender for the Provision of Expert Telecommunications Sector Consultancy Services to the Australian Competition and Consumer Commission*, 31 March 2007.

[113] WIK, *Mobile Termination Cost Model for Australia*, (*WIK Report*), January 2007.

from invitations extended to MNOs. One MNO declined to provide any information or assistance to WIK in developing the WIK Model;

- had several meetings (involving Commissioners and ACCC staff) with MNOs and other interested parties in the period November 2006 to May 2007 specifically related to the WIK Model development and initiated by these interested parties. Two parties that provided submissions on the WIK Model also presented these submissions in face-to-face meetings to the ACCC (ACCC staff and Commissioners); and
- continued its engagement with the carriers in respect of their RAF reporting requirements as appropriate and relevant to improve the consistency of information submitted.

4.5.2. Industry Consultation after the release of the *Draft Report*

Subsequent to the release of the *Draft Report*, the ACCC has:

- continued its engagement with the carriers on clarifications relating to the calculation of service and dimensioning minutes in the WIK Model; and
- requested information from three of the four carriers on 6 September 2007 on the number of network elements and extent of sharing on their different mobile networks. All three carriers responded with a commercial-in-confidence (C-I-C), public submission or both.

Further details about the WIK Model Consultation process are contained in the WIK Model Annexure A.7.

Annexure: Supporting Information

A.1. Observations relating to the regulation of the MTAS

A.1.1. Adjustment paths, financial performance and investment

In the *MTAS Pricing Principles Determination*, the Commission adopted an adjustment path over 30 months to effect a gradual adjustment of the MTAS price from above 21 cpm at 1 July 2004 to a price of 12 cpm by 1 January 2007.[114] The reason as set out in the *MTAS Final Report* 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 …[115]

One of the Commission's key concerns is that of regulatory certainty particularly as some access providers have developed business plans around existing pricing structures and the previous retail benchmarking pricing principle;[116] and balancing MNOs' ability to recover reasonable costs (inclusive of a normal profit) and the impact a fall in the price of MTAS may have on existing pricing plans for mobile services.[117]

This adjustment path was adopted when the majority of retail mobile plans were post-paid contracts of two years duration.

The Commission notes that even with the experience of arbitrating the 34 notified MTAS disputes it has been difficult for it to discern the extent of any actual disruptions to pricing and business strategies.

If the Commission reverts to market information about the actual nature of these disruptions, there is a dearth of data to show MNOs may have been adversely impacted by lower MTAS prices.

A.1.1.1. Financial performance

Optus's most recent (30 September 2007 quarter) financial results reported: an increase in mobile revenue of 3.9 per cent and a 4.5 per cent subscriber growth.[118] In fact in reporting its recent annual results, Optus states that 'traffic expenses fell by 9.3

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[114] ACCC, *Optus's Undertaking with Resect to the Supply of its Domestic GSM Terminating Access Service (DGTAS) Final Decision*, (*Optus Undertaking Decision*), February 2006, p. 158. The Commission's choice of timeframe for its Pricing Principles is designed, in order to meet the statutory criteria under section 152AH(1) of the Act, to minimise possible disruptions that would harm the legitimate business interests of MNOs.

[115] ACCC, *Mobile Services Review – Mobile Terminating Access Services: Final Decision on Whether or not the Commission Should Extend, Vary or Revoke its Existing Declaration of the Mobile Terminating Access Service*, (*MTAS Final Report*), June 2004, pp. 220-221.

[116] ibid., p. 216.

[117] ibid.

[118] SingTel, *Singapore Telecommunications Limited and Subsidiary Companies Management Discussion and Analysis of Financial Condition, Results of Operations and Cash Flows for the First Quarter Ended 30 September 2007*, November 2007, p. 41.

per cent. This was primarily due to lower mobile termination rates, lower outpayments and the shift towards more on-net fixed line traffic, partly offset by an increase in mobile traffic.'[119]

Telstra's mobiles revenue has improved from $5,006 million (an increase of 6.3 per cent from the previous year) to $5,701 million between 2005-06 and 2006-07, an increase of 13.9 per cent.[120] During this time mobiles revenue increased as proportion of total income in 2004-05 from 20.97 per cent to 23.79 per cent in 2006-07.[121]

Telstra's EBITDA margins have remained high at over 41 per cent between 2005-06 and 2006-07.[122] Over this same period Telstra reported a $286 million or 3 per cent increase in EBITDA. Telstra claimed this result has occurred despite 2007 being the 'peak spend year' of its 'transformation strategy' (The name of Telstra's project to build next generation platforms). [123]

Hutchison has significantly improved its performance, reducing its large operating losses over time. In 2005, service revenue grew by 45 per cent to $758.2 million.[124] In 2006 total operating revenue increased 22 per cent, largely due to the substantial growth in service revenue for '3', which grew by 75.8 per cent to $848.9 million.[125]

The main drivers for the strong improvements in service revenue for '3' were growth in customer numbers and the increased use of non-voice services.[126]

In 2005 Hutchison recorded a decline in its EBITDA losses from $230.2 million to $180.1 million.[127] Since 2005 Hutchison's EBITDA has improved significantly and it has reported a positive full year EBITDA of $30.2 million for the year ending 31 December 2006 and a positive half year EBITDA for the half year ending 30 June 2007 of $31.4 million.[128]

Vodafone's revenue has continued to rise, increasing by 11.4 per cent between 2005 and 2006 to $1,937.5 million, and by a further 16.3 per cent between year ending 31 March 2006 and 31 March 2007 to $2,252.8 million.[129] Part of this growth is reflected

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119 ibid., p. 46.

120 Telstra Corporation Limited and Controlled Entities, *Financial Highlights – Year Ended 30 June 2007*, p.61.

121 ibid.

122 Telstra, *Telstra Corporation Limited Full year results and operations review - June 2007*, p. 6.

123 Telstra Corporation Limited and Controlled Entities, *Financial Highlights – Year Ended 30 June 2007*, p.3.

124 Hutchison, *Hutchison Telecommunications (Australia) Limited, Annual Report 31 December2005*, p. 4.

125 ibid., pp. 4-5.

126 ibid., p. 10.

127 ibid., p. 4.

128 Hutchison, *Hutchison Telecommunications (Australia) Limited, Annual Report 31 December2006*, p. 4; Hutchison, *Hutchison Telecommunications (Australia) Limited, ASX Half year report – 30 June 2007; 22 August 2007*; p.4.

129 Vodafone, *Vodafone Australia Pty Ltd Annual Financial report for the Financial Year Ended 31 March 2006*, p. 7; Vodafone, *Vodafone Australia Pty Ltd Annual Financial report for the Financial Year Ended 31 March 2007*, p. 8.

in Vodafone's EBITDA which has improved between 2006 and 2007 by 28.2 per cent to $452.4 million.

However, the continued strong and improved performance is juxtaposed against lower MTAS prices. For some MNOs this has resulted in lower (MTAS) revenues and in spite of lower MTAS prices, the information set out above demonstrates that MNOs have not been adversely impacted by the fall in MTAS prices. In fact for all MNOs, total mobiles revenue has continued to increase and the relative performance (profit or reduction in losses) of their mobiles business has been sustained and/or improved over time.

From the period 1 July 2004 the nature of retail mobile handset plans has changed for some carriers. One key change in retail marketing and pricing plans is the increasing share of services in operation (SIOs) comprised of pre-paid contracts. This market trend has reduced the share of longer term customer contracts in the mix of customer plans, which was not as common in June 2004. For example, Telstra's most recent annual report indicated that the proportion of pre-paid services to total SIOs was 40 per cent compared with post-paid (contract) services of 60 per cent, where pre-paid mobile SIOs increased by 2.8 per cent to 3,697,000 and post-paid mobile SIOs totalled 5,515,000 (an increase of 11.8 per cent).[130] Optus's results for the first quarter ended 30 June 2007 indicated that its number of pre-paid services exceeds its post-paid subscribers,[131] reinforcing that the number of retail plans, which lock in retail prices for longer periods of time, is falling. In this way, MNOs have much more flexibility in changing retail pricing plans, which would allow them to more quickly adjust their retail prices for changes in input costs such as the MTAS.

The Commission considers that any further reduction in the MTAS rate below 12 cpm and more closely aligned with an efficient cost estimate for the supply of the MTAS in an Australian context will not adversely impact Australian MNO's legitimate business interests.

A.1.1.2. Investment in mobile network infrastructure

Submissions on Draft PPD Report

Vodafone submits that even if there is a positive welfare impact on non-FTM prices over an 18 month period, Vodafone submits that it is not significant enough to erode the very real risk of damaging future investment and competition as a result of setting MTAS too low..[132]

Vodafone submits that Ofcom notes that there is an asymmetry in the risks of setting a MTAS rate that turns out to be too low. It also notes that Ofcom notes that a rate that

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130 Telstra Corporation Limited and Controlled Entities, *Results and Operations Review – Year Ended 30 June 2007*, p. 20.

131 Prepaid subscribers total 3,835,000 (56 per cent of all services) compared with post-paid subscribers totalling 2,967,000 (44 per cent of all services); see SingTel, *Singapore Telecommunications Limited and Subsidiary Companies Management Discussion and Analysis of Financial Condition, Results of Operations and Cash Flows for the First Quarter Ended 30 June 2007*, August 2007, p. 41.

132 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 31.

fails to recover efficient costs of providing MTAS will have a negative impact on investment.[133]

Commission's views

The Commission notes that it has provided evidence of recent investment by both Optus and Telstra in 3G mobile networks in the *Draft Report*.[134]

Since 2004, all four MNOs have entered infrastructure share arrangements to build and deploy 3G networks. There is no evidence in an Australian context that lower MTAS prices have provided a disincentive to investment in the longer-term. The network build has been in forward-looking 3G technology and not reinvestment in GSM networks. The following outlines the major mobile infrastructure investment outlays and developments since 2004.

Hutchison's 2004 joint venture arrangement with Telstra continues to offer 3G services to Hutchison's customers over the 3GSM 2100 MHz network[135]. Hutchison recorded a capital expenditure of $203.8 million over the full year ending 31 December 2006,[136] and $134.7 million in the half year ending 30 June 2007.[137] This represents cash spent on capital expenditure and includes expenditure allocated toward the joint venture with Telstra.[138]

Hutchison reports that it is continuing its capital expenditure programme with Telstra on the existing network including increasing the coverage of 3G services and upgrading existing infrastructure with high speed downlink packet access (HSDPA) technology.[139]

In November 2005, Telstra announced plans to investment in a new 3G network at the 850MHz frequency, to replace its current CDMA network.[140] It commissioned the network in October 2006, and at that time indicated that when it was fully operational it was expected to cover 1.6 million kilometres and provide coverage to 98 per cent of the Australian population.[141] Telstra's deployment of its 'Next G' 850 MHz network

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133 ibid.

134 ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report)*, pp. 43-44.

135 Telstra, *Telstra Corporation Limited and controlled entities results and operations review Year ended 30 June 2007,* 9 August 2007, p.23.

136 Hutchison, Hutchison *Telecommunications (Australia) Limited, Annual Report 2006,* 27 February 2007, p.5.

137 Hutchison, *Hutchison Telecommunications (Australia) Limited, Half year report – 30 June 2007,* 22 August 2007, p.4.

138 ibid.

139 ibid.

140 Telstra Corporation Limited, *Telstra Unveils 3G City-to-Country Delivering Mobile 3G Broadband*, Media Release, 15 November 2005. Accessible from: <http://www.telstra.com.au/abouttelstra/media/mediareleases_article.cfm?ObjectID=35896>, Viewed on: 17 May 2007.

141 Telstra Corporation Limited, *Regional and Rural Presence Plan*, July 2006, p. 36. Accessible from: <http://www.telstra.com/countrywide/resources/pdf/RRPP_July2006.doc?SMSESSION=NO>, Viewed on: 17 May 2007.

has progressed to the point where it claims to offer 3G coverage to 98.8 per cent of the Australian population.[142] Telstra's investment expenditure on its mobile telecommunication networks amounted to $1.036 billion for the year ending 30 June 2007[143] and $1.043 billion in 2006.[144] The marginal decline in expenditure was primarily driven by the 'Next G' network being deployed ahead of schedule meaning fewer sites were deployed in the 2007 reporting period.[145]

Telstra claims to have 'rationalised' spending on its 2G GSM and CDMA networks. This has resulted in slightly lower total expenditure on mobile networks over the year ending 30 June 2007. However this reduction was partially offset by higher spend on network coverage, capacity, asset replacement, and on the HSDPA upgrades over this financial year.[146]

Since 2004, Vodafone and Optus have continued to invest in 3G shared infrastructure to deliver 3G services to major capital cities. The joint 3G infrastructure currently delivers 3G services across Sydney, Canberra, Melbourne, Geelong, Brisbane, the Gold Coast, the Sunshine Coast, Adelaide and Perth. This coverage equates to an area of 7,500 square kilometres and 55 per cent of the population.[147]

Vodafone reported capital expenditure on network infrastructure of $246.6 million for the full year ending 31 March 2007,[148] and $350.7 million from the full year ended 31 March 2006.[149]

In January 2007 Optus announced plans to build a new 3G mobile communications network to extend its 3G coverage.[150] Optus continue to co-own its existing 2100MHz 3G network in metropolitan Australia with Vodafone, however, the new network will be built and owned by Optus exclusively.[151]

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142 Sol Trujillo Telstra CEO, *The Other Central Nervous System – Networking Information, People and Assets in the Health Sector* address to the *MEDInfo conference* Brisbane, 21 August 2007; Sol Trujillo Telstra CEO *Speech to Australian Information Industry Association* The Westin Hotel, Sydney 31 July 2007.

143 Telstra, *Telstra Corporation Limited and controlled entities results and operations review – Year ended 30 June 2007,* 9 August 2007, p.54.

144 ibid.

145 Telstra, *Telstra Corporation Limited and controlled entities results and operations review – Year ended 30 June 2007,* 9 August 2007, p.55.

146 ibid.

147 Optus, *Optus expands 3G mobile network across wide national footprint*, Investor/Media Briefing, 30 January 2007, pp. 8-9.

148 Vodafone, *Vodafone Australia Limited Annual report for the year ended 31 March 2007*, 31 July 2007, p.26.

149 ibid.

150 Optus, *Optus announces bold expansion of its 3G mobile network across national footprint*, 30 Media Release, January 2007, p.1.

151 ibid.

The proposed expansion of its 3G network will cover 96 per cent of the Australian population replicating the coverage of Optus's existing 2G GSM network which currently covers approximately 650,000 square kilometres.[152]

Optus anticipates that the expansion will be completed by 2010,[153] and will be funded from its annual capital expenditure program over the three-year period.[154]

Within the coverage area Optus will offer a full range of voice and non-voice services as well as plans to sell excess capacity onto mobile resellers.[155]

The new network is expected to operate in the 2100MHz frequency range. However, Optus is currently testing technology that would utilise lower frequencies (900MHz) to address the problem of provisioning services to remote regional locations. Optus expects to make a final decision on its choice of frequency in late 2007.[156]

Optus estimates that the cost of the network deployment will be between $500 and $800 million. The final cost of the network will depend on the technologies in use and the frequency mix ($800 million if the network is built entirely at 2100MHz; $500 million if 900MHz proves feasible).[157]

As a consequence, Optus's Mobile Division expended $300 million in the full year ending 31 March 2007 on infrastructure investment[158] and $390 million in the full year ending 31 March 2006.[159]

Given the previous reductions in the MTAS and that all four MNOs are currently investing and planning to invest in their own mobile networks, the Commission considers that it is unlikely that reductions in the MTAS will be the main factor influencing decreases in investment.

A.1.1.3. Adjustment Path, legitimate business interests and investment

Submissions on Draft PPD Report

The CCC submits that 9 cpm will not promote the LTIE and 'is in fact likely to harm the LTIE.'[160] The CCC submits that the Commission has evidence that the efficient

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152 ibid.

153 Optus, *Optus expands 3G mobile network across wide national footprint,* Investor/Media Briefing, 30 January 2007, p. 9.

154 Optus, *Optus announces bold expansion of its 3G mobile network across national footprint*, Media Release, 30 January 2007ibid., p. 2.

155 ibid.

156 ibid.

157 ibid.

158 Singtel, *Singapore Telecommunications Limited And Subsidiary Companies Management Discussion and analysis of financial condition, results of operations and cash flows for the fourth quarter and financial year ended 31 March 2007*, 9 May 2007 p.56.

159 ibid.

160 CCC, *Response to [the] Draft MTAS Indicative Prices* (CCC Submission on *Draft Report*), August 2007, p. 2.

cost is between 5 and 7 cpm.[161] The CCC submits that there is no basis for regulatory shock or waterbed effect arguments to delay efficient cost based pricing.[162]

Optus submits that the basis for the Commission's decision to set an indicative MTAS price of 9 cpm has not been made clear[163] and that the corroborating information on which the Commission has relied in reaching its conclusions are irrelevant considerations for the purposes for which they have been used.[164]

Optus submits that an immediate reduction in the MTAS would adversely affect Optus's legitimate business interests and a gradual adjustment path is necessary to provide incentives for MNOs to further investment and efficiency gains.[165]

Telstra submits that 9 cpm is above cost, applied for too long a period, is not sufficiently substantiated by the Commission, and is 'in stark contrast to the Commission's approach to price drops in other declared services.'[166]

Telstra notes that the Commission considers that some 'constraints' and the 'policy context' should be considered when setting MTAS prices, but that the Commission does not explain what these constraints and policy contexts are.[167]

Telstra submits that the Commission has received detailed information from MNOs about their claimed costs. Telstra argues that 'waiting for further information will simply require a further detailed inquiry in about 12 months time (or less) when such information may or may not be provided.[168]

Telstra submits that the Commission 'must give a better explanation of why a glidepath is appropriate for MTAS when it does not provide for a glidepath for other services.'[169]

Telstra submits that the evidence suggests that reductions in MTAS rates are being virtually cancelled out by increased call volumes. This is consistent with Access Economics' analysis of data from the Telecommunications Market Indicator Report 2004-05 and generally observed in the 2005-06 Report.[170]

Telstra submits that in the Mobile Services Review the Commission referred to the majority of post-paid retail mobile contracts being for a period of 24 months and MNOs needing time to adjust pricing plans to accommodate a move to cost-based

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161 CCC Submission on *Draft Report*, p. 2.

162 CCC Submission on *Draft Report*, p. 3.

163 Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 7.

164 ibid., p. 4.

165 ibid., p. 43.

166 Telstra Corporation Limited, *Submission in Response to the ACCC's Discussion Paper on the Draft MTAS Pricing Principles Determination for the Period 1 July 2007 to 31 December 2008* (Telstra Submission on *Draft Report*), August 2007, p. 2.

167 ibid., p. 6.

168 ibid., p. 7.

169 ibid., p. 11.

170 ibid., p. 9.

pricing.[171] Telstra submits that MNOs 'have had plenty of opportunity to develop their business plans factoring in the possibility of MTAS pricing dropping to 5 to 6 cpm.'[172]

Telstra submits that if the Commission errs on the side of caution, then it should adopt an initial price of 9 cpm for 1 July 2007 to 31 December 2007 and then 6 cpm for the 2008 calendar year.[173]

Vodafone submits that 12 cpm should be maintained.[174]

Commission's views

The Commission directs parties to its comments about MNOs financial performance and commitment to investment, which have been updated from the *Draft Report* to reflect more recent developments. The Commission considers that the adjustment path from 12 cpm to 9 cpm as at 1 July 2007 is appropriate, particularly as the price of the MTAS approaches the TSLRIC+ of supply. There is no evidence to suggest that a slower adjustment path should be adopted based on either financial performance or disincentives to investment. In addition, there is no proposed adjustment path for the next 18 months. This should balance concerns about lower net MTAS revenues on the one hand experienced by some MNOs at a time when MNOs are upgrading and/or deploying additional mobile networks in Australia, to more than account a normal return on their capital.

The Commission notes Optus's conjecture about what could happen if an immediate reduction of the price of the supply of the MTAS to the TSLRIC+. The Commission notes that the MTAS has fallen from 21 cpm to 12 cpm from July 2004 to 1 January 2007, during which time Optus's mobiles revenue has grown and its mobiles EBITDA has increased by 17.9 per cent and dominates the EBITDA of the entire Optus Group.[175] These issues are highlighted in the CCC submission on the *WIK Report*, and over this time, there is no evidence of regulatory shock or other effects such as the waterbed effect, operating on the presence of this adjustment path. Optus itself has announced additional investment in its 3G infrastructure which may be as much as $800 million[176] over the period 2007 to 2010. The Commission also notes that Optus's mix of products has changed over time providing it with greater flexibility in setting retail prices than in 2004. Together these factors and in the absence of information provided in its submission about the nature and quantum of disruption likely to arise to Optus's business plans, indicate that 9 cpm is appropriate.

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171 ibid., p. 10.

172 ibid., p. 10.

173 ibid., p. 28.

174 Vodafone Submission on *Draft Report*, p. 2.

175 Singapore Telecommunications Limited and Subsidiary Companies, *Management Discussion and Analysis of Financial Condition, Results of Operations and Cash Flows for the Fourth Quarter and Financial Year Ended 31 March 2006*, May 2006, p. 43 and Singapore Telecommunications Limited and Subsidiary Companies, *Management Discussion and Analysis of Financial Condition, Results of Operations and Cash Flows for the Fourth Quarter and Financial Year Ended 31 March 2007*, May 2007, p. 42.

176 Optus, *Optus announces bold expansion of its 3G mobile network across national footprint*, Media Release, 30 January 2007, p. 2.

In relation to Vodafone's submissions on investment and its EBITDA, the Commission has provided evidence of recent investment by both Optus and Telstra in 3G mobile networks in this section. Since 2004, all four MNOs have entered infrastructure share arrangements to build and deploy 3G networks. There is no evidence in an Australian context that lower MTAS prices have provided a disincentive to investment in the longer-term. The network build has been in forward-looking 3G technology and not reinvestment in GSM networks.

Coverage of, and investment in, 3G networks by Australian MNO's can be summarised as follows:

- Vodafone and Optus have invested in a 3G shared infrastructure to deliver 3G services to major capital cities covering 55 per cent of the population.[177]
- Optus has commenced deployment of a more expansive 3G network to cover 96 per cent of the population to be completed during 2010. Optus's investment in this network is to be in the order of $500 to $800 million (depending on the frequency of the network deployed) and will be built and owned by Optus exclusive of its joint venture party.[178]
- Hutchison and Telstra have invested in a 3G shared infrastructure network to deliver 3G services to major capital cities covering about 55 per cent of the population.[179]
- Hutchison's joint venture with Telstra providing 3G services in capital cities does not extend to Telstra's Next G network and its expansion. As such, Hutchison customers outside capital cities roam onto Telstra's GSM network for access to voice and GPRS services. According to Hutchison access to roaming provides coverage to 96 per cent of Australians.[180]
- Telstra has continued to deploy its 850 MHz 'Next G' network and now purports to have capacity to provide 3G coverage to 98.8 per cent of the Australian population.[181] Telstra's investment expenditure on its mobile telecommunication networks amounted to $1.036 billion for the year ending 30 June 2007and $1.043 billion in 2006.[182] This marginal decline in investment spending reflects Telstra's rationalisation of investment spending on its 2G

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177 Optus, *Optus expands 3G mobile network across wide national footprint,* Investor/Media briefing, 30 January 2007, p. 8 and . Optus, *Optus announces bold expansion of its 3G mobile network across national footprint*, Media Release, 30 January 2007, p. 1.

178 Optus, *Optus announces bold expansion of its 3G mobile network across national footprint*, Media Release, 30 January 2007, p. 2.

179 Telstra, *Telstra Corporation Limited and controlled entities results and operations review Year ended 30 June 2007,* 9 August 2007, p.23.

180 Hutchison, *Coverage*, '3' Website, Accessible from: <http://www.three.com.au/cs/ContentServer?pagename=Three/Page/ICNetConnectCardPageTemplate&cid=1166681369894&c=Page&p=&homeId=>, viewed on 9 October 2007.

181 Telstra, *The Other Central Nervous System – Networking Information, People and Assets in the Health Sector*, Address to the *MEDInfo Conference*, Speech given by Sol Trujillo, Brisbane, 21 August 2007, and Telstra, *Speech to Australian Information Industry Association*, Speech given by Sol Trujillo, The Westin Hotel, Sydney 31 July 2007.

182 Telstra, *Telstra Corporation Limited and controlled entities results and operations review – Year ended 30 June 2007,* 9 August 2007, pp.54-55.

GSM and CDMA networks relative to its spending on the deployment and improvements to its Next G network.[183]

In Annexure A.1.1.1, the Commission considers recent financial data published by each MNO in Australia. However, the Commission also notes improved overall revenues, traffic volumes and performance of MNOs have been sustained over time. For example, as contained in table A.1-1. (below), over the longer term the Commission has observed significant improvement in Vodafone Australia's operating performance and revenue growth in the financial years ended 31 March 2003 to 31 March 2007 in a period of falling MTAS rates. This has included a 26 per cent growth in its EBITDA[184].

Table A.1-1: Vodafone's financial performance for financial years ended 31 March 2003 to 31 March 2007

	2006-07	2005-06	2004-05	2003-04	2002-03	2002-03 to - 2006-07
	$ mn	$ mn	$ mn	$ mn	$ mn	% change
Operating revenue	2252.8	1937.5	1736.8	1566.8	1507.3	49.5
Operating Profit (EBIT)	131.3	24.2	156.7	143.2	37.7	248
Depreciation & Amortisation expense	321.1	328.6	287	324.2	320	0.34
Operational EBITDA	452.4	352.8	443.7	467.4	357.7	26.5

The analysis presented in table 7 of the Vodafone submission on the *Draft Report*[185], is partial in that it only seems to reflect a Vodafone profile. The analysis for the mobile-only firm assumes that the MNO is a net terminator of calls from other networks, not all mobile only operators are net terminators, and the financial impact on each MNO will depend on the relative share of on-net and off-net termination of a particular carrier.

Vodafone has not provided any workings or support for the 'regulatory transfer' of $1 billion to Telstra it submits that has occurred nor has it provided the Vodafone analysis that supports Graph 2.[186] The Commission is not in a position to respond to these issues, with the dearth of information provided.

The Commission notes Telstra's submission that 9cpm is above cost and represents a glide path that is not provided for in other services relates to the cent per minute outcome in the *Draft Report*. The range of referable estimates in this report are above

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183 Telstra, *Telstra Corporation Limited and controlled entities results and operations review – Year ended 30 June 2007,* 9 August 2007, pp.54-55.

184 Vodafone, *Vodafone Australia Limited Annual report for the year ended 31 March 2007*, 31 July 2007, pp 8-19; Vodafone, *Vodafone Australia Limited Annual report for the year ended 31 March 2007*, 31 July 2005, p.22.

185 Vodafone Submission on *Draft Report*, p. 32.

186 ibid., pp. 21 and 32.

6 cpm resulting from modifications to the WIK Model and further calibration of the parameters since the *Draft Report* The Commission considers therefore, that 9cpm is a useful indicative price that is broadly consistent with the statutory criteria and does not represent a glide path, but a considered, conservative estimate at this point in time of the cost of supply of the MTAS.

A.1.2. Financial Estimates of input cost savings arising from the reduction in the MTAS prices

Reductions in MTAS prices have resulted in lower input costs for any suppliers of fixed services terminating on a mobile network.

The following table outlines a process that can be used to estimate the input cost savings relating to lower MTAS prices for FTM minutes, making reasonable assumptions based on publicly available data.

Table A.1-2: Calculation of savings from reduction in MTAS prices

1. Derive market share – based on FTM minutes				
Fixed-line Operator	**Minutes (mns)** [187]	**Market share FTM minutes (%)**		
Telstra	4,392	73		
Optus	958	16		
Other * this does not include all fixed line providers	660	11		
Total	6,010	100		
2. Derive total FTM minutes				
Assumption: Market shares of FTM minutes are unchanged since 2004-05				
	FTM Minutes per relevant period			
	2003-04	**2004-05**	**2005-06**	**HY to December 2006**
If: Telstra has 73% of FTM minutes	4,226.00[188]	4,375.00[189]	4,491.00[190]	2,339[191]
Then: Optus with 16% of FTM minutes	926.25	958.90	984.33	512.66
And: Other with 11% of FTM minutes	636.79	659.25	676.73	352.45

[187] ACCC, *Telecommunications Market Indicator* Report *2004-05*, July 2006, Table B, p.22.

[188] Telstra Corporation Limited and Controlled Entities, *Annual Report 2004*, pp. 6. and 19.

[189] Telstra Corporation Limited and Controlled Entities, *Annual Report 2006*, p. 8.

[190] ibid.

[191] Telstra Corporation Limited and Controlled Entities, *Half Year Report for the Half-Year Ended 31 December 2006*, pp. 10-11.

Equals: Total market (FTM minutes)	5,789.04	5,993.15	6,152.05	3,204.11
3. Derive MTAS only FTM Minutes (using inverse of mobile market shares)				
	Calendar Year			
Fixed-line Operator	**2005**		**2006**	
	H1	**H2**	**H1**	**H2**
Telstra - MTAS Minutes (56% of total FTM minutes)	1,225.00	1,257.48	1,257.48	1,309.84
Optus FTM - MTAS minutes (67% of total FTM minutes)	321.23	329.75	329.75	343.48
Other (fixed line carriers) FTM MTAS minutes (100% of FTM minutes)	329.62	338.36	338.36	352.45
Total FTM MTAS minutes	1,875.86	1,925.59	1,925.59	2,005.77
4. Use FTM MTAS minutes to derive estimate of input costs				
	2005		**2006**	
Total FTM MTAS minutes for the relevant calendar year	3,801.45		3,931.37	
Value of difference between indicative MTAS rate and 21 cpm ($ million)		114.04	235.88	349.92

In relation to FTM calls, the input cost savings achieved by lower MTAS are in the order of $350 million to the end of calendar year 2006.

A.2. Relevance of information used for pricing decision

A.2.1. Overall outcomes and efficient cost estimate

Submissions on Draft PPD Report

The CCC submits that 9 cpm will not promote the LTIE and 'is in fact likely to harm the LTIE.'[192] The CCC submits that the Commission has evidence that the efficient cost is between 5 and 7 cpm.[193] The CCC submits that there is no basis for regulatory shock or 'waterbed' effect arguments to delay efficient cost based pricing.[194]

Optus submits that it considers that the Commission's conclusion that 9 cpm is aligned with the efficient cost of supply of the MTAS is not properly supported by either the outputs of the WIK Model or by the other corroborating evidence.[195]

Optus submits that the efficient cost of provision of the MTAS cannot be estimated by reference to the WIK Model since it estimates the hypothetical efficient MTAS cost based on a network design that is not practically achievable by any real world operator, either an existing operator or a new entrant.[196]

Optus submits that even if the WIK Model was a realistic representation of an efficient mobile network in Australia (which it is not), it would be unreasonable to set an MTAS price in reliance on the WIK Model, since to do so would be to hold MNOs to an unreasonably high standard of efficiency.[197]

Optus submits that the networks of existing MNOs in Australia are highly unlikely to be as cheap as the hypothetical networks designed by models such as the WIK Model, even if those networks were designed efficiently at the time they were built.[198]

Optus submits that it considers that the Commission's international benchmarks are of limited use since efficient costs are influenced by many factors which vary between one country and another.[199]

Optus submits that it would also observe that the Commission has not demonstrated how the RAF data supports its indicative MTAS price of 9 cpm.[200]

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192 CCC, *Response to [the] Draft MTAS Indicative Prices* (CCC Submission on *Draft Report*), August 2007, p. 2.

193 ibid., p. 2.

194 ibid., p. 3.

195 Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 4.

196 ibid. p. 9.

197 ibid., p. 11.

198 ibid., p. 12.

199 ibid., p. 34.

200 ibid., p. 35.

Optus submits that it is not reasonable for the Commission to draw conclusions about the efficient cost of supply of the MTAS in the relevant time period based on the FL-LRIC+ estimate for the supply of the MTAS by Optus in Australia derived from the CRA Model to support Optus' 2004 Undertaking and Analysys' advice.[201]

Telstra submits that if the Commission errs on the side of caution, then it should adopt an initial price of 9 cpm for 1 July 2007 to 31 December 2007 and then 6 cpm for the 2008 calendar year.[202]

Vodafone submits that 12 cpm should be maintained[203] and that the Commission does not have the data necessary to produce a robust cost model.[204]

Commission's views

The Commission considers even after extensive consultation over the period from July 2003, there is still much debate as to an efficient cost estimate of supplying the MTAS in Australia. There is ample information to support that an efficient cost estimate lies below 9 cpm, which is still within the previous range of 5 cpm to 12 cpm, as first identified in the *MTAS Final Report*.

Telstra has clearly articulated that its view is an efficient cost estimate is toward the lower end of this range, the CCC also supports this view.[205] Optus and Vodafone on the other hand have not definitively outlined their views on an efficient cost estimate as part of the consultation period on the draft MTAS pricing principles determination. In contrast to Telstra and the CCC, Optus and Vodafone consider that the Commission should not reduce the MTAS below 12 cpm for the 'time being' due to a lack of evidence and that the WIK Model cannot be relied upon for efficient cost estimates. The Commission considers the submissions made by Optus and Vodafone below supporting their views.[206]

First, in relation to Optus's submissions on an appropriate efficient cost estimate[207], Optus seems to confused cost and network design concepts throughout its submission. The Commission considers these are quite distinct issues. The Commission has considered the issues raised by interested parties about:

- network design under the sub-section heading 'network design in section 3.7.2 and separately in Annexure A.8.3 of this report; and
- cost paramerisation under the sub-section heading 'cost parameterisation' in section 3.7.2 and separately in Annexure A.8.2 of this report.

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201 ibid.

202 Telstra Corporation Limited, *Submission in Response to the ACCC's Discussion Paper on the Draft MTAS Pricing Principles Determination for the Period 1 July 2007 to 31 December 2008* (Telstra Submission on *Draft Report*), August 2007, p. 28.

203 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 2.

204 ibid., p. 7.

205 CCC Submission on *Draft Report*, p.2 and Telstra Submission on *Draft Report*, p. 28.

206 Optus Submission on *Draft Report*, p. 4. and Vodafone Submission on *Draft Report*, p. 2.

207 Optus Submission on *Draft Report*, pp. 9-12.

Optus's submissions on the issue of cost estimates are considered below.

Second, the Commission considers that it is not necessarily the case that a scorched-node design would apply a historic cost approach to valuing network elements as submitted by Optus.[208] The Commission considers that network design and cost of the network are interrelated as outlined below in the section on 'scorched-earth and scorched-node network design', but the cost estimate derived and the values of the assets on which these are based upon are policy decisions guided by the relevant statutory criteria and guidance from judicial bodies not by what other international regulators do as they are guided within their own policy context.

Third, the Commission as outlined in section 3.4 of this report indicates that the Tribunal has affirmed that while cost models distinct from TSLRIC+ models are not unreasonable, it is generally not in the LTIE to depart from TSLRIC pricing for regulated access services and that access prices should reflect and not exceed forward-looking efficient costs[209] and further that a top-down approach may not be unreasonable if it can be established that the actual costs incurred by an MNO are efficient.[210]

Regardless of the network design, the value of that network should reflect an access price which reflects or is tending toward an efficient cost for the supply of the relevant access services using that network (in the case of MTAS using a TSLRIC+ estimate). There is also recognition that pricing aligned to efficient costs will more likely encourage efficient investment in infrastructure. The Access Pricing Principles states that an access price consistent with the TSLRIC framework encourages economically efficient investment in infrastructure providing a normal rate of return on efficient investments in infrastructure and the efficient use existing infrastructure[211].

The Commission's statutory obligations are not to compensate MNOs for past or legacy decisions about investments or network design or at an historic cost value of these network assets unless it can be proven that these result in an access price which is in the LTIE and meet the objectives of the other statutory criteria. The Tribunal makes this point in discussing both network design and the efficiency of the cost of the assets in that network, clearly distinguishing the two issues:

> [The modelling approach adopted by Optus] relieved Optus, to a certain extent, ***from establishing the efficiency of the costs of the assets used in its network design but it still left open the need to establish the efficiency of the network design and configuration itself. (emphasis added)***
>
> The approach taken by Optus to present, through CRA, a top-down model was not controversial. The Commission was content to accept Optus' top-down exercise. It appeared to be accepted, and we accept, that a bottom-up model based upon a hypothetical efficient operator may not, having regard to the time and costs involved, be feasible. The Commission's complaint was that Optus had not adjusted its costs sufficiently, or put forward material, to satisfy the Commission that

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208 ibid., p. 11.

209 *Application by Vodafone Network Pty Ltd & Vodafone Australia Limited* [2007] ACompT 1, 11 January 2007, at [44].

210 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116-118].

211 ACCC, *Access Pricing Principles – Telecommunications – A Guide*, (*Access Pricing Principles Guide*), July 1997, pp. 29-30.

> Optus' costs were costs that an efficient operator would incur, based on TSLRIC or FL-LRIC formulations.
>
> Although there is merit in the proposition that a firm in a competitive market has an incentive to be efficient and to incur costs efficiently, there is still a need for the Commission (and, on review the Tribunal), to be satisfied, having regards to the matters set out in s 152 AH and the objectives in s 152 AB of the Act that the firm's costs are efficiently incurred. In general terms, an operator in a competitive market should have more of an opportunity to establish the efficiency of its recently incurred costs by reference to its actual costs than a monopolist or dominant operator such as Telstra in *Telstra Corporation Limited* [2004] AcompT4. [212]

The Commission considers that the WIK Model's approach to deriving an efficient cost estimate is appropriate and reflects the statutory context and Tribunal guidance that the costs of an efficient operator should reflect efficiently incurred costs and be forward-looking.

A.2.2. Changes to the WIK Model and cost estimates

A.2.2.1. Changes to the WIK Model

Submissions on Draft PPD Report

Analysys submits that the ideal approach to investigating and costing mobile services relies on a combination of both bottom-up and top-down methods: the bottom-up model provides flexibility and transparency, while the top-down model provides a viewpoint based on actual operator data, with which to compare the bottom-up model.[213]

Analysys submits that in its opinion, calibration is very important since it helps to compare actual data with that produced by the model to verify the legitimacy of the results and better replicate the network and the costs that a hypothetical entrant would have.[214]

Analysys submits that calibration makes it more likely that the market will accept the results and reach an agreement among parties.[215]

Analysys submits that the most appropriate approach to estimate the efficient cost of supplying the MTAS in Australia is a modified scorched-node because it enables the model to be grounded in reality.[216]

Analysys submits that the scorched-earth approach runs the risk of underestimating what a reasonably efficient network deployment would be, and thus not allowing the existing operators to recover their efficiently incurred costs.[217]

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212 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116-118].

213 Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), 6 August 2007, pp. 5-6.

214 ibid., p. 6.

215 ibid., pp. 6-7.

216 ibid. p. 8.

217 ibid., p. 9.

Analysys submits that the application of the scorched-node principle to the core network may need to be accompanied by a degree of optimisation to ensure the resulting network is modern and efficient.[218]

Analysys submits that the Commission proposed some modifications to the original version of the WIK Model released 16 February 2007 and that some of the modifications have not been implemented.[219]

Commission's views

Since the release of version 1.0 of the WIK Model, the Commission has released versions 1.1 and 1.2 in response to the submissions it received. The following table summarises the changes made to the WIK Model and scenarios relating to the WIK Model to account for issues that are reasonably considered relevant for scenarios reflecting Australian market conditions.

Table A2-1: Changes to the WIK Model

Change	Cost or Network Design Calibration	Reference
Draft Pricing Principles Determination (Version 1.0 to Version 1.1)		
Increased minimum SMSCs from 1 to 2	Network Design Calibration	Annexure A.4.5
Adjustments made to recognise transient population in POAs encompassing airport precincts, industrial areas and military bases	Network Design Calibration	Annexure A.4.2
Included unbilled minutes to reduce annual service traffic	Cost Calibration	Annexure A.6.3
Changed routing usage factors for allocating cent per minute costs of the HLRs to services	Cost Calibration	Annexure A.6.4
Removal of the Redundant Terrain Parameters	Network Design Calibration	Annexure A.4.2
Increased number of MSC switching machines from 5 to 9	Network Design Calibration	Annexure A.4.5
Increase in service and dimensioning minutes by increasing the average milli-Erlang demand for service traffic from 8.3 to 13.1	Both (dimensioining and service minutes)	Annexure A.6.1
Traffic reduction on core network set to zero	Network Design Calibration	Annexure A.4.2
Averaging of dual-band and single-band scenarios to account for spectrum restrictions faced by MNOs	Network Design Calibration	Annexure A.4.2

[218] ibid.

[219] ibid., pp. 29-30.

WACC changed from 11.68 to 13 per cent	Cost Calibration	Annexure A.5.6
Pricing Principles Determination (Version 1.1 to 1.2)		
Decrease in service and dimensioning minutes by decreasing the average milli-Erlang demand for service traffic from 13.1 to 12.6	Both (dimensioining and service minutes)	Annexure A.6.1
Change of rounding procedure for the number of BTSs estimated by WIK Model	Network Design Calibration	Annexure A.4.2
Adjustment to service traffic calculation at BTS level	Cost Calibration	Annexure A.4.2
Inclusion of ability to force single-band deployment on urban, suburban or rural areas (rural areas are single-band in all scenarios)	Network Design Calibration	Annexure A.4.2
Individual uplift factors for all BTS types (uplift factor of 37.7% used on BTS macrocells with 3 sectors and 2 TRXs)	Network Design Calibration	Annexure A.4.2
Allowed deployment of BTS macrocells in urban areas, and BTS picocells in suburbs.	Network Design Calibration	Annexure A.4.2
Site sharing factor for microcell sites has been set to zero	Cost Calibration	Annexure A.5.4
Changed SMS Conversion factor from 125 to 40 bytes	Both (dimensioning and service minutes)	Annexure A.6.3

As discussed in section 3.7.2 of this report, the WIK Model is a bottom-up model, with an optimised network design. The Commission however has parameterised the WIK Model where it considers appropriate for an Australian context. These changes are outlined in this section, including revised annual service and dimensioning traffic amounts as discussed in Annexure A.6 of this report and Annexure A.3 of the *Draft Report*.

While, the Commission is open to further parameterisation of the WIK Model for an Australian context, there has been no reliable and verifiable data provided to it that would suggest there is a systematic error in the costs employed. In fact, it has specifically increased the WACC.

The Commission considers the Analysys characterisation as 'not implemented in the model', to be somewhat misleading. The WIK Model allows users to change a wide range of parameters. On the one hand Analysys criticises the Commission because the model is not flexible enough 'in terms of changing inputs and assumptions'[220], and then takes issue with the changes the Commission has made in the WIK Model in the input fields rather than hard-coding. The purpose of making these changes in the input fields rather than hard-coding the changes in the WIK Model was to improve transparency for the user. In this respect the Commission reiterates that:

[220] ibid., p. 3.

- the number of switching machines were increased from 5 to 9, by adjusting the number of ports per MSC, which is also clearly evident in the third column of the output file called 'Australia_conf_nod.txt';
- the milli-Erlang demand has increased from 8.3 to 12.6, as demonstrated by seventh column in the input file called 'Australia_Services.txt';
- the traffic reduction factor has been altered from 0.1 to 0, as demonstrated by the last column in the input file called 'Australia_param_cn.txt';
- the SMS conversion factor was changed from 125 to 40 bytes, as demonstrated by the 17th column of the 'Australia_services.txt" file;
- the scenarios used in this report ensured that no dual-band sites were deployed in rural areas, as demonstrated by the fifth column of the 'Australia_general.txt' file;
- the uplifting of BTS macrocells with three sectors (two TRXs per sector) by 37.7 per cent, as demonstrated by the last column in the row labelled 'BTS_Macrocell_3Sector_2T' of the 'Australia_BTS.txt'file;
- the setting of the BTS microcell site sharing factor to zero, as shown in the input file called 'Australia_cost_param.txt'; and
- the WACC was changed in the input field from 11.68 per cent to 13 per cent, as shown in the input file called 'Australia_cost_param.txt'.

The Commission considers that Analysys has misunderstood where and how these changes have been made in the WIK Model.

Table A2-2: TSLRIC+ estimates of MTAS supply

Population coverage: 96 % **Penetration rate: 96 %**	**TSLRIC+ estimate of supply (cpm)**
Reference Case 1 (25%)	6.6
Reference Case 2 (31%)	6.1

The results in this table indicate that a relevant efficient cost estimate for the supply of the MTAS. In the *Draft Report*, the range for the efficient cent per minute cost of the MTAS was 5.2 to 5.6 cpm for the relevant efficient operator scenarios detailed in the *Draft Report* that used version 1.1 of the WIK Model. These WIK Model estimates were updated to reflect recalibration of the optimised network and inclusion of parameters to reflect an Australian context since receiving submissions in response to the *Draft Report*. These changes are outlined in table A2-1.

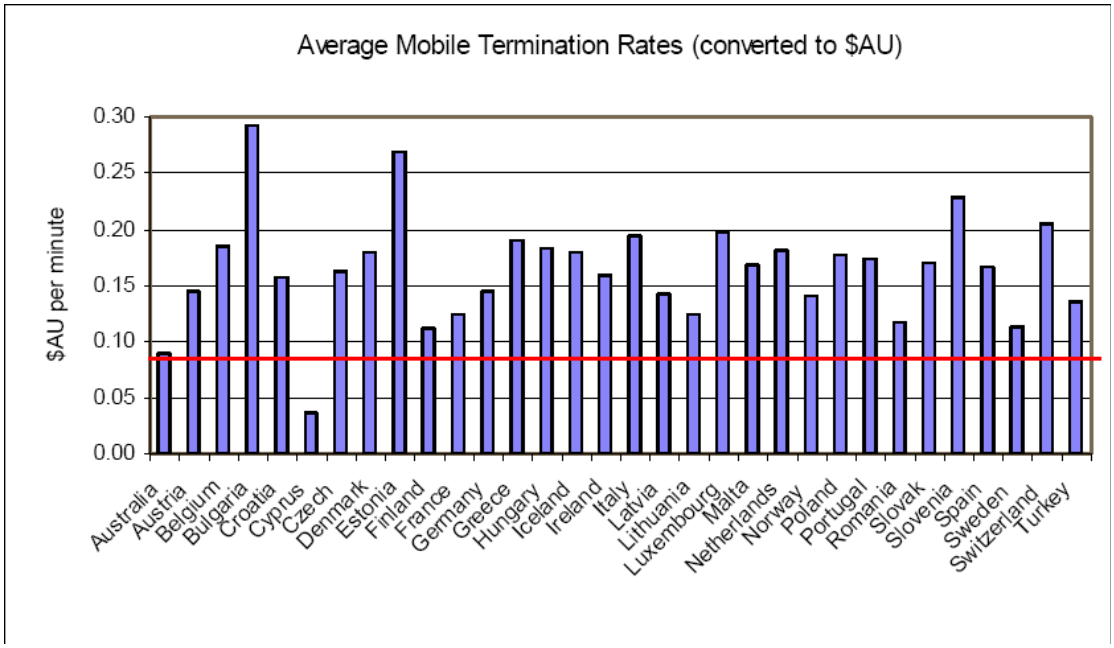
The outcomes of the WIK Model verify and support the robustness and reliability of the international cost benchmarking and RAF data analyses that have informed the 5 cpm to 12 cpm range of costs contained in the *MTAS Pricing Principles Determination* for the period 1 July 2004 to 30 June 2007.

A.2.3. International Cost Benchmarking

Submissions on Draft PPD Report

Optus submits that the Commission's international benchmarks are of limited use since efficient costs are influenced by factors which vary between countries.[221]

Optus notes, at the same time however, that according to a recent survey by the European Regulator Group (ERG) the proposed 9 cpm termination rate is significantly lower than all but one of the countries of the European Union. It submits the following graph that shows the listed rates (from the ERG's snapshot) are the mean of on and off-peak mobile termination rates (where applicable) for each country.[222]



Source: Optus (2007), Optus Submission on *Draft Report*, p. 34.

Vodafone submits that the Tribunal has noted that international benchmarking is of limited use. Vodafone also submits that the Commission has selectively chosen Israel and South Korea as 'best practice' benchmarks.[223]

Vodafone submits the following comparative metrics to illustrate its point:

	Australia	Israel	South Korea	UK	Netherlands
Minutes per sub per month	139	333	222	164	111
Pop per km^2	2.7	316.1	499.5	251.6	489.1
NRA cost model estimates (excluding externality & 3G spectrum in UK)	**5.2-5.5c**	**5.5c**	**4.5c**	**8.9c**	**8.6c***

Source: Vodafone (2007), Vodafone Submission on *Draft Report*, p. 10.

Vodafone submits there are higher traffic levels in Israel and South Korea, which will lead to more even traffic profile and drives further cost differences between Australia and Israel and South Korea.[224]

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221 Optus Submission on *Draft Report*, p. 34.

222 ibid., pp. 33-34.

223 Vodafone Submission on *Draft Report*, p. 9.

Vodafone submits based upon Wireless-Intelligence reports that the minutes of use per subscriber for Israel and South Korea are respectively 333 and 222 minutes per subscriber per month. It notes that Wireless-Intelligence does not report results for Australia, but based on available figures it estimates average minutes per use in the Australian market to be 139 minutes per subscriber per month (using the Commission's estimate of 38,577 million mobile minutes per annum counting both ends of on-net, reducing to 34,660 by eliminating double counting of on-net, dividing through by 20.783 million subscribers and expressing as a monthly average).[225]

Vodafone submits that the international benchmark cases are characterised by high population densities, such that a high proportion of the costs are capacity related. However, in Australia costs are driven by coverage, so costs will be higher in Australia.[226]

Commission's views

The Commission has relied on international cost benchmarking to support its position on TSLRIC+ estimates of 5 cpm to 12 cpm and that informed the upper-bound of the range which established the price of 12 cpm from 1 January 2007 contained in the MTAS Pricing Principles Determination. At the time, the Commission also outlined in the *MTAS Final Report* that before it would reduce the price of the MTAS below 12 cpm with reference to international cost benchmarking any such exercise would need to make adjustments for all factors that influence the TSLRIC of providing the MTAS in different countries for Australia-specific factors. For the purposes of this current process, the Commission has not undertaken this detailed benchmarking exercise, so the information provided below in relation to cost and price benchmarking processes is used as corroborating information.[227]

Since the release of its June 2004, international cost benchmarking analyses have featured in regulatory processes and in particular Optus has sought to rely on such analysis to support its position in both its 2004 undertaking to support a price of 17 cpm and its 2007 Undertaking to support a price of 12 cpm.

The Commission notes that these international benchmarking analyses have not always related to cost benchmarking and have more recently focused on rate or price benchmarking. It was for this reason that the Tribunal concluded that (in reference to Optus's earlier undertaking) it did not consider 'The international benchmarking proffered by Optus is of any assistance to us in determining the issue as to the reasonableness of Optus's price…In order to place any reliance upon the international benchmarking analysis it would be necessary to know much more about the regulatory environment within which they were determined.'[228]

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224 ibid., p. 9.

225 ibid., p. 10.

226 ibid.

227 ACCC, *Mobile Services Review – Mobile Terminating Access Services: Final Decision on Whether or not the Commission Should Extend, Vary or Revoke its Existing Declaration of the Mobile Terminating Access Service*, (*MTAS Final Report*), June 2004, p. 211.

228 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [296-297].

These analyses have confused price and cost. Further, these analyses have also not accurately represented the model framework and approaches used in other jurisdictions. In response to the *WIK Report*, Vodafone submitted several examples of overseas models.[229] The relevance of these models is discussed below.

As mentioned, in the Commission's views on equipment prices (see Annexure A.5.2), the LRIC model framework adopted by Ofcom may look for intents and purposes similar to the TSLRIC framework used in the WIK Model but is distinguishable in fundamental ways from the underlying approach adopted in the WIK Model.

Ofcom parameterises its model using the actual costs incurred by MNOs rather than efficient cost benchmarks. The model developed for Ofcom was calibrated with the MNOs' accounting data.[230] One of the consequences of this approach was that Ofcom did not consider that it was possible in practice to collect a robust and consistent set of detailed accounting information for all MNOs.[231] This extensive consultation was required because of the very nature of the cost model developed: a hybrid bottom-up, top-down model. In this respect comparison of indicative prices derived from a top-down LRIC model are likely to provide an upper-bound cost estimate of the supply of the MTAS compared to a lower bound estimate that might emerge from a scorched-earth model like the WIK Model.

Other critical differences include the inclusion of a network externality charge of 0.3 pence per minute (ppm) or 0.72 cpm.[232] The inclusion of an externality surcharge has been dismissed for Australian purposes by the Tribunal.[233] Ofcom also differentiates 2G and 3G termination costs to account for the large initial outlay by MNOs for 3G spectrum in the United Kingdom. This approach to spectrum costs is specific to the United Kingdom regulatory context and does not reflect the most recent experience in Australia. In November 2006, the EU Information Society and Media Commissioner, Viviane Reding stated that:

> I am concerned that Ofcom's approach to calculate 3G spectrum costs could hinder the movement towards lower mobile interconnection prices. The (European) Commission believes that such costs should not be calculated on the basis of prices paid during the spectrum auction, which are in today's context inflated.[234]

The EU asked Ofcom in that same letter to reassess its method of calculating mobile termination rates in the UK.[235] The EU noted that the impact of the 3G spectrum costs

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229 Vodafone, *Submission to the Australian Competition and Consumer Commission: WIK Mobile Network and Cost Model and MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*, (Vodafone Submission on *WIK Report*), March 2007, pp. 20-23.

230 Office of Communications (Ofcom), *Mobile Call Termination - Proposals for Consultations*, September 2006, p. 142. See also: Ofcom, *Mobile Call Termination Report Statement*, March 2007, p. 200.

231 ibid.

232 Using an exchange rate of AU$1 to 0.42 GBP.

233 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [287-291].

234 Letter from the European Commission, to Ofcom, dated 22 November 2006. Accessible from: <http://europa.eu/rapid/pressReleasesAction.do?reference=IP/06/1628&format=HTML&aged=0&language=EN&guiLanguage=en>, Viewed on: 23 April 2007.

235 ibid.

added on average between 1.2 ppm to 1.9 ppm [236]or the equivalent of 2.9 cpm to 4.5 cpm[237] to the MTAS prices.

Together the impacts of these two factors reduce the target price to be implemented in the United Kingdom for 1 April 2010 by 3.6 cpm and 5.2 cpm resulting in target prices less than 9 cpm, when converted to Australian currency.[238]

Another example submitted by Vodafone as a relevant cost model for comparison is that developed by OPTA for the Netherlands. The Netherlands national regulatory authority, OPTA, has undertaken industry consultation for its Bottom-Up Forward Looking Long Run Incremental Cost (BULRIC) Model, informing it of the cost basis for a maximum MTAS price. OPTA's model is distinguishable from the WIK Model as it adopts a scorched-node approach to network dimensioning which has necessitated industry input, but as a result reflects the costs associated with the actual equipment and locations used by operators. While the OPTA model is based on a bottom-up approach, 'the unit costs used to populate the model have been derived by averaging across operator provided data' and in this way takes account of both bottom-up and top-down estimates of the unit cost of network elements.[239] Further the model has been calibrated using a scorched-node approach against the 'actual number of radio and switching sites deployed by the operators'.[240] OPTA's BULRIC Model is not directly comparable to the WIK Model in terms of its approach to cost parameterisation or network calibration.

The model developed in the Swedish regulatory context parameterises the model using a hybrid of bottom-up (LRIC + EPMU) and top-down (historic costs).[241] The Commission notes that the use of historic data may be unavoidable in certain circumstances but other approaches using forward-looking costs are preferable to sole reliance on historic cost measures.

The Commission considers that LRIC models, such as those Vodafone refers to in its submission, that adopt a top-down approach to parameterisation would provide an upper-bound cost estimate for MTAS, which may or may not be an efficient cost benchmark.

Since 2004, the Commission notes that there have been developments of comparable cost models that reflect the outcomes produced by the WIK Model. These models support that the TSLRIC+ estimate of supply of the MTAS may be in a range lower than 5 cpm to 12 cpm. Information from jurisdictions such as South Korea and Israel provide for cost estimates implemented in those jurisdictions of 4.49 cpm and 5.45

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236 European Commission, *Press Release: Telecommunications: Commission asks UK Regulator not to use Inflated 3G Auction Costs in Termination Rates for Mobile Phone Operators*, IP/06/1628, 27 November 2006.

237 Using an exchange rate of AU$1 to 0.42 GBP.

238 Using an exchange rate of AU$1 to 0.42 GBP.

239 Onafhankelijke Post en Telecommunicatie Autoriteit (OPTA), *Summary Notification Form Relating to a Draft Decision of the Commission of the Independent Post and Telecommunications Authority in the Netherlands with respect to the Implementation of Price Control Obligations on the Relevant Markets for Voice Call termination on Individual Mobile Networks*, 21 June 2006, p. 5.

240 ibid.

241 Analysys, *Examination of Mobile Cost*s *(Final Report for ACCC)*, 30 June 2004, pp. 24-25.

cpm respectively,[242] which support the WIK Model efficient cost estimates of 6.1 cpm to 6.6 cpm for the two reference scenarios.

However, as already noted the Commission has stated in the *MTAS Final Report* that before it would reduce the price of the MTAS below 12 cpm with reference to benchmarking any detailed benchmarking exercise would need to make adjustments for all factors that drive the TSLRIC of providing the MTAS in different countries for Australia-specific factors.[243]

The Commission has concerns with the international benchmarking survey provided by Optus showing that 9 cpm is significantly lower than all but one country. These include:

1. It has sought to rely on international benchmarking analyses, and has failed to provide detailed information about the data sources for the information it is seeking to rely on, including whether the benchmarks are price or cost benchmarks.
2. The Commission notes that the information provided by Optus is not complete and countries such as the United Kingdom are omitted from the Optus analysis but are contained in the European Regulators Group (ERG) *Updated snapshot on mobile termination rates (June 2007).* [244] Optus has not provided any reason as to why this country is excluded from its analysis.
3. There is no indication from these average termination rates data provided by Optus as to whether the data are peak termination, off-peak termination or total termination rates (all these rates are labelled average mobile termination rates in the ERG 'snapshot' document).
4. Optus has not provided as part of its analysis the exchange rate used to convert the European rates used by the ERG to an Australian dollar rate. The Commission has not been able to verify if the Australian cent per minute rates are accurately converted.
5. In addition, the ERG termination rates referred to by Optus are as of 1 January 2007, and the United Kingdom (excluded from the Optus analysis) has had a reduction in regulated termination rates since that time, below the rates reported. In addition, termination rates in Sweden have also reduced since 1 January 2007 which was not reflected in the data. An updated snapshot of mobile termination rates as of 1 July 2007 was released by the ERG on 23 October 2007[245] which reflects the reduction in rates.
6. The Commission considers that the termination prices in three countries (United Kingdom, Netherlands and Sweden), contained in the ERG 'snapshot' may not be entirely comparable to an Australian regulatory context as an efficient cost estimate for the supply of the MTAS as outlined above. The

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242 ACCC, *Optus Undertaking Decision*, February 2006, p. 123.

243 ACCC, *MTAS Final Report*, June 2004, p. 211.

244 ERG (07) 27 *Updated snapshot on mobile termination rates,* Accessed on 21 August 2007, http://erg.eu.int/doc/whatsnew/erg_07_27_mtr_update_snapshot_for_publication.pdf

245 ERG (07) 61 *Updated snapshot on mobile termination rates,* Accessed on 8 November 2007, http://erg.eu.int/doc/publications/erg_07_61_mtr_update_snapshot_for_publ.pdf

analysis of those countries demonstrates the limitations of the Optus international benchmarking exercise.

The Commission has outlined its position in relation to reliance on international cost benchmarks in the *MTAS Final Report* to set indicative prices below 12 cpm. This has been reiterated in several places this report (see mainly Annexure A.5.2).

The Commission notes that the Tribunal did not place 'little weight on international benchmarks', but as the following shows, it stated that it could not rely on the international benchmarking analysis provided by Optus to support its undertaking submitted in 2004:

> We do not consider that the international benchmarking analysis proffered by Optus is of any assistance to us in determining the issue as to the reasonableness of Optus' price… In order to place any reliance on the international benchmarking analysis it would be necessary to know much more about the regulatory environment within which they were determined… [246]

This conclusion is not inconsistent with the Commission's conclusion on the need to make adjustments for all factors that influence the TSLRIC of providing the MTAS in different countries for Australia-specific factors before relying on international cost benchmarks to set indicative prices below 12 cpm.[247]

In respect of the 'comparative metrics' provided by Vodafone, the Commission notes that Vodafone has made assumptions about certain variables used to support this information, including the relevant minutes to derive the minutes per subscriber per month and the relevant coverage (kilometres) to derive the population per kilometre. While the Commission appreciates these are issues that may need to be considered if the Commission was seeking to rely on international cost benchmarking, the analysis provided is partial. The factors presented will also need to be augmented with other issues, including as the Tribunal outlined relevant regulatory contexts, before it can be established that these countries are not relevant cost benchmarks for reference in an Australian context.

The reference to international cost benchmarking analyses from South Korea and Israel, confirms the international cost benchmarking analysis, establishing a range of 5 cpm to 12 cpm as outlined in the *MTAS Final Report* is a relevant starting point for the development of any such analyses.

That said, the Commission is not seeking to rely on international cost benchmarking analyses at this juncture in line with the statements it has made in the *MTAS Final Report*

A.2.4. RAF data

Submissions on Draft PPD Report

Optus submits that the Commission's RAF analysis has not been demonstrated to provide any support for the Commission's indicative price.[248]

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246 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8 (22 November 2006) at [296-297].

247 ACCC, *MTAS Final Report*, June 2004, p. 211.

248 Optus Submission on *Draft Report*, p. 35.

Commission's views

As outlined below in Annexure A.3.1, the Commission used RAF data to provide corroboration and verification for the international cost benchmarking analysis establishing the range of 5 cpm to 12 cpm in its *MTAS Final Report*.

The information from the RAF suggested that an actual cost for the supply of the MTAS may lie below the conservative upper-bound estimate of 12 cpm established in June 2004.

The Commission notes that RAF data is C-I-C and the nature of information collected under the RAF is changing, with the emergence of 3G network costs and revenues in more recent years. The Commission is not seeking to rely on RAF data analysis to support a price of 9 cpm for the period 1 July 2007 to 31 December 2008.

A.2.5. Telstra's submissions and Optus Undertaking FL-LRIC

Submissions on Draft PPD Report

Optus submits that the Commission's conclusion that the price of 9 cpm is informed, in part, by the FL-LRIC+ estimate for the MTAS estimated by the CRA Model. Optus submits that it is out of date given that it applies to the period prior to 2004 and the Commission has no basis for rolling forward the cost estimate.[249]

Telstra submits that in the course of considering SingTel Optus' undertaking, the Commission indicated that the CRA model produced a cost estimate for SingTel Optus supplying MTAS that lies "comfortably in the middle" of the Commission's 5-12 cpm cost estimate.[250]

Telstra submits that the outputs generated by the Commission's model are consistent with:

(a) the Commission's previous analysis undertaken in relation to the making of the now-expired Pricing Principles which recognised that the cost of supplying the MTAS could be as low as 5-6 cpm;

(b) the cost model presented by SingTel Optus in support of its recently rejected MTAS undertaking, a critical examination of which produces a TSLRIC+ estimate towards 5-6 cpm (as discussed above); and

(c) recent international benchmarks which have produced estimates of supplying the MTAS in the order of 4.5-5.5 cpm.[251]

Commission's views

Further verification for a TSLRIC+ estimate tending toward 6 cpm is provided in Telstra's submission in which it acknowledges that the outputs generated by the WIK

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[249] Optus Submission on *Draft Report*, p. 35.

[250] Telstra Submission on *Draft Report*, p. 6.

[251] ibid., p. 15.

Model indicate that the most efficient cost estimate is at the lower end of the TSLRIC+ range of estimates previously identified by the Commission.[252]

In November 2005, Analysys Consulting Pty Ltd (Analysys) provided advice to the Commission about the FL-LRIC+ estimates for the supply of the MTAS by Optus in Australia from the CRA Model. The cost estimate for the supply of the MTAS based on 2004 data, confirms that without adjustment for higher traffic volumes since that time that are likely to offset any rise in costs, that an estimate of the efficient cost for the supply of MTAS would lie below the conservative upper-bound estimate of 12 cpm established in June 2004 – but is above the rate for the most efficient operator. The WIK Model presents several scenarios that may be referable to the costs of an efficient operator, which has an optimised network design.

The Commission reiterates its position in the *Draft Report* that:

- the cost estimate (FL-LRIC) for the supply of the DGTAS was based on 2004 data;
- there has been no adjustments for higher traffic volumes;
- there are likely higher costs; and
- the efficient cost estimate for the supply of MTAS would lie below the conservative upper-bound estimate of 12 cpm established in June 2004 – but is above the rate for the most efficient operator.[253]

The Commission does not link the CRA Model FL-LRIC estimate to the 9 cpm price established in its indicative price principles as Optus seems to construe in its submission.[254] This would confound price (considered in terms of reasonableness in regulatory decisions) and efficient cost concepts (related to cost models).

In addition, the Commission does not represent the price of 9 cpm as the efficient cost estimate of supply of the MTAS as Optus submits.[255]

Optus also seems to have confused Telstra's submission and the Commission's views. The Commission did not include Telstra's submission which it does now for completeness to clarify this confusion:

> the outputs of the WIK Model are consistent with several other sources which indicated that the efficient costs of the MTAS are at the lower end of the Commission's previous 5-12 estimate. These sources include:
>
> ….
>
> (b)the cost model presented by Optus in support of its recently rejected MTAS undertaking - in that context, the Commission indicated that:
>
> Optus's own [LRIC + EPMU] cost estimate appears to fit comfortably within the Commission's previously determined range of 5 – 12 cpm. In fact, CRA's own

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252 Telstra, Submission in Response to the ACCC's Discussion Paper on the WIK Mobile Network and Cost Model to Inform the MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009, (Telstra Submission on *WIK Report*), March 2007,, p. 47.

253 ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report)*,, p. 51.

254 Optus Submission on *Draft Report*, p. 35.

255 ibid.

> model reveals that Optus's 'LRIC+EPMU' estimate of supplying the MTAS lies comfortably in the middle of the Commission's estimated range.[256]

Telstra again reiterates these issues in its latest submission and that the WIK Model outcomes are consistent with the 'cost model presented by Sing Tel Optus in support of its recently rejected MTAS undertaking, a critical examination of which produces a TSLRIC+ estimate towards 5-6 cpm.'[257]

The Commission did not point out as Telstra does in its submission that the FL-LRIC estimate lies 'comfortably' in the middle of the 5 to12 cpm range.[258]

The Commission does not consider it unreasonable to respond to Telstra's submission about this issue, nor qualify that the 2004 estimate would need to factor in traffic and changes in costs over time to address this submission. The FL-LRIC estimate is not being relied on to support a 9 cpm price of the supply of the MTAS but relates to another corroborating source than the WIK Model of an efficient cost estimate in an Australian context.

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256 Telstra Submission on *WIK Report*, p. 46.

257 Telstra Submission on *Draft Report*, p. 15.

258 ibid.

A.3. Draft PPD Submissions on Efficient Operators

A.3.1. Hypothetical efficient operator, market share and the efficient entrant

A.3.1.1. Technology platform

Submissions on Draft PPD Report

Optus submits that the assumption that a new entrant would only deploy a 2G service is unrealistic as no MNO has launched a new 2G network since March 2000[259] and that a new entrant is highly likely to deploy 3G technology in order to compete.[260]

Optus further submits that despite the sharing of spectrum, a 3G network has increased capital and operating and maintenance costs compared to 2G.[261]

Vodafone disagrees with the Commission's view that 2G technology is the most cost efficient and submits that MNOs must offer voice and data services to compete for customers. Vodafone submits that no leading MNO in major OECD markets embarks on a 2G only strategy[262] and notes that Ofcom concluded that reliance on 2G costs does not provide incentives for efficient investment.[263]

Vodafone submits that 'a 2G/3G network cost base is the only one that can be considered for regulatory purposes when setting MTAS prices.'[264] In this respect Vodafone argues that the Commission's use of the European Commission letter to Ofcom 'to support the view of Ofcom as a maverick regulator' is misleading as the European Commission letter focused on 3G spectrum fees and did not address modelling of 3G costs generally.[265]

Vodafone notes that its consultant, Analysys, considers that an efficient MNO would operate 2G in rural areas and 3G in urban areas, which could result in under-utilisation of both 2G and 3G networks in their respective lifetimes, and the WIK Model does not consider transition costs from 2G to 3G.[266]

Commission's views

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259 Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 16.

260 ibid., p. 17.

261 ibid., p. 15.

262 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 11.

263 ibid., p. 13.

264 ibid., p. 12.

265 ibid., p. 14.

266 Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), 6 August 2007, p. 13.

The WIK Model and the Commission's approach to modelling a hypothetical operator is that the operator deploys a 2G network for the reasons discussed in section 3.2 of the report.

Interested parties continue to submit that the WIK Model fails to account for the fact that Australian MNOs do not operate standalone 2G networks and that they should be compensated for the migration of their customers from 2G to 3G networks.[267] The Commission continues to be of the view that the conclusions drawn in the *WIK Report* in respect of the delivery of voice services on 3G networks are reasonable and that the use of a 2G benchmark for the establishment of a cost for the supply of the MTAS on 3G networks is appropriate.[268]

Vodafone submits that the Commission misinterpreted the European Commission's views on the Office of Communications (Ofcom) on the usage of a 2G/3G model. It submits that the Commission placed *reliance on the letter from the EC (European Commission) to Ofcom to support the view of Ofcom as a maverick regulator in respect of its decision to model a 2G/3G network.*[269]

The Commission considers that Vodafone has not accurately reflected the Commission's comments in the *Draft Report*. The Commission quoted the European Commission's letter to illustrate the impact of high spectrum prices paid at auction in the United Kingdom. This reference was included to distinguish the market context for spectrum costs between Australia and the United Kingdom, and the relevance or lack thereof of spectrum costs as a reference point for comparison between the MTAS price in Australia and the United Kingdom. The Commission notes that the Vodafone submission does not provide evidence of the European Commission's acceptance of the UK approach, as it submits only that the letter discussing spectrum costs did not criticise Ofcom's approach to 3G technology.[270]

Vodafone's justification for considering a converged 2G/3G network operator approach relies heavily upon the approach taken by Ofcom for its mobile termination decisions.[271] However, using the same approach for the Australian mobile market would not only be inconsistent with Vodafone's submission of the need for the WIK Model to reflect conditions in the Australian market[272] but also previous decisions made in the Tribunal with respect to the pricing of 2G and 3G services. This is due to the fact that Ofcom not only used UK input costs but also set a different price for integrated and (standalone) 3G MNOs. The Commission notes that it is not required to set different prices for different technology platforms as affirmed by Justice Edmonds's decision.

> … the subject matter of the Declaration is the MTAS; that is the 'declared service' for the purposes of Part XIC of the Act, not any particular technology such as 3G. The MTAS is also

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267 Optus Submission on *Draft Report*, pp. 15 -17, and Vodafone Submission on *Draft Report*, pp. 11-14.

268 Note that in the *Draft Report* that there was a typographical error and the Commission was referring to the analysis conducted by WIK Consult in the *WIK Report* rather than the WIK Model.

269 Vodafone Submission on *Draft Report*, p. 14.

270 ibid.

271 Vodafone Submission on *Draft Report*, pp. 12-14.

272 ibid., p. 2.

> the subject matter of the access pricing principles the subject of the Determination, not 3G or any other technology.[273]

Vodafone submits that Ofcom concluded in its consultation documentation that a combined 2G/3G network is more costly than a standalone 2G or 3G network.[274] It interprets, in the form of a table, a graph taken from an Ofcom report.[275]

The Commission notes that the graph examines the different costs between different platforms and reflects the technology specific approach that Ofcom has taken. As previously noted in Justice Edmond's decision, the Commission is not required to set technology specific prices. The Ofcom analysis submitted by Vodafone is also in conflict with its own view that a cost model developed for the Australian mobile market should reflect Australian conditions. The graph presented in the Ofcom report represents estimates of costs based on assumptions for MNOs operating in the United Kingdom.[276] Vodafone notes that:

> Australia, however, is fundamentally different with significant areas, and even regions, dimensioned purely for coverage purposes.[277]

However, the Commission notes that in Vodafone's submission that voice termination on the 3G network is the lowest cost technology and it is the highest or higher cost when using 2G technology. Therefore, the Commission considers that it is reasonable to assume that a cost model using 2G technology will provide an upper-bound estimate the efficient cpm cost of the MTAS.

The Analysys report prepared for the Vodafone submission relates the issue of modelling for 2G, integrated or standalone 3G networks to the issue of technological neutrality. It notes that the WIK Report does not consider that a MNO would deploy a 3G network as a 'defensive move' to compete with standalone 3G MNOs providing advanced services.[278] However, the object of Part XIC is to promote the LTIE of carriage services or of services provided by mean of carriage services. The Commission notes that the decision to for an MNO to integrate 3G services into a 2G network or operate a standalone 3G network (such as Hutchison and Telstra's Next G network) is a commercial decision and not a decision to be made by the Commission.

The Commission notes that both the Analysys report and Vodafone criticise the WIK Model for not taking into account Australian market conditions. However, the Analysys report itself has failed to take into account the same market conditions in its comments with respect to the use of 2G and 3G technology. The Analysys report notes that:

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273 *Vodafone Australia Limited v Australian Competition and Consumer Commission*, [2005], FCA, 16 September 2005, at [69].

274 ibid., p. 13.

275 Ofcom, *Mobile Call Termination: Proposals from Consultation*, September 2006, Figure A13.10, p. 199.

276 Ofcom, *Mobile Call Termination: Proposals from Consultation*, September 2006, pp. 141-167.

277 Vodafone Submission on *Draft Report*, p. 10.

278 Analysys Report on WIK Model, p. 11.

> In the long term, an efficient operator in Australia should deploy and run networks of both types, 2G in rural areas and 3G in urban areas, which could result in under-utilisation of both 2G and 3G networks in their respective lifetimes.[279]

In the Commission's view these comments seem to relate to a European context, where there have been limitations on radio frequency for deploying 3G networks around the 900 MHz band. However, in Australia, Telstra has deployed a nationwide 3G network at 850 MHz and Optus has commenced 3G service trials using the spectrum it owns around the 900 MHz band for rural areas.[280] Therefore it is likely that in an Australian context, in the long-run, most MNOs will either deploy or be using 3G networks which cover at least 96 per cent of the population at a lower radiofrequency.[281] This enables MNOs to deploy a mobile network at a lower cost for rural and regional areas, as less Node Bs are required in these areas to cover larger distances.

A.3.1.2. Market Share

Submissions on Draft PPD

Optus submits that having regard to the Tribunal and the competitive market, it is not realistic for the WIK model to use a 25 per cent market share as a standard reference case.[282]

Optus submits that it considers that it is not clear that the 25 per cent standard would necessarily be achievable by a new entrant. Optus disagrees that the Tribunal has given any indication that the relevant benchmark may be greater than 25 per cent. The Tribunal considered a number of 'potential' outcomes. Moreover, Optus believes the Commission has no basis for establishing a 31 per cent benchmark because it has no basis for assuming that Hutchison's market share potential is only 7 per cent.[283]

Vodafone submits that the Tribunal said that no convincing case had been made that a 25 per cent market share was achievable.

> Vodafone submits that Vodafone's current market share of 17 per cent serves as an efficient benchmark in light of the Tribunal's guidance. This reflects the market reality that after more than 10 years in the market, the third mobile player – offering innovative and competitively priced services in the Australian market and with access to the resources of an international group – retains a market share of around 17 per cent. Hutchinson, the other non-integrated firm, has failed to attain market share in excess of 10 per cent.[284]

Analysys, on the behalf of Vodafone, submits that it takes a number of years to increase scale, and these higher costs should be recovered over the relevant period.

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279 ibid., p. 12.

280 Telstra, *Telstra's New Next G™ Network*, Accessible from: <http://www.telstra.com.au/mobile/networks/info/nextg.htm>, Viewed on: 11 September 2007 and Optus, *Optus Announces Bold Expansion of its 3G Mobile Network Across National Footprint*, Accessible from: <http://www.optus.com.au/portal/site/aboutoptus/menuitem.813c6f701cee5a14f0419f108c8ac7a0/?vgnextoid=27e13268b6070110VgnVCM10000029867c0aRCRD&vgnextchannel=daf6d7ef03820110VgnVCM10000029867c0aRCRD&vgnextfmt=default>, Viewed on: 11 September 2007.

281 ibid.

282 Optus Submission on *Draft Report*, p. 17.

283 ibid., p. 18.

284 Vodafone Submission on *Draft Report, p. 15.*

Accordingly, Analysys thinks it aggressive that the WIK Model does not assume any costs will be incurred as a result of the increase in scale.[285]

Commision's views

The Commission considers market share relates to the concept of the efficient operator. The reasons for using a hypothetical operator rather than new entrant are given in section 3.1 of this report and section 4.2 of the *Draft Report*.

The Commission is not required for the purposes of setting a price for the supply of the MTAS to establish a definitive stance about the market share of the hypothetical operator. The WIK Model provides for flexibility in determining the market share of hypothetical operator and two scenarios have been presented as a reasonable range of cost estimates (from 6.1 to 6.6 cpm). The Commission considers these scenarios provide a range of market shares that can be used to establish a range of referable TSLRIC+ estimates of the supply of the MTAS in an Australian context. Modelling for a market share higher and lower than 25 per cent has also been provided previously; not all of which may be relevant in the Australian regulatory context. The following table shows the TSLRIC+ estimates of the supply for a range of market shares for reference:

Table A.3-1: Cent per Minute Outcomes for Hypothetical MNOs with Different Market Shares[286]

Market share (%)	TSLRIC+ estimate (cpm)
94% Coverage	
17	7.6*
25	6.4*
31	6.0**
44	5.5***
96% Coverage	
17	7.8*
25	6.6*
31	6.1**
44	5.6***

* 20 BSC sites assumed

** 25 BSC sites assumed

*** 45 BSC sites assumed

[285] Analysys Report on WIK Model, pp. 12-13.

[286] The above table uses the same assumptions as outlined on table A.4-2 (on page 65 of this report). Increases in the number of BSC sites are required in order to handle the increased number of BTSs deployed according to the market share provided in the hypothetical scenarios. The number of ports per MSC switching machine has been adjusted in each scenario to ensure that the model uses nine MSC switching machines.

The Commission notes that coverage is likely to be positively correlated with market share for reasons discussed in section A.5.2. Coverage as observed in an Australian context varies from MNO to MNO, with Telstra providing the highest coverage (approximately 96 per cent) and Vodafone providing the least coverage (approximately 94 per cent) in the 2G GSM market.

A.4. Network design and dimensioning

A.4.1. Network resilience and design

Submissions on Draft PPD Report

Optus submits that it remains unconvinced that WIK fully understands network reliability and the network features that are used to achieve it for an Australian context.[287]

Commission's views

The Commission notes that a number of factors were outlined in Annexure A.1.3.7 of the *Draft Report*. None of the interested parties made substantive comments about the overall approach to network resilience as discussed in the *Draft Report*. Only Optus submitted that it was unconvinced about the approach taken in the WIK Model.

The Commission notes that in the *Draft Report*, WIK did consider network reliability for an Australian context through the architecture of the network, technical specifications of the equipment, asset prices and maintenance expenses.[288] It is the Commission's view that no new information on network from interested parties has been received to suggest that the WIK Model fails to reasonably account for network reliability in an Australian context.

Before discussing the substantive changes and issues to the WIK Model, the Commission notes that the *Draft Report* and the technical specifications provided make clarifications on a number of issues raised by the interested parties. The purpose of this section/annexure is to detail the Commission's reasons for making changes to the WIK Model and other substantive issues.

A.4.2. Cell deployment issues

Submissions on Draft PPD Report

Optus submits that the number of transceivers (TRXs) deployed in the WIK Model is substantially lower than those deployed on an Australian network.[289]

Optus submits that the Commission has misunderstood Optus's criticism on BTS sites. Optus is of view that an efficient MNO that wished to deliver the standards of

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[287] Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 23.

[288] ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report),* pp. 77-78, and 81-82.

[289] Optus Submission on *Draft Report*, pp. 21-22.

service required is compelled to deploy a more extensive and costly network as the WIK Model fails to take into account a range of practical realities.[290]

In this regard Optus argues that coverage is an important competitive factor and that a new entrant would provide highway coverage without being subsidised.[291]

Telstra, however, also submits that the WIK Model is flawed as it assumes large coverage gaps where none exist in reality, underestimates Telstra's rural costs, and has not been subject to parties' scrutiny of the underling model algorithms.[292]

Telstra submits that the WIK Model does not take account of special areas that require unique coverage solutions, such as the Sydney Harbour Bridge and Spirit of Tasmania, and as such the WIK Model does not reflect reality.[293]

Telstra further submits that the WIK Model does not reflect reality as it excludes postcodes with a population lower than an assumed minimum population level[294] and there are significant concentrations of traffic that are not represented such as educational facilities and shopping malls.[295]

Telstra submits that the Commission's model must account for sites with more than two sectors, so as to ensure the model reflects reality.[296]

Telstra submits that the Commission's model must account for sectors with more than two transceivers (TRXs), so as to ensure the model reflects reality.[297]

Vodafone submits that the WIK Model understates the number of BTS sites deployed compared to its own network.[298]

Commission's views

The Commission considers that many of the submissions provided by interested parties relate to the actual experience of MNOs and their actual networks. As outlined previously (see Annexure A.1.1.3.2 of the *Draft Report*), the WIK Model is not intended to reflect the realities of a particular MNO's network. The WIK Model is intended to support regulatory processes that can be applied across Australian MNOs' experience without being specific to one MNO's particular network or business context. This is why a range of scenarios are considered for the purposes of informing the Pricing Principles Determination process.

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290 Optus Submission on *Draft Report*, p. 14.

291 ibid., p. 19.

292 Telstra Corporation Limited, *Submission in Response to the ACCC's Discussion Paper on the Draft MTAS Pricing Principles Determination for the Period 1 July 2007 to 31 December 2008* (Telstra Submission on *Draft Report*), August 2007, p. 16.

293 ibid.,, p. 23.

294 ibid., p. 24.

295 ibid., p. 25.

296 ibid., p. 26.

297 ibid., p. 27.

298 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 18.

Optus reiterated that the number of TRXs deployed for the scenarios for the *WIK Report* were substantially lower than an Australian network. There are two observations that the Commission will make in relation to this comment.

First, that the number of TRXs will be affected by the amount of dimensioning traffic carried by the hypothetical network. Given that the service traffic parameter used in this report is 4.3 milli-Erlang higher than that used in the *WIK Report*, it is inappropriate for the purposes of comparisons to be using the number of TRXs generated by the scenarios in the *WIK Report*.

Second, the number of TRXs that the model determines provides a capacity that is sufficient to carry the total volume of traffic and still leaves a substantial margin of this capacity as a buffer.

Table A4-1: TRX capacity of BTSs[299]

Row	Description	Dimension	Scenarios and results	
1	Market share		25%	31%
2	Total traffic	Erlang/BH	84,636	106,489
3	Number of BTSs		4,931	5,774
4	Number of TRXs/BTS		6.14	6.45
5	Number of slots/TRX		7	7
6	Number of slots/BTS		42.99	45.17
7	Maximum traffic/BTS	Erlang/BH	33.70	35.55
8	Total traffic capacity	Erlang/BH	166,153	205,262
9	**Average utilisation of BTSs**		**50.94%**	**51.88%**

As this table illustrates, the total traffic is well below the total traffic capacity according to the total number of TRXs estimated in each scenario. The TRX capacity effectively left idle is large enough to fulfil any quality requirements that the operator may wish to guarantee its customers.

The Commission finds that the assumptions made about the restrictions placed on different types of BTSs deployed in the WIK Model are reasonable and consistent with approaches in other models and studies,[300] even though these deployment assumptions may not reflect how different BTSs may be located across an actual network.

The Commission notes that Vodafone's submission refers to Optus's submission in response to the *WIK Report*. The Commission has noted the reasons for the

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[299] Row two is calculated by the following equation: (Modified output users x market share x Erlang x (1+ on-net percentage)); Number of TRXs and BTSs obtained from output files in the 'Cell Deployment' module in the WIK Model; Row seven is calculated by using the inverse of the Erlang B formula using the number of slots per BTS and the blocking probability of two per cent; and Row eight is calculated by multiplying row three by row seven.

[300] For example see Lee, M. 'Wired and Wireless Convergence', *CableLabs Media Briefing 2005*, 25 May 2005, slide 10, Accessible from: <http://www.cablelabs.com/conferences_public/MB2005/>, Viewed on: 10 May 2007 or Rabanos J. M. H. *Communicaciones Móvile GSM*, Airtel Foundation, Spain, 1999, p. 201.

difference between Optus actual network and the WIK Model in the *Draft Report*.[301] However, the example used in the Vodafone submission does not account for the adjustments made to cell sites for the dual-band restriction in the MTAS 2007 Report. The submission replicates the 17 per cent market share covering 96 per cent of the population; with no restrictions on the usage of dual-band BTSs. Therefore Vodafone understates the total number of BTS sites used in the 17 per cent scenario in the *Draft Report* by 416 sites (273 of which are macrocell sites).[302]

Given that the ACMA data used in the *Draft Report*[303] to reconcile the BTS mix was based primarily on assumptions about how spectrum was used in urban, suburban and rural areas, the Commission requested further information to verify its estimates. On 6 September 2007 the ACCC wrote to the 2G MNOs seeking their assistance in providing information about the number of BTSs, Node Bs, sites and the extent of sharing on their 2G networks.[304] The Commission received responses from all three MNOs and based upon these submissions has recalibrated the parameters used for the scenarios to reflect Australian conditions.[305] The scenarios used in this report now deploy:

- BTS macrocells in urban, suburban and rural areas rather than just suburban and rural areas;
- BTS microcells are only deployed in suburban areas; and
- BTS picocells are now deployed in both suburban and urban areas.

The Commission recognises that the MNOs deploy different BTS types for legitimate reasons that may diverge from that of a hypothetically efficient operator. Therefore, the Commission has decided to make an allowance for the mix of macrocells being lower in the scenarios than what is observed by introducing an uplift factor on the number of BTS macrocells.[306] The Commission considers that the change in the uplift factor and BTS deployment restrictions have resulted in a deployment of BTSs more reflective of an Australian context.

The Commission notes it did not receive any further submissions on the use of the Okumura-Hata model. Reasons for adopting this model are given in Annexure A.1.1.3.2 of the *Draft Report*.

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301 Australian Competition and Consumer Commission (ACCC), *MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Draft Report*, (*Draft Report*), June 2007, p. 74.

302 ACCC, *Draft Report*, p. 155.

303 ACCC, *Draft Report*, p. 71.

304 ACCC, *ACCC Letters to MNOs Regarding BTSs, Node Bs and Sites,* Accessible from: <http://www.accc.gov.au/content/index.phtml/itemId/797864/fromItemId/783052>, Viewed on: 2 November 2007.

305 ACCC, *Mobile Terminating Access Service (MTAS) 2007 Pricing Principles – Letters to MNOs About Network Elements and Sites Information*, Accessible from: <http://www.accc.gov.au/content/index.phtml/itemId/783052/fromItemId/356715>, Viewed on: 2 November 2007.

306 The number of BTS macrocells with three sectors and two TRXs per sector has been increased by 37.7 per cent.

The Commission notes, contrary to the Telstra submission, that the WIK Model does deploy BTS macrocells with more than two sectors. For example, over 3,000 macrocells with three sectors and two transceivers are deployed in the 44 per cent market share scenario.

Both Optus[307] and Telstra[308] submitted in response to the *WIK Report* and the *Draft Report* respectively that the WIK Model did not deploy macrocells with four or more sectors, and that BTSs were capable of having more than two TRXs. The Commission recognises by allowing the model to deploy BTSs with more transceivers and sectors, the number of BTSs and BTS sites would decrease. This would result in a lower cent per minute cost of the MTAS and therefore Commission believes that it has chosen a reasonable approach.

Interested parties provided submissions with respect to the WIK Model's inability to account for coverage on highways and rural areas. Telstra submited a number of maps comparing the WIK Model's coverage estimations to its own network.[309] The Commission has noted in the *Draft Report* that the aim of the WIK Model is not to precisely replicate the design of any one MNO's actual network but to estimate the efficient cost of providing the MTAS in an Australian context.

The Commission notes in respect of the coverage maps submitted by Telstra, it is unclear whether Telstra was comparing the coverage of its 2G GSM (96 per cent coverage) or CDMA (98 per cent coverage) network to the coverage in the 96 per cent coverage scenarios in the WIK Model. However, the Commission notes that there is little evidence that the WIK Model provides for substantially less coverage than that of Telstra's 2G GSM network.

Contrary to Telstra's submission, the WIK Model does not exclude all postal areas that lie below the exclusion threshold, it excludes postal areas that:

- have population densities below the specified exclusion parameter; and
- are not adjacent (do not fall within the aggregation radius) to postal areas that have population densities above the exclusion parameter.

The Commission notes that in section 3.10 of the *WIK Report* there is a discussion of Australian subsidy schemes[310] and that those Federal government subsidies have supported increased network coverage along Australia's highways. The Commission is of view that a hypothetical MNO would not provide coverage to highways that are located outside of the areas covered by the WIK Model without being subsidised for such an activity.[311] Further, the Commission notes that given that many main roads

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307 Optus, *Optus Submission to the Australian Competition and Consumer Commission on the WIK Mobile Network and Cost Model for Australia*, (Optus Submission on *WIK Report*), p. 15.

308 Telstra Submission on *Draft Report*, p. 27.

309 Telstra Submission on *Draft Report*, pp. 17-22.

310 WIK, *Mobile Termination Cost Model for Australia - Report for the ACCC*, January 2007 (*WIK Report*), pp. 56-58.

311 Areas that are not included for coverage either have no buildings or residential populations, or fall outside the exclusion threshold.

and highways are adjacent to built-up areas in which cells are deployed,[312] not all main roads and highways are neglected by the WIK Model. There are many stretches of highway which are located in areas where BTS cells are deployed to support the surrounding demand.

In respect of subsidies provided in the past for coverage on highways, Optus submits that these subsidies are irrelevant and that a new entrant would be forced to compete on the basis of coverage.[313] Ignoring Optus's inconsistent approach to the suggested treatment of a new entrant operator, which would face incumbent asset values rather than current asset values when investing in its network (refer to section 3.1 for the Commission's views on the concept of the efficient operator), Optus's comments on coverage provided by new entrants do not reflect what occurs in reality. First, only Telstra provides coverage along most of Australia's major highways on its mobile networks. The reason for the extent of coverage it provides is not only due to the subsidies it has received but is also due to the obligations placed on its CDMA network and now enforced through recent amendments to its carrier licence.[314] Second, a hypothetical operator (even if that operator is a new entrant) could provide coverage to Australia major highways, by accessing the infrastructure of another MNO, such as Telstra under arrangements set out in either the Facilities Access Code, or from the Mobile Connect or other subsidy schemes.

The 'terrain coverage' parameter has been removed as a redundant parameter in the modified WIK Model. The WIK Model accounts for this factor in its exclusion and aggregation parameters.

Telstra submits that the Commission is using outdated 2001 Census data.[315] The Commission notes that although the 2006 Census data for residential Australia has been released, the data relating to working population is not due for release until December 2007.[316] The Commission proposes to update the input file relating to Australia's population after this data becomes available.

Telstra submits that the WIK Model does not account for a number of locations which contain additional mobile traffic such as TAFEs, Universities and shopping centres.[317] This is not a new criticism of the WIK Model and the Commission considers that the purpose of the model is not to precisely replicate the actual networks of MNOs operating in Australia. The Commission has already undertaken a refinement in calibration of the network by reviewing areas of high mobile traffic such as airports,

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312 Some examples of districts with major roads covered by the scenarios used in the *WIK Report* are Colac in Victoria, Albury in New South Wales and Toowoomba in Queensland.

313 Optus Submission on *Draft Report*, p. 19.

314 Department of Communications, Information Technology and the Arts, *Telstra's Transition from a CDMA to Next G Mobile Network*, Accessible from: <http://www.dcita.gov.au/communications_for_consumers/mobile_services/telstras_transition_from_a_cdma_to_next_g_mobile_network>, Viewed on: 3 September, 2007.

315 Telstra Submission on *Draft Report*, p. 24.

316 Australian Bureau of Statistics (ABS), *2006 Census of Population and Housing - Product Brief*, Accessible from: <http://www.abs.gov.au/websitedbs/d3310114.nsf/89a5f3d8684682b6ca256de4002c809b/a8004c69a984826bca257213002196a6>, Viewed on: 11 September 2007.

317 Telstra Submission on *Draft Report*, pp. 22-24.

in changes made in the WIK Model Version 1.1. The Commission acknowledges that it is impossible to precisely account for all these areas of high mobile traffic, and for every type and number of BTS deployed in reality (irrespective of whether a scorched-earth or scorched-node method was adopted). The reason for establishing a 9 cpm price rather than a price more closely aligned to a TSLRIC+ estimate generated by the WIK Model is to provide a reasonable outcome that can account for any discrepancies in network elements that may be deployed in an actual network of an MNO. That said the network deployed in the WIK Model does account comprehensively for mobile traffic throughout Australia and discrepancies between estimated and actual network deployment have generally resulted in more rather than less BTSs being deployed than is observed in reality. Further, the WIK Model has a built-in increment factor that can be used to provide an uplift factor that can be applied to any BTS-type. An increment was employed which increased the number of picocells in the scenarios used for the (25 and 31 per cent market share) cpm outcomes in the *Draft Report*. This equated to an increase in picocells ranging from 79 to 89 picocells depending on market share to account for the deficiencies in picocell deployment that might arise in areas such as airports, universities and other tertiary institutions and shopping centres. This is in addition to the calibration of the model for airport precinct mobile traffic.

The Commission notes that the cell deployment algorithm takes account of the geographic features of Australia by using percentages of flat, hilly and mountainous terrain in each district based upon Australian data. This data is then used to apply the corresponding losses that are due to these types of terrain.

As bays are not included in the initial district file which is based on postal areas, these are not considered in the cell deployment process of the WIK Model. As a result there will necessarily be some particular and special cases (such as bays) that may have an influence in operational cell deployment which will impact on the specific location of BTS. However, the Commission notes that in global studies where average values are deduced for element numbers and corresponding costs, the impacts of deviations from specific geographic features usually wash out in the averaging process or have only a minor influence on overall costs. However, the Commission reiterates that the indicative price for the MTAS has not been set at the efficient cost, as estimated by the WIK Model.

The Commission notes that buildings are accounted for in the WIK Model through the calculation of the cell radius by propagation. In the 'General Parameters' section of the 'Cell Deployment' module in the WIK Model cells are calculated through the use of a factor that measures the building penetration losses which contribute to these losses. Further, the average building height, the height of BTSs and the terrain loss in the 'District Parameters' section of the 'Cell Deployment' module are given as average values which depend on the type of district.

The Commission also notes Optus's submission that the WIK Model over-provisions for the number of dual-band BTSs.[318] The Commission considers there are two reasons why the WIK Model estimates a higher usage of dual-band BTSs than compared to actual MNOs. Firstly, MNOs are constrained by legacy decisions arising from the fact

[318] Optus, Optus Submission on *WIK Report*, p. 16.

that spectrum licences in the 1,800 MHz band were not granted for a number of years after the licensing of the PMTS B licences using the 900 MHz band. Secondly, as Optus pointed out in its submission on the *WIK Report*[319], most of Australia's MNOs do not have Australia-wide access to spectrum in the 1,800 MHz band. Therefore, the Commission has made an allowance for this by restricting the deployment of BTSs in rural areas to the 900 MHz range only. This was achieved by modifying the WIK Model to allow users the option to restrict the deployment of dual-band BTSs in rural or other types of areas.

The following assumptions were made in determining these estimates

Table A4-2: List of assumptions for scenarios for dual-band restrictions

WIK Model parameter assumptions	25 per cent scenario	31 per cent scenario
milli-Erlang demand (to obtain approximately 40.1 billion minutes comprised of 37.7 billion voice minutes plus 6 per cent non-voice minutes)	12.6	12.6
Coverage	96 per cent	96 per cent
Dual-band deployment in rural areas	Not Allowed	Not Allowed
BTS Macrocells	Urban, Suburban and Rural	Urban, Suburban and Rural
BTS Microcells	Suburban	Suburban
BTS Picocells	Urban and Suburban	Urban and Suburban
Uplift on BTS Macrocells with 3 sectors and 2 TRXs	37.7%	37.7%
Uplift on BTS Picocells	20%	20%
Number of BSC locations	20	25
Traffic reduction factor	0	0
Number of ports per MSC (to maintain the number of switching machines at nine)	915	1,008
Busy-hour percentage	8.5	8.5
Business days	250	250
Unbilled minutes	0.04	0.04
WACC per cent	13	13
Cost estimate (cpm)	6.6434	6.092

These parameters were calibrated using information received from MNOs during various stages of the PPD process. Therefore, the outcomes in the WIK Model result in a reasonable outcome when compared to every MNO that is deployed in reality.

[319] ibid.

A.4.3. Aggregation network

Submissions on Draft PPD Report

Optus submits that the WIK Model does not take into account practical constraints on BSC locations.[320] Optus also submits that it is not practical for a network to use microwave links only in the BTS-BSC aggregation network as radio links have limited throughput capacity and cannot aggregate traffic from all upstream sites.[321]

Commission's views

The Commission considers that the approach taken for technical specifications of the BSC units in the aggregation network of the WIK Model is reasonable for the reasons outlined in Annexure A1.1.3.4 of the *Draft Report*. The Commission notes it did not received any further submissions on the technical specifications of the aggregation network.

The Commission considers that the exclusive use of microwave links for a hypothetical non-integrated MNO is a reasonable approach. There are two reasons why a MNO might use a majority of fibre links in its aggregation network. First, if as is the case for two of the four MNOs, it is an integrated MNO, it already has fibre links built for its fixed-line network. Second, use of microwave links in the WIK Model provides a reasonable approach to the cost of links as the use of fibre is relatively cheaper than the alternative.

Concerning the capacities of the aggregation links, the WIK Model takes into account both radio links and leased DSG systems of varying TRX capacities as shown in the table below.[322]

Table A4-3: List of DSG types and TRX capacities

System type	Number of E1	Number of TRXs
E1	1	15
E3	16	240
E4	64	960

From the network configuration determined by the aggregation module of the WIK Model, average values for the different link flows between BTS hub and BSC locations can be derived. These values are shown in the following table for the four market share scenarios and for the BH service traffic per user used in the *WIK Report* and this report.

Table A4-4: TRXs per link

BH traffic/user (milli Erlang)	Average number of TRXs per link differentiated by market share			
	17%	25%	31%	44%
8.3	49.9	66.3	90.7	111.5

[320] Optus Submission on *Draft Report*, p. 22.

[321] ibid., pp. 22-23.

[322] Hardy et al. (2002): *Networks*, Springer de boeck, Paris & Berlin, p. 145-189.

12.6	66.2	96.4	143.9	155.2

From these values it follows that a large number of aggregation links can be implemented by installing only one radio link system with a corresponding capacity (for example one of the systems listed in table A4-3). In special cases, where the capacity of the highest radio link system (E4) is lower than the required link flow, a second radio link system has to be installed or, if the cost is lower, a corresponding number of DSG leased lines must be used.

At the same time, it is clear that Optus, as an integrated fixed-line MNO, will in most cases not use radio link systems. The reason for this, however, is not likely to be capacity limits but rather due to using a Synchronous Digital Hierarchy (SDH) physical transport platform using fibre links for its fixed-line business. It is therefore likely to be able to provide an optimal integration of DSG traffic resulting from its different networks (PSTN/ISDN, mobile and public data networks).

The Commission considers that a non-integrated MNO will not implement their own SDH transport network based on fibre links as it would not generate enough traffic to operate these links cost effectively. Hence it has to choose either between installing its own radio link system or leasing DSG links from an operator that provides this service.

Optus submits that the Commission did not address its earlier submission that BSC sites need to be located in areas where infrastructure such as roads and power are available.[323] The Commission notes that it did address a number of concerns raised by interested parties on the aggregation network in the *Draft Report*, such as:

- the number of BTSs per BSC unit;
- the number of transceivers (TRXs) per BSC unit;
- the number of BSC units in the network as opposed to the number of BSC sites;
- the number of channels per E1 group;
- the grouping of BTSs to a specific BSC site; and
- the usage of a minimum distance parameter in the WIK Model.

The Commission acknowledges that it did not address the issue relating to the location of BSC sites raised in Optus' submission, but notes that the WIK Model selects districts where traffic is highly aggregated and as a result the districts where the BSC sites are located all have access to the basic infrastructure. The Commission did not receive any evidence that the districts used in the WIK Model for BSC sites do not have access to roads and power. The Commission notes, similar to the submissions about coverage, that it would need to understand if there was over-compensation of BSC sites in other areas relative to the BSC sites of an actual MNO. The Commission would need to know the overall cost impact of these omissions balanced with calibration of the network deployed or parameterisation of the WIK Model which resulted in a more conservative (higher MTAS cost) outcome. These submissions would also need to be considered in the context of difference between the

[323] Optus Submission on *Draft Report*., p. 22.

price set in the pricing principle determination and the TSLRIC+ estimate generated by the WIK Model. To more finely calibrate the WIK Model interested parties would need to support their submissions by demonstrating that some or all of the districts selected by the WIK Model are inappropriate and not serviced by infrastructure.

A.4.4. Backhaul network

Submissions on Draft PPD Report

Optus is also of view that the resilience of the network design is inappropriate as it does not incorporate 99.95 per cent service protection for the backhaul network.[324]

Commission's views

The Commission's view that the WIK Model addresses resilience in the backhaul network is outlined in Annexure A.1.1.3.5 of the *Draft Report*. Only one party submitted further comments in response to the Commission's view on this issue. Given parties' submissions and the Commission's view about the importance of switching machines located at the MSC for connecting a large number of mobile users, the Commission has increased the number of switching machines from five to nine as discussed in Annexure A.1.1.3.5 of the *Draft Report*. This was achieved by changing the ports per MSC parameter for the scenarios estimated subsequent to the *WIK Report*.

Optus submits that the WIK Model did not incorporate any path protection mechanisms for the backhaul network. The Commission notes that Optus 'maintains at all times 'Carrier class' annual network availability of 99.95 per cent for backhaul transmission', this is below the assumed availability by the WIK Model.[325] The Commission noted in the *Draft Report* that the WIK Model assumes that the transmission for the backhaul network guarantees an annual average availability of 99.99 per cent. Further, it has been noted in the *WIK Report* that the leased lines follow a SDH which uses ring structures which are protected by the 'self-healing' principle.[326] When combining the 'self-healing' principle with a SDH, it is implied that the leased lines employ a path protection as a part of the ring structure. Therefore it is the Commission's view that the WIK Model's design of the backhaul network is reasonable and meets with typical Australian availability standards.

A.4.5. Core network

The Commission made changes to the number of minimum SMSCs as discussed in Annexure A.1.1.3.6 of the Draft Report. There were no new submissions on this issue. The Commission considers that the interested parties are satisfied with these changes. In respect of the core network elements as submitted by Vodafone, the Commission finds that including a VMS and a voice mail service would have an immaterial impact on the cost of the MTAS for the reasons given in Annexure A.1.1.3.6 of the *Draft Report*.

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[324] ibid., p. 23.

[325] ibid., p. 23.

[326] WIK, *WIK Report*, pp. 73-74.

A.5. Cost Module

The Commission considers that network asset prices and costs informing the parameters in the WIK Model reflect reasonable estimates in the Australian context. The Commission views that most issues raised by the interested parties require no changes to the parameters in the WIK Model (refer to Annexure A2 and Appendix D of the *Draft Report* for details about earlier submissions and discussion on cost parameters).

A.5.1. Asset lives

The Commission considers that there has been significant engagement with industry in respect of asset lives in assessment of the Vodafone and Optus undertakings, and there is broad industry acceptance of the asset lives used in the WIK Model. This is confirmed by the fact that only Vodafone has made a submission on this issue in response to the *WIK Report*. As the Commission has received no further submissions on this issue, it considers that the asset lives used for the scenarios and reasons given in Annexure A.2.1 of the *Draft Report* are reasonable.

A.5.2. Equipment prices

Submissions on Draft PPD Report

Optus submits that the equipment costs used by the WIK Model are substantially lower than actual prices faced by MNOs in Australia.[327] Optus submits that the Commission has not adequately demonstrated that land values are the dominant factor behind international variation in site acquisition and construction costs. Optus submits that there is significant variation in international costs and the causes of that variation have not been adequately explained.[328]

Optus further submits that there is 'an apparent inconsistency in that the Commission on one hand states equipment prices have nothing to do with the geographical features of a country and on the other hand relies on analysis of land values in various countries to support the variation in site acquisition and construction costs.'[329]

Optus submits that the Commission has not specifically addressed Optus's concerns on price trends and that price trends need to consider local factors.[330]

Optus submits that the WIK figure for site sharing for macrocells is too high.[331]

Vodafone submits that the Tribunal has noted that regard should be had to the market realities of operating a network in Australia, including consideration of actual incurred costs.[332]

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[327] Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 26.

[328] ibid., p. 27.

[329] ibid., pp. 27-8.

[330] ibid., p. 29.

[331] ibid., p. 30.

The Analysys report supporting the Vodafone submission notes that while the WIK Model claims to benchmark asset prices against those used by public European models, there are significant price differences, particularly in regard to software.[333] However, Analysys does not find any major issues with the annual rates of price changes.[334]

Commission's views

The Commission considers that the question of equipment prices is largely an empirical one that is easily verifiable by reference to an MNO's own equipment prices or supplier prices. Despite protestations about the inappropriateness of the use of European Benchmarks, only Vodafone provides data that the equipment costs for a limited number of network elements used in the WIK Model are inappropriate in an Australian context or diverge from the equipment costs incurred by it. Again Vodafone is the only MNO to provide any information and for only a limited number of network elements.

Further, the Commission has previously invited MNOs to provide any non-confidential information about relevant equipment prices, which could be in the form of, for example, global price lists from suppliers (which do not reflect any C-I-C material).

That said, the Commission notes that Vodafone in its submission to the *WIK Report* has referenced three European regulators and prices used in cost models in the United Kingdom, the Netherlands and Sweden.[335] The Commission considers that the analysis proffered by Vodafone, while partial and selective, is nonetheless instructive, in that there does not seem to be any particular bias in the equipment prices used in the WIK Model; equipment prices are both higher and lower across different types of equipment items except, as expected, for the United Kingdom where almost all the prices for equipment are higher than is used in the WIK Model. The equipment prices used in the Ofcom (United Kingdom) model are also generally higher than those used in the Swedish and the Netherlands models. Notwithstanding the competitive nature of the global equipment market, these data confirm that the United Kingdom may not be an appropriate efficient cost benchmark in isolation for sourcing equipment prices as it is a high-priced jurisdiction (see discussion below on site values).[336] The Commission reiterates if, as some interested parties submitted, the WIK Model was

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[332] Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 2.

[333] Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), 6 August 2007, p. 38.

[334] ibid., p. 39.

[335] Vodafone, *Submission to the Australian Competition and Consumer Commission: WIK Mobile Network and Cost Model and MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*, (Vodafone Submission on *WIK Report*), March 2007, p. 21.

[336] See also: See World Bank data on purchasing power parity accessible from: <http://devdata.worldbank.org/wdi2006/contents/Table4_14.htm>, Viewed on: 17 May 2007; and International Monetary Fund data on purchasing power parity accessible from: <http://imf.org/external/pubs/ft/weo/2007/01/data/weoselgr.aspx>, Viewed on: 17 May 2007.

aggressive in approach[337] then one would expect that the WIK Model equipment prices would be systematically and consistently lower across all the equipment classes and particularly the highest priced equipment. This is not the case.

The Commission also notes that in Vodafone's submission in response to the *WIK Report*, it discusses how equipment prices (which Vodafone terms interchangeably as 'asset prices' and CAPEX) in the Netherlands cost model is lower than in the Australian model due to the geographical features of the Netherlands.[338] Optus likewise submitted that international benchmarks used by WIK for equipment prices are determined in large part by local factors such as land prices and labour costs.[339] However, both of these submissions fail to recognise that equipment prices have nothing to do with geographical features of a country.

Only one MNO has provided equipment price data on a confidential basis. In terms of the data on equipment costs submitted by Vodafone, the WIK model underestimates only three broad classes of network assets.[340]

In examining the list of equipment provided by Vodafone the Commission makes the following comments. The Commission refers parties to Annexure A.2.1 of the *Draft Report*[341] and maintains that there is no inherent bias in the underlying equipment price data that would suggest the prices used in the WIK Model are not reasonable.

First, the WIK Model does not include STP or Voicemail equipment. The reasons for the non-inclusion of these issues have been discussed in Annexure A.1.1.3 of the *Draft Report* and Annexure A.4.5 of this report. Contrary to Vodafone's submission these issues were discussed in the *Draft Report*.[342]

Second, the Commission notes in respect of software, Vodafone submits the software costs for BSCs and MSCs is substantially higher than parameterised in the WIK Model[343] and the relativity of hardware to software costs was also much higher in reality than allowed for in the WIK Model.

However the Commission is not aware of what these software costs comprise and whether some of this equipment only services the 2G network on a standalone basis. The Commission is not in a position to verify this directly from the information provided by Vodafone, so it examined the relativity of hardware to software costs that Vodafone provided in its 2004 undertaking. The Commission understands that these costs related to the delivery of services on a 2G network and were prices relevant to a period prior to the deployment of Vodafone's 3G (shared infrastructure) network. From this information the Commission estimated the relativity of the PwC Model's hardware costs to software costs (taking into account prices changes contained in the

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337 Optus, *Optus Submission to the Australian Competition and Consumer Commission on the WIK Mobile Network and Cost Model for Australia*, (Optus Submission on *WIK Report*), p. 6.

338 Vodafone Submission on *WIK Report*, p. 21.

339 Optus Submission on *WIK Report*, p. 31.

340 Vodafone Submission on *Draft Report*, p. 17.

341 ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report)*, pp. 92-94.

342 ACCC, *Draft Report*, p. 80 discusses the STP and pp. 80-81 discusses voicemail equipment.

343 Vodafone Submission on *Draft Report*, p. 17.

PwC Model) for these software items. This analysis shows that the relativity of MSC hardware costs to software costs that MSC software costs in the PwC Model are 20 per cent lower than MSC hardware costs (and in 2004 prices the relativity is closer to 40 per cent lower). In respect of BSC hardware costs to software costs the relativity in the PwC Model is BSC software costs in the PwC model are more than 50 per cent lower. In addition, the hardware costs for BSC and MSC equipment are materially higher in the WIK Model compared with the extrapolated 2007 prices contained in the PwC Model (close to or in excess of 20 per cent respectively).

The Commission notes the difficulty in undertaking this analysis and that establishing the relativity of costs can be complicated by the WIK Model having a higher hardware costs than Vodafone's purported equipment prices (for example, the price of BSC hardware is higher than what was submitted).

The Commission concludes that at least in relation to MSC and BSC software costs, the relativities to hardware costs submitted by Vodafone do not reflect the software to hardware cost relativities Vodafone used in its 2004 Undertaking. Further Vodafone's most recent submission materially contradicts these relativities (software costs are equal to the cost of hardware but are much lower than in the PwC Model).

Third, in the same way the Commission examined the costs of macrocell and microcell equipment in the PwC Model and extrapolated the 2004 prices for price changes contained in that model. The equipment price for the omni-sector macrocell equipment (one-sector equipment in the WIK Model) and tri-sector microcell equipment (microcell equipment in the WIK Model) in the PwC Model is close to a third of the price contained in the WIK Model.

The Commission considers that based on this verification that the price of macrocell and microcell equipment used in the WIK Model is reasonable.

Fourth, in respect of the HLR software, the impact on the cent per minute efficient cost of the supply of the MTAS is 0.2 to 0.4 cpm. The Commission considers that without verification of these costs by Vodafone from an independent source of data, an indicative price of 9 cpm more than accounts for any variation in the increased cost that could be attributed to this equipment in the WIK Model.

In respect of Optus's submission about the WIK Model's approach to equipment prices the following points are made.[344] First the Commission considers that asset values which are informed by equipment prices, and land costs which relate to site costs, are different and distinct variables. Optus in its submission seems to confuse and use these terms interchangeably.

Second, in relation to equipment prices, the Commission does not consider that equipment prices are determined by local factors such as land prices. Equipment prices are generally a function of material and labour costs as well as distribution and selling costs including any margin or loss on the sale of the equipment producer and supplier. It is unclear what Optus is referring when it states that equipment prices from international benchmarks are determined largely by local factors such as land prices, labour and installation costs. Site costs include construction costs which may comprise a component for labour and material costs, and land but not equipment costs.

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[344] Optus Submission on *Draft Report*, pp. 25-26.

It is unclear what aspect of the Commission's analysis of equipment price analysis Optus rejects. In its submission[345], Optus has confused comments made in the *Draft Report* about equipment prices and comments it made about site values (construction costs and land values).

In respect of calibration of the WIK Model for equipment prices, the Commission notes Optus's criticism that the Commission is inconsistent in choosing between modelling a hypothetical operator and an actual operator.[346] The Commission is perplexed by this comment, as Optus itself has criticised the Commission for adopting a scorched-earth and efficient cost approach to modelling and calibrating the WIK Model (refer to paragraphs 3.17 to 3.21 for example).[347] Optus may 'observe' but has not provided any evidence to support its submission that the 'cost figures' in the WIK Model are substantially lower than the actual prices 'faced' by MNOs in Australia. Again, the Commission encourages MNOs to provide evidence, which they can on a confidential basis, to support submissions in relation to equipment prices. As indicated, only Vodafone has provided any information or submissions on prices of the network elements; these submissions are discussed above.

Optus criticises the Commission for being inconsistent in its approach to the calibration of the WIK Model and submits that the Commission is 'using a model designed to estimate the costs incurred by a hypothetical efficient operator.... but modelling … an actual operator[348]'. However, Optus expects the Commission to give weight to its submissions about calibrating the WIK Model with Australian data including its own cost and network data (the data of an actual operator). The Commission is puzzled by this submission and it is uncertain if Optus is submitting that the Commission should have no regard to its submissions about the network design or actual cost issues it has raised. Optus seems to be stating that the equipment prices paid by 'three out of the four [MNOs]… …are irrelevant'[349] and the Commission cannot reconcile this comment with Optus's submissions that 'the cost figures used by WIK are substantially lower than actual prices faced by [MNOs] in Australia'.[350] In addition, in its submission Optus considers that the efficient cost of supply of the MTAS should be estimated by reference to the costs of real world mobile network operators and not solely by reference to a hypothetical scorched earth network.[351]

Optus also seems to have misconstrued the Commission's comments about geographical features and equipment prices. The quantity of equipment may indeed vary according to the nature of the topography of the land in a particular country. For example, flat unencumbered topography may require less equipment than a landscape with significant mountainous or built-up areas. But the equipment prices for any unit of equipment deployed will remain the same. As already outlined, asset values are

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345 Optus Submission on *Draft Report*, p. 27.

346 ibid.

347 ibid., pp. 9-10.

348 Ibid, p. 10.

349 ibid., p. 27.

350 ibid., p. 26.

351 ibid., p. 9.

distinct from equipment prices (reflecting both prices and quantities of equipment among other things) and their values for a class of assets may vary as a result, because more or less equipment is deployed, not because of the variability of the prices of the equipment at a point in time.

A.5.3. Site values

Submissions on Draft PPD Report

Optus submits that it does not consider the Commission has adequately demonstrated that land values are the dominant factor behind international variation in site acquisition and construction costs. It considers that there is significant variation in international costs and the causes of that variation have not been adequately explained. Optus notes that the Commission has not demonstrated its international benchmark would apply in Australian circumstance. Optus submits that the best source of information in estimating the cost of an efficient model network operator is data from Australian sources.[352]

Commission's views

The site values used in the WIK Model incorporate land and construction costs derived from Australian and European data. As with equipment prices, the Commission considers that Vodafone's submission on site values demonstrates that there does not appear to be any particular bias in the site values used in the WIK Model: the values for macrocell, microcell and picocell sites are higher than the cost figures submitted by Vodafone for both the Netherlands and Sweden, but lower than for the United Kingdom.

Land costs comprise a substantial component of site values, particularly for macrocells. The average land value per hectare in Australia's urban areas is $3,178,855[353] as at the December quarter 2006 compared to $6,885,164[354] for the United Kingdom (excluding inner London, where it is even higher) as at July 2006. Similarly, the average rural land value per hectare in Australia is approximately $2,906[355], compared to approximately $14,832[356] for the United Kingdom. While these precise land values are not explicitly adopted in the WIK Model, they nevertheless indicate that higher site costs in the UK can be explained by the material difference in the cost of land between Australia and the UK.

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352 Optus Submission on *Draft Report*, p. 27.

353 Calculated average of 2006 urban land prices per square metre block converted to hectares. See Housing Industry Association of Australia data on land prices accessible from: <http://hia.com.au/Latest%20News/Article.aspx?CID=&RID=%7B42CB0DD2-F51C-4278-89F8-6A59809FCEF1%7D&yearmonth=200607&title=July%202006&AID=%7B717AA037-F30B-4FDB-B988-20CF5DE1E204%7D>, Viewed on: 17 May 2007; and <http://economics.hia.com.au/media/HIA%20Land%20Monitor%20-%20December%202006%20Quarter.pdf>, Viewed on: 17 May 2007.

354 Valuation Office Agency, *Property Market Report – July 2006*, p. 33. Calculated on an average of recorded prices for UK small sites per hectare (excluding figures for inner London and average for England and Wales) and based on exchange rate of AU$1 to 0.42 GBP.

355 Calculated based on average of grazing and wheat properties accessible from: <http://www.lands.nsw.gov.au/valuation/nsw_land_values>, Viewed on: 17 May 2007.

356 Valuation Office Agency, *Property Market Report – July 2006*, p. 18. Calculated on an average of recorded prices for arable, dairy, mixed and hilly land per hectare (excluding the average figure for England and Wales) and based on exchange rate of AU$1 to 0.42 GBP.

These relatively higher costs in the UK compared with Australia are also referable to purchasing power party data.[357]

Consequently, the Commission considers that the site values used in the WIK Model are reasonable in the Australian market context.

As outlined, land values are country-specific but are quite distinct from equipment prices. Land values are one factor, along with construction costs, used in the WIK Model to estimate site costs. The Commission is not sure if Optus is suggesting that Australian-only land values should be used to calibrate the site costs in the WIK Model. If this is the case, then this would result in a much lower land and site value than deriving an average of European and Australian land values. The Commission considers that the approach adopted in the WIK Model in respect of land values provides a reasonable approach to deriving site values and results in a higher site value than relying on Australian data alone.

In regard to Optus's submission concerning international variation in site costs, the Commission notes that comparison can be made with the mobile termination cost models developed by Analysys for The Netherlands, Sweden, and UK markets. The site values used in Analysys's UK mobile termination cost model are higher than those used by the WIK Model, while Analysys's Sweden and Netherlands mobile termination cost model site values are lower than those used by the WIK Model. The Commission considers that the variation in prices assumed by the WIK Model compared to the Netherlands, Sweden, and UK cost models indicates that there is no particular bias in the site values assumed by the WIK Model. In comparing Vodafone's site values with the site values used by Analysys in its UK cost model, the Commission notes that Vodafone's macrocell site values are 15 per cent higher than Analysys's site values, even though the site values used in the Analysys UK model are already far higher than the site values in the WIK Model for Australia or in Analysys's cost models for The Netherlands and Sweden.

The Commission further considers that the site values used in the WIK Model are far in excess of annual rental costs. As such, the WIK Model over estimates costs associated with any sites that may be rented or shared with another mobile network operator.

These factors indicate that the site values used in the WIK Model are reasonable.

A.5.4. Site Sharing

Submissions on Draft PPD Report

Vodafone submits that the site sharing issue remains unaddressed.[358]

Analysys notes that the idea of site sharing is incompatible with the scorched-earth approach and that in its opinion, the site-sharing assumption should be removed.[359]

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[357] See World Bank data on purchasing power parity, accessible from: <http://devdata.worldbank.org/wdi2006/contents/Table4_14.htm>, Viewed on: 17 May 2007; and International Monetary Fund data on purchasing power parity accessible from: <http://imf.org/external/pubs/ft/weo/2007/01/data/weoselgr.aspx>, Viewed on: 17 May 2007.

[358] Vodafone Submission on *Draft Report,* p. 16.

[359] Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), p. 10.

Analysys notes that MNOs may choose to co-locate for a number of reasons, other than the cost saving motivation assumed in the WIK model, such as:

- Outsourcing the development and maintenance of the sites is a way to reduce the peak funding requirement. It represents a transfer from capex to opex.
- Sharing existing sites can reduce operators' time to market. Obtaining permits and constructing a tower can take considerable time (from Analysys' experience in one European country, up to 18 months), which gives competitors a chance to establish their network and initiate service first.
- Site acquisition is becoming a much more complex activity due to the recent increase in demand for tower space.
- There is a limited number of suitable sites, owing to lack of space.
- Obstacles to establishing new sites are growing. Regulatory, environmental and community concerns include the visual impact on the environment.[360]

Optus submits that contrary to the Commission's apparent belief that shelter costs are negligible compared to overall site costs, shelter costs are in fact a substantial component of overall site costs. Optus considers that the Commission's view that shelter costs can simply be assumed to be included in the 60 per cent of the site value which is not shared on the site is incorrect.[361]

Optus submits that the WIK figure for site sharing for macrocells is too high.[362]

Optus submits that contrary to the Commission's apparent belief that shelter costs are negligible compared to overall site costs, shelter costs are in fact a substantial component of overall site costs. Optus considers that the Commission's view that shelter costs can simply be assumed to be included in the 60 per cent of the site value which is not shared on the site is incorrect.[363]

Commission's views

The Commission considers that MNOs can make savings on the amount they invest in mobile network sites through site sharing. The Commission's reasoning is contained in Annexure A.2.5 of the *Draft Report* which details the submissions and discussion on site sharing.

Vodafone and the Analysys Report for Vodafone note that the site sharing factor should be set to zero.[364] The Analysys Report raises only one new issue and it relates to the link between a scorched-earth methodology and the site sharing assumption. Optus submits that it has BTSs deployed on sites owned by 'another carrier or specialist provider' but not to the extent in which the scenarios in the Draft Report have relied upon.[365] The Commission has stated in section 3.7.2 that the purpose of the

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360 ibid.

361 Optus Submission on *Draft Report*, p. 30.

362 ibid.

363 ibid.

364 ibid., pp. 9-10.

365 Optus Submission on *Draft Report*, p. 30.

WIK Model is not to replicate the design of an actual MNO's network but to provide a reasonable approach using an optimised network for an Australian context.

The WIK Model estimates the number of network elements that an efficient MNO with an optimised network would deploy to meet its capacity and coverage requirements for an Australian context. That said the WIK Model has been parameterised to account for certain real-world network design issues relevant for Australian MNOs, for example an allowance was made to account for the fact that not all MNOs have access to Australia-wide spectrum in the 1,800 MHz band.

It is reasonable to assume that an efficient operator would locate it BTS sites in locations within districts where there is a possibility of sharing sites. Site sharing is a practical and cost-effective means by which MNOs deploy infrastructure in an Australian context. It is difficult to understand how an MNO can sustain a position that, site sharing is not cost effective, compared with the alternative of purchasing and developing new sites. The Commission considers that for the reasons previously stated in the *Draft Report*[366], site sharing is a reasonable assumption.

In relation to Optus's submission about the extent of sharing, Optus has failed to note the extent of sharing by other operators on any of the sites it owns. With respect to sharing on microcell sites, the Commission agrees that it is reasonable to assume that no sharing occurs on microcell sites and has set it to zero for the scenarios estimated in this report.

Further, Optus provides no verifiable evidence to support that its macrocell site costs are higher than those used in the WIK Model. The Commission reiterates that it demonstrated in the *Draft Report* that there is publicly available information showing that the assumption for the extent of site sharing is reasonable.[367]

A.5.5. Working capital

Submissions on Draft PPD Report

Optus submits that it is unrealistic to say an efficient operator would not face demand for working capital. MNOs incur substantial up-front costs for infrastructure and labour before receiving payments and unexpected turbulences occur from time to time.[368]

Commission's views

The Commission considers that there is broad consensus on the WIK Model approach to working capital as only one party has raised concerns on this issue.

The WIK Model assumes that an efficient operator would not face a demand for working capital because it would organise its business processes such that there are no timing differences between cash payments for inputs and cash receipts for output on

366 ACCC, *Draft Report*, pp. 113-116.

367 ACCC, *Draft Report*, p. 116.

368 Optus Submission on *Draft Report*, p. 31.

account of current operations.[369] That said, working capital is accounted for in the WIK Model as a component of organisational-level costs.

Given that the WIK Model provides for a 10 per cent mark-up for common organisational-level costs (see Annexure A.2.4 of the *Draft Report*), the Commission considers that this approach is reasonable to account for the relevant amount of working capital.

The *WIK Report* outlines the basis for why an efficient operator would not have working capital requirements (an ability of a business to meet its short-term obligations such as inventory and accounts payable taking into account accounts receivable).

It is reasonable to assume that all MNOs even in reality attempt to manage and reduce working capital requirements by timing cash-flow outflows and inflows. In reality the Commission understands that MNOs may have treasury operations with the sole purpose of managing and reducing the uncertainty of cash-flow streams overtime, including contingencies because of the financing costs and taxation implications to business of having idle cash attracting relatively low or limited interest income. In examining Optus's working capital requirements its liabilities and assets are almost identically matched:

Table A.5-1: Working Capital Derivation

Items from Optus's Annual Report	**2006 Consolidated $ mn**
Accounts Receivable	1,261.3
Inventory	36.5
Accounts Payable	1,302.6
Net working capital	-4.8
Net working capital as a percentage of net assets	-0.09%

Source: SingTel, *Singapore Telecommunications Limited and Subsidiary Companies Management Discussion and Analysis of Unaudited Financial Condition, Results of Operations and Cash Flows for the Fourth Quarter and Financial Year Ended 31 March 2007*, May 2007, p.6.

Optus submits that the demise of One.Tel 'indicates the difficulties faced by new entrants in organising their cash flow'.[370] The Commission reiterates that the reference to a new entrant is not the relevant benchmark as outlined in section 3.1.

The example that Optus has provided regarding the armoured personnel carrier related to an unusual or contingent event but events like these that unexpectedly damage

[369] WIK, *Mobile Termination Cost Model for Australia - Report for the ACCC*, January 2007 (*WIK Report*), p. 44.

[370] Optus Submission on *Draft Report*, p. 31.

property with a material impact on outlays would generally be factored into disaster recovery or emergency plans for businesses such as Optus. In relation to these events several points can be made. First, the repairs associated with these types of events would generally be covered by business insurance, and second businesses like Optus are in a position to time cash-flow and payments for these repairs under contracts with suppliers. There is likely to be no immediate liability which is not covered by an offsetting and equal asset. These extraordinary events of materiality are insurable and outside the scope of what is working capital in the ordinary course of business.

The assumptions made about working capital in the WIK Model reflect a reasonable approach to financing of short-term cash-flows of a business including Optus's working capital requirements.

A.5.6. Tilted annuity

Submissions on Draft PPD Report

Analysys submits that the WIK Model recovers capex on the basis of the tilted annuity methodology. Analysys states this may be appropriate when demand levels are relatively stable; however where the network element output profile does change significantly over time, then the tilted annuity result is likely to diverge significantly from economic depreciation in any given year. Tilted annuity will fail to account for the impact that higher asset utilisation and increased economies of scale in future years have on a LRAIC today when calculated using economic depreciation.[371]

Commission's views

The Commission considers that based on this information that the use of a five per cent growth factor per annum or a value of five for 'g' in the tilted annuity formula is appropriate and reasonable given the growth in traffic services for voice services. The Commission did not receive any new submissions on this issue and will therefore continue to use the same factor for the reasons given in Annexure A.2.1. of the *Draft Report*.

In relation to price and cost trends over time, cost trends are reflected in the tilted annuity value 'p'. The 'p' value is based on ABS data for 30 June 2006 as outlined in section 5.3.11 of the *WIK Report*.

With respect to Analysys's comments on the tilted annuity failing to account for higher asset utilisation in given years due to the instability of mobile demand, the Commission notes that Analysys comments rely upon periods where high growth is experienced (for example, an increase in mobile penetration from 5 to 80 per cent). Given the high level of mobile penetration currently experienced in the Australian market, the Commission views that the growth in mobile services is likely to be steady and therefore considers that using a tilted annuity approach is reasonable.

A.5.7. Weighted Average Cost of Capital

Submissions on Draft PPD Report

[371] Analysys Report on WIK Model, p. 14.

Optus submits the Commission should reconsider its use of a 10-year government bond rate as the risk free rate and considering matching the maturity of the debt instrument with the regulatory period.[372]

Optus submits the Commission should continue to use a longer bond maturity in setting the market risk premium.[373]

The Analysys report supporting Vodafone's submission notes that the WACC used by the WIK Model is in line with those used by European regulators.[374]

Commission's views

In the *Draft Report* the ACCC outlined its views on parties' submissions made in respect of the[375]:

1. Risk-free rate
2. Market risk premium
3. Equity beta and
4. Gearing level

The Commission concluded in the *Draft Report* that:

1. a reference point for a risk free rate of between 5.5 per cent to 5.7 per cent is appropriate
2. a market risk premium of around 6 per cent was reasonable
3. an equity beta somewhere in the range of 1.10 to 1.32 may be appropriate, and
4. a gearing ratio of 40 per cent consistent with its decisions on fixed-line services[376] is a reasonable approach

The Commission included a scenario analysis based on the application of different risk free rates[377] and concluded that based on this analysis that a WACC of between 10.7 per cent and 11.8 per cent is reasonable, given the submissions about WACC parameters provided by interested parties, which is referable to the WIK Model WACC of 11.68 per cent derived using international parameters as outlined in the *WIK Report*.[378] However, this analysis was illustrative in purpose and not used to parameterise the model.

Only one submission was received on risk free rate where Optus submits that the Commission should reconsider its use of a 10-year government bond rate as the risk free rate and considering matching the maturity of the debt instrument with the

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372 Optus Submission on *Draft Report*, p. 28.

373 Optus Submission on *Draft Report*, p. 28.

374 Analysys Report on WIK Model, p. 15.

375 ACCC, *Draft Report*, pp. 100-103.

376 ACCC, *Assessment of Telstra's ULLS Monthly Charge Undertaking – Final Decision (Public Version)*, August 2006, p. 102; ACCC, *Assessment of Telstra's PSTN and LCS Undertaking – Final Decision (Public Version)*, 29 November 2006, p. 77.

377 ACCC, *Draft Report*, pp. 153-154.

378 WIK, *Mobile Termination Cost Model for Australia*, (*WIK Report*), January 2007, pp. 30-35.

regulatory period.[379] It also submits that the ACCC continue to use a longer bond maturity in setting the market risk premium.[380]

The Analysys report supporting Vodafone's submission notes that the WACC used by WIK Model is in line with those used by European regulators.[381]

In respect of Optus's submission on the relevant risk-free rate, the Commission has considered an Australian 10-year government bond rate with an interest rate which has range between 5.5 to 5.7 per cent. For the purposes of making a pricing principles determination, the Commission does not need to precisely determine a WACC value or its component parts such as the risk-free rate. This is in contrast to an undertaking assessment in which the capital cost of a specific service provider would be required to be assessed for its reasonableness based on the risk profile of that entity. The Commission considers that while the WACC of 11.68 is reasonable as outlined in the *WIK Report*[382] and even appropriate in an Australian context, it has discretion as to the WACC it can apply in a policy context and considers that a WACC of 13.0 per cent is reasonable. Therefore, the Commission considers the approach to calibrating the WACC in the WIK Model is reasonable.

Overall WACC outcome

As a result, the Commission maintains its conclusion form the draft pricing principles determination report that there are many variables which influence the value of the WACC and that these values are themselves subjective and prone to a level of imprecision in estimation. The main discrepancy identified by interested parties in their submissions was the value of the equity beta. The Commission considers that given the large discrepancy in equity betas, which is subject to a level of imprecision in estimation, that it need not be definitive in its approach to a point estimate for WACC.

Further, the Commission notes that there is a variety of debt structures relevant for Australian MNOs, which may be difficult to discern from publicly-reported data by MNOs particularly with the increasing sophistication of corporate structures and debt and equity instruments.

In the circumstances when a specific MNO's debt structure is not being assessed, the Commission considers it is prudent in the formulation of price-related terms and conditions for the draft pricing principles determination to provide a more conservative approach to WACC that can account for different gearing levels and betas.

A.5.8. Operating expenditure

The Commission considers that the OPEX mark-ups assumed in the WIK Model appear to over-estimate the OPEX incurred by Australian MNOs, rather than underestimate it. As a consequence, the estimated amount for OPEX in the WIK Model is reasonable in an Australian context. The Commission did not receive any

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379 Optus Submission on *Draft Report*, p. 28.

380 ibid., p. 28.

381 Analysys Report on WIK Model, p. 15.

382 WIK, *WIK Report*, pp. 30-32.

new submissions on OPEX subsequent to the release of the Draft Report. The reasons given for not changing the OPEX parameters are noted in Annexure A2.3 of the *Draft Report*.

A.5.9. Organisational-level costs

Submissions on Draft PPD Report

Analysys submits that the use of an EPMU is in line with that used by most regulators, but notes that the level of mark-up and size of organisational costs has not been benchmarked in detail against those of Australian MNOs.[383]

Commisison's views

The Commission has outlined that when determining an appropriate cost for the purposes of the pricing principle, TSLRIC should be augmented by a mark-up (or '+') to enable a contribution toward the recovery of organisational-level common costs using the so-called 'equi-proportionate mark-up' (EPMU) rule as discussed in section 3.5.

The Commission noted in Annexure A.2.4 of the *Draft Report* its concerns over the approach taken by Vodafone in its previous submission about the impact of using its organisational-level common costs to increase the MTAS by around 5 cpm.[384]

The Commission further notes that as indicated previously, even if an accurate comparison was possible, there may be some differences in the efficient cost estimate for a hypothetical efficient operator (as estimated by the WIK Model) and the costs incurred by Vodafone or other MNOs.

The Commission notes that only Vodafone has submitted on this issue in the previous round of submissions.[385] The Commission noted at the time that it was not satisfied that the value for common organisational costs as submitted by Vodafone can be relied on due to the limited nature of the information provided by the Regulatory Accounting Procedure Manual (RAPM).[386]

No further submissions were received by interested parties subsequent to this response illustrating that a EPMU of ten per cent was unreasonable. Therefore the Commission considers that an EPMU of ten per cent is reasonable for estimation of efficient costs in an Australian context.

A.5.10. Treatment of Carrier Licences and 1800 MHz spectrum

Submissions on Draft PPD Report

Optus submits that the entire carrier licence fee should be allocated to network services and not as a component of common organisational-level costs.[387]

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383 Analysys Report on WIK Model, p. 16.

384 ACCC, *Draft Report*, pp. 110-111.

385 Vodafone Submission on *WIK Report*, p. 28.

386 ACCC, *Draft Report*, pp. 110-111.

387 Optus Submission on *Draft Report*, p. 31.

Optus submits that spectrum costs should be entirely allocated to network costs and that such an approach is adopted by Ofcom and OPTA. Optus further submits that spectrum costs are better suited to straight-line amortisation as a tilted annuity approach will backload the recovery of those costs.[388]

The Analysys report supporting the Vodafone submission notes that the methodology used to allocate spectrum costs is not in line with IFRS standards and that the methodology for calculating the annual cost, taking into account the annual average growth rate of mobile services is more in line with economic depreciation, but is not consistent with the methodology used to calculate the annual cost of other network assets.[389]

The Analysys report supporting the Vodafone submission notes that the proposed allocation methodology is not consistent since it uses two different drivers to allocate the same cost. Analysys argues that the 2:1 split is arbitrary and that the proposed methodology means that retail services are allocated approximately 66 per cent of the cost plus 33 per cent multiplied by on-net and outgoing share minutes.[390]

Commission's views

The 900MHz spectrum costs are included as network costs and are amortised using the tilted annuity formula, as are all network assets. In relation to the treatment of spectrum, the relevant value of spectrum costs for 1,800MHz, the WIK Model gives the user the option to either treat the spectrum cost as a common organisational-level cost or as a network cost. Both WIK and the Commission have treated the 1,800 MHz spectrum as a part of the BTS element cost (in the 'BTS Investment' subsection of the 'Cost Module') and is amortised using the tilted annuity formula.

Carrier licences are allocated as organisational level costs. WIK has assumed that only one third of the costs are allocated to network services and the *WIK Report* outlines the basis for this.[391] Subsequently, the WIK Model does not make an internal adjustment to the lump sum organisational-level cost rather the Commission and WIK have only included one third of the carrier licence fee in the lump sum amount.

In addition, the Commission notes that Optus considers that the entire carrier licence fee of $1.944 million that WIK allocated to network services (one third) and to retail (two thirds) should be all allocated to network services.[392] The Commission notes the *WIK Report* states that:

> … the licence fee of A$1.944 million is calculated as the average of the fees of Vodafone and Optus in 2006 which should approximate the relevant fee payable by an MNO with a 25 per cent market share. As a result, one third of the licence fee of the hypothetical operator is allocated to network services consistent with the relative proportion of network costs to total costs of an MNO…The licence fee and USL contributions add an additional A$5.5 million in common organisational-level costs.[393]

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388 Optus Submission on *Draft Report*, p. 32.

389 Analysys Report on WIK Model, p. 28.

390 Analysys Report on WIK Model, p. 29.

391 WIK Consult, *Mobile Termination Cost Model for Australia*, (*WIK Report*), January 2007, pp. 14-16.

392 Optus Submission on *WIK Report*, p. 35.

393 WIK, *WIK Report*, p. 117.

The Commission considers that the approach adopted in the WIK Model represents a reasonable approach to the allocation of licence fees, as the carrier licence fee is related to the entire mobile business of an MNO and should therefore be treated in the same way as common organisational-level costs.

A.6. Demand and Traffic Distribution

Annual minutes and call attempts, and routing factors inform the cost (cent per minute) of the MTAS in the WIK Model.[394] The busy-hour traffic and call attempts inputs in the WIK Model are also used to inform the capacity requirements for the Strategic Network Planning Tool in the WIK Model (SNPT). The busy-hour percentage and the number of business days are used to convert busy-hour traffic and call attempts into annualised figures. These annualised figures are then allocated according to the routing factors to estimate the cent per minute cost of the MTAS.[395] The Commission did not receive any further submissions relating to the busy-hour percentage and number of business day parameters. The Commission is therefore satisfied that the busy-hour parameters used for the *Draft Report*[396] are reasonable. Other issues raised by interested parties about the treatment of traffic and traffic parameters in the WIK Model are dealt with under the relevant headings below.

A.6.1. Estimation of Annual service traffic for cost calculation

The WIK Model released on 16 February 2007 used a total of 27.5 billion service minutes in the model and 28.8 billion service minutes for the report. These minutes were estimated by using the 2004-2005 Market Indicator Report data. The *WIK Report* notes that the total amount of traffic is representative (within a reasonable margin of error) of the total volume of voice services observed in the Australian market.[397] As a result of submissions received from interested parties and calculations performed using more recent data, 43.5 billion service minutes were used for the scenarios in the *Draft Report*.[398]

Submissions in response to the Draft Report

Optus submits that the 43.5 billion minutes used in the WIK Model is an over estimate and that the assumption that MNOs have broadly similar traffic minutes to Telstra may be incorrect.[399]

Optus subsequently considers that the WIK Model underestimates the efficient cost of supplying the MTAS.[400]

Vodafone submits that the usage of the milli-Erlang input figure in the WIK Model is incorrect and results in under-estimating the cost of providing the MTAS.[401]

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394 WIK, *Specification of the Cost Module of the WIK Mobile Network and Cost Model*, p. 61.

395 For a discussion on routing factors please refer to Annexure A.6.4 of this report.

396 ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report)*, pp. 124-126.

397 WIK, *Mobile Termination Cost Model for Australia*, (*WIK Report*), January 2007, pp. 107-108.

398 ACCC, *Draft Report*, pp. 158-159.

399 Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 45.

400 ibid., p. 26.

401 Vodafone, *RAN Assets and WIK Response*, Letter to the Commission, Public Version, 28 September 2007.

Commission's views

First, the Commission considers that the actual minute volume is fundamentally an empirical one. It has only sought to extrapolate the minute volume estimated is based on the best available information it had at the time (2004-05 voice minutes) for a more realistic volume of minutes for the period from 1 July 2007.

Second, it is reasonable to assume that the voice minute volume for 2004-05 is not a referable volume for the period 1 July 2007, particularly with the growth in traffic in recent years. As a result, the Commission considers that Analysys's estimate of 27.5 billion minutes relies on 2004-05 data for voice minutes only, which even on conservative traffic volume increases cannot reflect voice and data traffic for the period 1 July 2007 to 31 December 2008. This is supported by data provided by two other MNOs which suggest that the WIK Model estimate of 27.5 billion minutes substantially underestimates the volume of traffic.

Given the submissions it has received from both Optus[402] and Vodafone[403], the Commission considers that it is reasonable and conservative to assume that a (voice and data) traffic volume of around 40 billion could be used as a reference point for traffic volumes at 1 July 2007 for use in the WIK Model.

A.6.2. Dimensioning traffic

Submissions on Draft Report

Optus submits that the application of an average milli-Erlang demand per consumer in the WIK Model to estimate busy hour traffic is not reasonable.[404]

Optus submits that it is not necessarily the case that actual milli-Erlang demand per consumer in rural areas is likely to be below the average milli-Erlang demand per consumer.[405]

Optus submits that a 'a-bis transmission has a minimum fixed size (one E1 or 2 Mpbs) regardless of carried traffic, and this is not impacted by the milli-Erlang demand per customer at that site. The assumption that as BTS units located in rural areas are further away from BSC locations than in suburban areas, using an average milli-Erlang demand per consumer results in an over-estimation of the capacity required for transmission, in general, is incorrect.'[406]

Optus submits that the cost of microwave links has little dependency on the transmission path length, so the assumption that the impact from overestimating milli-Erlang demand in rural areas has a greater impact on cost than the underestimation in suburban and urban areas due to the longer transmission links required in rural areas is not generally correct.[407]

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402 Optus Submission on *Draft Report*, p. 26.

403 Vodafone, *RAN Assets and WIK Response*, Letter to the Commission, Public Version, 28 September 2007.

404 Optus Submission on *Draft Report*, p. 24.

405 ibid., pp. 24-25.

406 ibid., p. 25.

407 ibid., p. 25.

Vodafone submits that an extensive review by Analysys and itself show that the WIK Model is flawed as the WIK Model fails to account for the extra usage of elements for on-net traffic. It subsequently notes that correcting for this error would result in the increase of the unit costs of all services estimated in the WIK Model by approximately 60 per cent.[408] In its criticism it refers to Annex A of its own submission, which was a report created by Analysys Limited on the behalf of Vodafone.

Vodafone submits that its consultant, Analysys, concludes that the WIK Model's treatment of busy-hour demand as an exogenous input is unusual and that the WIK Model correctly converts busy-hour demand into unit costs. Vodafone submits that after extensive testing it appears that routing factors in the WIK Model are compounded in the computations so that on-net calls with a routing factor of 2 are in fact accorded a routing factor of 4 in the WIK Model.[409]

Vodafone further submits that Analysys confirms two flaws in the WIK Model: that the average subscriber generates constant amount of traffic regardless of location and that subscribers of an operator are evenly distributed throughout its coverage.[410]

Vodafone submits that it cannot comment on the accuracy of the uplift in dimensioning minutes due to the restrictive nature of the WIK Model, and the level of detail contained in WIK's response.[411]

Analysys notes that the routing factor values are plausible, but that the values may not have been applied correctly in the derivation of service traffic.[412]

Analysys notes that the assumption that an MNO has a constant market share of subscribers throughout its coverage is not appropriate.[413]

Analysys submits that correcting for these assumptions would result in a more uneven, but more realistic, distribution of traffic and consequently a higher number of TRXs.[414]

Analysys notes that the WIK Model assumes that a subscriber generates a constant amount of traffic regardless of the location. Analysys argues that lower traffic per subscriber in rural areas means that urban areas handle more traffic than the WIK Model estimates. This has the effect of requiring further investment in urban areas and reducing the efficiency of the deployment in rural areas.[415]

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408 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, pp. 15-16.

409 ibid., p. 15.

410 ibid., p. 16.

411 Vodafone, *RAN Assets and WIK Response*, Letter to the Commission, Public Version, 28 September 2007.

412 Analysys Limited, *Final Report for Vodafone Australia - Review of WIK's Mobile Network Cost Model* (Analysys Report on WIK Model), 6 August 2007, p. 45 and pp. 23-5.

413 ibid., p. 26.

414 ibid.

415 ibid., p. 28.

The Analysys Report notes that WIK uses lower traffic per subscriber values compared to OPTA, Ofcom and PTS and that such data should be benchmarked against actual data from operators rather than between countries.[416]

Analysys notes that the traffic profile is different from that in the benchmark models and that WIK's uses a higher on-net voice traffic percentage. Analysys also submits that the assumptions in the WIK model regarding network capacity appear to be more aggressive than those in the benchmark models and this could have an impact on network resilience and quality of service.[417]

Analysys notes that the four per cent of overall traffic as unbilled traffic lies in the lower part of the range for adjustments used to account for the unbilled minutes in this kind of model.[418]

Commission's response

The Commission did not receive any further submissions relating to the treatment of time zones, traffic reduction factor and the magnitude of the uniform busy-hour demand used for the scenarios in the *Draft Report*. The Commission is therefore satisfied that the busy-hour parameters, as outlined in Annexure A.3.1 of the *Draft Report*, are reasonable.

It is the Commission's view that Vodafone has misinterpreted not only how the WIK Model operates but also Analysys's critique of the way how dimensioning is applied in the WIK Model. In its report, Analysys provides two scenarios on how the WIK Model calculates the cent per minute costs.[419] The first scenario assumes that the WIK Model uses a service traffic milli-Erlang figure to allocate costs, which results in the hypothetical operator recovering costs across the services it offers over the correct amount of minutes.

The second scenario assumes that the WIK Model uses a network traffic milli-Erlang figure and as a result the WIK Model overestimates the number of minutes used to allocate the costs to services. This is due to the fact that dimensioning traffic includes on-net traffic which uses a larger amount of dimensioning traffic than service traffic. Analysys therefore concludes that if dimensioning traffic is used, such as in the second scenario, then the WIK Model underestimates the cent per minute costs of services by up to 60 per cent.

The Commission notes two points of interest. First, Analysys's assessment of the error was that it was up to a magnitude of 60 per cent[420], not as Vodafone had submitted as approximately 60 per cent.[421] The Vodafone representation of Analysys's estimation of the magnitude of the error is not only incorrect, but Vodafone has sought to rely on this representation of the error to bring into question the robustness

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416 ibid., p. 32.

417 ibid., pp. 33-34.

418 ibid. p. 24.

419 ibid., pp. 23-25.

420 ibid., p. 20.

421 Vodafone Submission on *Draft Report*, p. 3.

of the WIK Model more generally. Second the WIK Model uses the service traffic milli-Erlang for two separate purposes in the WIK Model, to:

1. uplift the average service traffic milli-Erlang per user value to account for on-net services before using it to dimension the hypothetical network; and

2. calculate the per minute costs of each network element class, without any adjustment to the average service traffic milli-Erlang per user, which is then applied to usage factors in the WIK Model to estimate cent per minute costs of each service.

The Commission notes it has provided interested parties with the technical specification documents of the WIK Model (see section 3.2 of the technical specification documents)[422] and instructions to show that the uplift in dimensioning minutes.[423] The Commission considers the provision of these documents as sufficient in showing that there is no error relating to the calculation of service minutes as Vodafone proposes. Further, the Commission considers that providing the source code for this purpose would be unhelpful.

In this way, Analysys's first scenario is the correct interpretation of how the WIK Model calculates cent per minute costs and therefore the WIK Model does not underestimate cent per minute costs.

In response to Analysys's comments in relation to the usage of a uniform market share, the Commission notes that the purposes of the WIK Model is to estimate the efficient cost for a hypothetical network. As discussed in Annexure A.3.1 the WIK Model does not set out to replicate an actual network but rather estimate the efficient cost of a hypothetical network.

The Commission received a number of submissions both in response to the *WIK Report*[424] and the *Draft Report*[425] that noted that it was inappropriate to use a uniform milli-Erlang demand to dimension the entire network. The Commission notes that the WIK Model dimensions the hypothetical network based upon the capacity and or coverage requirements in a district which subsequently results in a non-uniform milli-Erlang demand across districts. This can be verified by examining the 'Australia_OutputBA.txt' file generated by the WIK Model by dividing the total dimensioning traffic in a district by the total population within a district. For example, the average milli-Erlang per user used to dimension the network in the Broadway district (15.77 milli-Erlang) is much higher than that in the Mount Gambier district

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422 WIK, *Specification of the Strategic Network Planning Tool GSM-Connect for Implementing the WIK Mobile Network and Cost Model Manual* and the *Specification of the Cost Module of the WIK Mobile Network and Cost Model* (together the *Technical Specification Manuals*), pp. 14-16.

423 ACCC, *Response to Vodafone Suggest of 60 per cent Error in WIK Model Calculations in relation to Service vs Dimensioning Traffic in the WIK Model*, E-mail to Vodafone, 5 September 2007, Attachment 2.

424 Optus, *Optus Submission to the Australian Competition and Consumer Commission on the WIK Mobile Network and Cost Model for Australia*, (Optus Submission on *WIK Report*), pp. 26-27, and Vodafone, *Submission to the Australian Competition and Consumer Commission: WIK Mobile Network and Cost Model and MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*, (Vodafone Submission on *WIK Report*), March 2007, p. 13.

425 Optus Submission on *Draft Report*, pp. 24-25.

(1.4 milli-Erlang) in the 25 per cent scenario. Therefore, the Commission considers that although a uniform service traffic figure is used to estimate cent per minute costs that the WIK Model does not take a uniform dimensioning figure across districts, which is appropriate given the submissions it has received on the matter.

A.6.3. Other service traffic issues

Submissions on Draft PPD Report

Analysys noted in its report in support of the Vodafone submission that the conversion factor of 125 bytes per message for SMS is in excess of the channel rate of that used by mobile operators.[426]

Commission's views

The Commission noted the difficulties in selecting and using a specific MNO's service traffic distribution in the *Draft Report*.[427] The Commission did not receive any submissions noting that the distribution of service traffic of the market as a whole differs significantly from that used for the scenarios in the *Draft Report*.

Given the submissions made by interested parties to the Commission and subsequent letters[428], the WIK Model has been recalibrated. Changes were made to include unbillable minutes and uplift factors. The Commission did not receive any further submissions on this issue and notes that the current version of the WIK Model uses the following formula to calculate annual service traffic:

$$\text{Annual service traffic} = \left(\frac{\text{Busy - hour service traffic} \times (1 - \text{Percentage of unbillable minutes})}{\text{Percentage busy hour of the day}} \right) \cdot \text{Number of business days}$$

Interested parties submitted that the SMS conversion parameter used for the scenarios in the *Draft Report* and the *WIK Report* were too aggressive.[429] The Commission notes that this parameter has a relatively minor impact on dimensioning, as SMS traffic is accounted for by reserving two time slots across the network for the signalling layer.

It was noted in the *Draft Report* that a conversion factor was used in the WIK Model to calculate cent per minute service costs and not to dimension the network.[430] The Commission would also note that changing the SMS conversion parameter from 125 to 40 bytes results in the cent per minute cost impact of a hundredth of a cent. This

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426 Analysys Report on WIK Model, p. 45.

427 ACCC, *Draft Report*, pp. 127-128.

428 The public versions of the letters and submissions from the MNOs are located at the ACCC's website. Refer to ACCC, May 2007, *Mobile Terminating Access Service (MTAS) 2007 Pricing Principles – Letters to the MNOs about 'Busy-Hour' Information*, and *Mobile Terminating Access Service (MTAS) 2007 Pricing Principles – Submission on the WIK Cost Model Discussion Paper* respectively , both are accessible from: <http://www.accc.gov.au/content/index.phtml/itemId/783052/fromItemId/356715>, Viewed on: 11 May 2007.

429 Optus, Optus Submission to the Australian Competition and Consumer Commission on the WIK Mobile Network and Cost Model for Australia, (Optus Submission on *WIK Report*), March 2007, p. 30.

430 ACCC, *Draft Report*, p. 124.

change will more than likely have an immaterial impact on the cent per minute cost estimate of an efficient operator. Therefore for the purposes of meeting with Optus's past submission and benchmarks noted in the Analysys report, the Commission has changed this parameter from 125 to 40 bytes per message in the scenarios used for this report.

A.6.4. Routing factors for service traffic

Routing factors are the nexus between network dimensioning and the calculation of the cent per minute cost estimate in the WIK Model. The traffic matrix in the WIK Model shows the usage factors of the network elements for different mobile services. The usage factors imply how the WIK Model routes traffic through the different network elements.

The Commission considers that the WIK Model adopts a reasonable approach to the routing of traffic for the reasons given in the *Draft Report*.[431]

The Commission notes that routing factors were adjusted so that the HLR is only used for (on-net and off-net) call termination. The Commissions received no new submissions on this issue.

[431] ibid., pp. 130-131.

A.7. WIK Model Consultation Process

A.7.1. WIK Model (Version 1.0) access regime and consultation process during February/March 2007 as part of the ongoing consultation process with industry

A.7.1.1. WIK Model (Version 1.0) Consultation – February/March 2007

On 1 February 2007, the *WIK Report* was released for public consultation along with the *Discussion Paper on the WIK Mobile Network and Cost Model to Inform the MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*[432] on version 1.0 of the WIK Model and the *Reference Paper: To Accompany the Release of the WIK Mobile Network and Cost Model*.[433]

At 9am on 16 February 2007, version 1.0 of the WIK Model and the *WIK Mobile Network and Cost Model Version 1.0 User Guide*[434] (*User Guide*) was available for collection by interested parties that signed a *WIK Mobile Network and Cost Model Access Deed* (*Access Deed*). A sample *Access Deed* was released along with the *WIK Model Discussion Paper* to parties on 1 February 2007, to afford parties sufficient time to agree to the conditions of access for version 1.0 of the WIK Model, sign an *Access Deed*, and collect version 1.0 of the WIK Model.

The *WIK Report* was provided to parties for a period of six weeks and version 1.0 of the WIK Model and the *User Guide* was provided for a period of four weeks.

The Consultation period for version 1.0 of the WIK Model and *WIK Report* ended at 5pm on 16 March 2007.

The WIK Model (Version 1.0) CD-ROM was not operative after 16 March 2007.

A.7.1.2. Objective of the WIK Model (Version 1.0) February/March 2007 consultation process

The *WIK Model Discussion Paper* outlined that the WIK Model would assist the Commission in informing it of an estimate of the efficient cost of supply of the MTAS for inclusion in a pricing determination for the period 1 July 2007 to 30 June 2009. However, the development of the WIK Model should not be considered as an isolated and independent process from the ongoing consultation with industry that has preceded the *WIK Report* and WIK Model.

A.7.1.3. Submission content and format for the WIK Model (Version 1.0) February/March 2007 consultation process

Submission content

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[432] ACCC, *Discussion Paper on the WIK Mobile Network and Cost Model to Inform the MTAS Pricing Principles Determination 1 July 2007 to 30 June 2009*, (*WIK Report* Discussion Paper), February 2007.

[433] ACCC, *Reference Paper: To Accompany the Release of the WIK Mobile Network and Cost Model*, (*WIK Reference Paper*), February 2007.

[434] References to version 1.0 of the WIK Model in this Report are also references to the *WIK Mobile Network and Cost Model Version 1.01* contained in documentation prepared by WIK.

As outlined in the *WIK Model Discussion Paper*, the ACCC sought submissions from interested parties on:

1. version 1.0 of the WIK Model released on 16 February 2006; and
2. the *WIK Report* and, in particular, the range of cost outcomes arising from the various scenarios presented that will inform the Commission of price-related terms and conditions for inclusion in a *MTAS Pricing Principles Determination* relevant for the period 1 July 2007 to 30 June 2009.

The ACCC did not limit the scope of parties' submissions and provided the following list of issues as a guide:

- version 1.0 of the WIK Model engineering and costing framework. The WIK Model (Version 1.0) is comprised of two modules: a Strategic Network Planning Tool (SNPT) and a Cost Module. The SNPT is used to design and dimension a mobile network for an Australian context. The Cost Module calculates the costs (capital, operating and common-organisational level) of the various network elements used to provide the various mobile services;
- version 1.0 of the WIK Model functionality and in particular the component parts;
- suitability of the input parameters used in version 1.0 of the WIK Model in an Australian context. The WIK Model (Version 1.0) has the flexibility to change input parameters which can be broadly categorised as population coverage, market share, traffic shares of various services and the prices of equipment and facilities;
- other issues concerning version 1.0 of the WIK Model that may impact the cost estimates of the MTAS; and
- cost estimates informed by a range of scenarios including different market shares and population penetration. Several scenarios are contained in Section 6 of the *WIK Report*, illustrating various scenarios that might represent a hypothetical operator and how these compare to operators with different market shares and population coverage of services. Scenarios are also presented on an integrated mobile and fixed-line operator and the cost implications of providing services on a 3G compared with a 2G network.

The ACCC provided core documents for parties on which it sought submissions. These included the *WIK Report* and *WIK Model Discussion Paper*.

The ACCC did not request nor accept submissions on either the *User Guide* released with version 1.0 of the WIK Model or the *WIK Reference Paper* released with the *WIK Model Discussion Paper*. The Commission stated in the *WIK Model Discussion Paper* that it considered that these documents were in the nature of reference material to assist parties to make submissions and support the use of version 1.0 of the WIK Model.[435]

Submission format

[435] ACCC, *WIK Report* Discussion Paper, p. 8.

The *WIK Model Discussion Paper* outlined that written submissions would be accepted. In addition, the ACCC indicated that all submissions would be considered as public submissions and posted on the ACCC's website.

It also outlined those parties wishing to submit C-I-C material as part of their submission to the ACCC would be required to submit both a public and C-I-C version of their submission. The public version of the submission should clearly identify the C-I-C material by replacing the confidential material with an appropriate symbol or 'C-I-C'.

Only one party, Vodafone, provided a public and C-I-C version of its submission to the ACCC.[436] On 20 March 2007, the ACCC indicated on its website that parties requiring a copy of this C-I-C submission should directly contact Vodafone and provided the details of Vodafone's contact officer for this matter.

Optus provided a public version of its submission to the ACCC, which contained C-I-C material marked 'C-I-C'.[437] It did not provide the ACCC with a C-I-C version of this document as requested in the *WIK Model Discussion Paper*. Accordingly, the Commission did not have access to the material marked C-I-C by Optus.

A.7.1.4. WIK Model (Version 1.0) Access Conditions for the February/March 2007 consultation process

Interested parties that signed the *Access Deed* were provided with a copy of version 1.0 of the WIK Model and *User Guide* on CD-ROM to assist with their submissions on and from 16 February 2007.

The *WIK Model Discussion Paper* outlined that version 1.0 of the WIK Model would be made available on a CD-ROM to parties which agree to the conditions set out in the *Access Deed*.

The *User Guide* and version 1.0 of the WIK Model were only released to interested parties that signed the *Access Deed*.

Parties were provided with details for arranging to sign the *Access Deed* on 1 February 2007, more than two weeks before version 1.0 of the WIK Model was available for collection.

Under the Access Deed, the WIK Model (Version 1.0) CD-ROM was to be returned to the ACCC on 16 March 2007.

A.7.1.5. Access Deeds executed for the February/March 2007 consultation process

The ACCC received inquiries regarding access to version 1.0 of the WIK Model from 14 organisations. Of these, 12 organisations entered into an *Access Deed* with the ACCC. Table A.7-1 below lists the interested parties who entered into an *Access Deed*. All the WIK Model (Version 1.0) CD-ROMs supplied to interested parties who entered into an *Access Deed* were returned to the Commission. Under the *Access Deed*, interested parties were required to return their copy of version 1.0 of the WIK

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[436] Vodafone Submission on *WIK Report.*

[437] Optus Submission on *WIK Report.*

Model to the Commission by 5pm on 16 March 2007. Table A.7-1 sets out when the returned WIK Model (Version 1.0) CD-ROMs were received by the ACCC.

Table A.7-1: Interested Parties who entered into the Access Deed

Access Deed Party	Access Deed Date	Date on which WIK Model (Version 1.0) Access was requested	WIK Model (Version 1.0) Collection Date	Date Returned WIK Model (Version 1.0) CD-ROMs received by ACCC
AAPT Limited	15 February	13 February	16 February	16 March
Telstra Corporation Limited	15 February	14 February	16 February	16 March
Hutchison 3G Australia Pty Limited	16 February	15 February	22 February	16 March
Vodafone Australia Limited	16 February	9 February	16 February	19 March
Allens Arthur Robinson (AAR)	19 February	15 February	22 February	Not applicable. AAR provided Marsden Jacob and Associates (MJA) with AAR's copy of the WIK Model (Version 1.0) CD-ROM on or about 13 March. MJA returned the CD-ROM to the ACCC. (16 March)
SingTel Optus Pty Limited	20 February	5 February	20 February	19 March
PowerTel Limited	28 February	16 February	1 March	16 March
Synergies Economic Consulting Pty Limited	1 March	1 March	Telstra provided Synergies with one of Telstra's copies of the WIK Model (Version 1.0) CD-ROM on or about 1 March	19 March
Access Economics Pty Limited	2 March	27 February	2 March	20 March
The Competitive Carriers' Coalition Inc.	5 March	28 February	7 March	20 March

Marsden Jacob and Associates	8 March	15 February	AAR provided MJA with AAR's copy of the WIK Model (Version 1.0) CD-ROM on or about 13 March	16 March
Primus Telecommunications Pty Limited	16 March	14 February	Not applicable. Primus could obtain access to the WIK Model (Version 1.0) from the CCC.	Not applicable. Primus could obtain access to the WIK Model (Version 1.0) from the CCC.

Note: All dates in the table are 2007.

On 28 March 2007, 2 May 2007, 3 May 2007, and 17 May 2007 ACCC staff attended meetings and presentations given by Vodafone in relation to Vodafone's submission. On 29 March 2007, ACCC staff attended a presentation given by Access Economics (on behalf of the CCC) in relation to the CCC's submission. Representatives of PowerTel and Macquarie Telecom also attended Access Economics' presentation.

In light of submissions made by interested parties about the use of busy-hour data in version 1.0 of the WIK Model, the ACCC wrote to all MNOs on 3 April 2007 asking them to provide certain busy-hour information. All the MNOs provided the requested information, and any public versions of these submissions have been posted on the ACCC's website.

A.7.1.6. Parties' views on WIK Report and WIK Model (Version 1.0) February/March 2007 consultation process

The ACCC received a number of submissions on the *WIK Report* and WIK Model (Version 1.0) consultation process. These submissions are set out in Annexure A.4.1.6 of the *Draft Report*.

A.7.1.7. Commission's view on the submissions on the WIK Report and WIK Model (Version 1.0) February/March 2007 consultation process

The Commission's view on the submissions is set out in Annexure A.4.1.7 of the *Draft Report*.

A.7.2. WIK Model (Version 1.1) access regime and consultation process for the Draft MTAS Pricing Principles Determination as part of the ongoing consultation process with industry

A.7.2.1. WIK Model (Version 1.1) Consultation and Draft MTAS Pricing Principles Determination – June 2007

Modifications as outlined in the *Draft Report* and the WIK-Consult, *Addendum to Report on Mobile Termination Cost Model for Australia* (WIK Model Report Addendum) have been made to version 1.0 of the WIK Model for minor network element additions and certain policy considerations. On 21 June 2007, the *Draft MTAS Pricing Principles Determination* was released for public consultation along with the:

- *Discussion Paper on the Draft MTAS Pricing Principles Determination for the period 1 July 2007 to 31 December 2008* (*Draft MTAS PPD Discussion Paper*)[438]*;*
- *Draft Report*;
- WIK Model Report Addendum;
- *WIK Mobile Network and Cost Model Version 1.1 User Guide (Version 1.1 User Guide)*;
- *Specification of the Strategic Network Planning Tool GSM-Connect for Implementing the WIK Mobile Network and Cost Model Manual* and the *Specification of the Cost Module of the WIK Mobile Network and Cost Model* (together the *Technical Specification Manuals*); and
- sample Access Deed.

At 9am on 22 June 2007, version 1.1 of the WIK Model was available for collection by interested parties that signed a *WIK Mobile Network and Cost Model Access Deed* (*Access Deed*).

The deadline for submissions was 9am on 6 August 2007.

A.7.2.2. Objective of the Draft MTAS Pricing Principles Determination consultation process

The *Draft MTAS PPD Discussion Paper* outlined that the WIK Model has been developed along with other information to support a price below 12 cpm informing the indicative prices in a new *Pricing Principles Determination* relevant after 30 June 2007. The WIK Model is considered an important and supplementary source of information to support the robustness and reliability of the international cost benchmarking and RAF data analyses that have informed the range of TSLRIC+ estimates of 5 cpm to 12 cpm and confirms that an efficient cost estimate in an Australian context is below 12 cpm.

Further, it was stated that the Commission considers that the WIK Model provides a basis for identifying a reasonable cost estimate of the supply MTAS in an Australian context and is supported by international cost benchmarks and regulatory data and information provided by MNOs that can inform a price for the MTAS.

A7.2.3. Submission content and format for the Draft MTAS Pricing Principles Determination consultation process

Submission content

As outlined in the *Draft MTAS PPD Discussion Paper*, the Commission sought submissions from interested parties on the indicative price of 9 cents per minute contained in the *Draft MTAS Pricing Principles Determination* to apply for the period 1 July 2007 to 31 December 2008 as informed by version 1.1 of the WIK Model and other corroborating information.

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[438] ACCC, Discussion Paper on the *Draft MTAS Pricing Principles Determination for the period 1 July 2007 to 31 December 2008* (*Draft MTAS PPD Discussion Paper*), June 2007.

The ACCC provided core documents for parties on which it sought submissions. These included the Draft Report and the *Draft MTAS PPD Discussion Paper*.

Submission format

The *Draft MTAS PPD Discussion Paper* outlined that written submissions would be accepted. In addition, the ACCC indicated that all submissions would be considered as public submissions and posted on the ACCC's website.

It also outlined that those parties wishing to submit C-I-C material as part of their submission to the ACCC should provide both a public and C-I-C version of their submission. The public version of the submission should clearly identify the C-I-C material by replacing the confidential material with an appropriate symbol or 'C-I-C'.

Only two parties, Vodafone and Optus provided a public and C-I-C version of their submissions to the ACCC. The ACCC has indicated on its website that parties requiring a copy of these C-I-C submissions should directly contact the relevant MNO and the ACCC has provided the details of the MNO's contact officer to enable parties to access this information.

A.7.2.4. WIK Model (Version 1.1) Access Conditions for the Draft MTAS Pricing Principles Determination consultation process

Interested parties that signed the *Access Deed* were provided with a copy of version 1.1 of the WIK Model on CD-ROM to assist with their submissions on and from 22 June 2007.

The *Draft MTAS PPD Discussion Paper* outlined that version 1.1 of the WIK Model would be made available on a CD-ROM to parties which agree to the conditions set out in the *Access Deed*.

Version 1.1 of the WIK Model was only released to interested parties that signed the *Access Deed*.

A.7.2.5. Access Deeds executed for the Draft MTAS Pricing Principles Determination consultation process

The organisations which entered into an *Access Deed* with the ACCC are listed in Table A.7-2 below.

Table A.7-2: Interested Parties who entered into the Access Deed

Access Deed Party	Access Deed Date	Date on which WIK Model (Version 1.1) Access was requested	WIK Model (Version 1.1) Collection Date
SingTel Optus Pty Limited	28 June	22 June	28-June
Vodafone Australia Limited	29 June	22 June	29-June
Telstra Corporation Limited	4 July	24 June	5-July
AAPT Limited / PowerTel Limited	12 July	27 June	12-July

Analysys Consulting Limited	13 July	12 July	Vodafone provided Analysys with Vodafone's copy of the WIK Model (Version 1.1) CD-ROM on or about 13 July
Gibson Quai – AAS Pty Limited	16 July	11 July	17 July

Note: All dates in the table are 2007.

On 6 September 2007 the ACCC wrote to the second generation (2G) MNOs in Australia seeking their assistance in providing information about the number of BTSs, Node Bs, sites and the extent of sharing on their 2G networks by 28 September 2007. Responses from the MNOs in relation to this matter (excised of any C-I-C information as identified by the MNOs) have been placed on the ACCC website.

Submissions on Draft PPD Report

Vodafone submitted that its ability to fully verify the WIK Model is constrained by the lack of access to the source code of the model.[439] Telstra in its submission raises a number of generic issues in relation to access to the WIK Model.[440] Telstra submits that there has been insufficient industry access to the WIK Model and that the assumptions and inputs used in the WIK Model are not referenced.[441]

Commission's view

The Commission has been cognisant of the views expressed by interested parties on the access regime used for version 1.0 of the WIK Model consultation process in February/March 2007 and has modified the access regime used for the *Draft MTAS Pricing Principles Determination* consultation process to take into account submissions on the previous access regime. The Commission's response to issues raised in relation to the previous access regime is set out in the Draft Report. A revised *Access Deed* was drafted after considering submission on the previous WIK Model (Version 1.0) access regime. A copy of the revised *Access Deed* was released with the *Draft MTAS PPD Discussion Paper*. As a result of the modifications to the previous access regime, the Commission notes that there have been very few comments on the current access regime.

Vodafone submitted that its ability to fully verify the WIK Model is constrained by the lack of access to the source code of the model.[442] The Commission confirms its view as expressed in the Draft Report that the Commission has provided interested

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439 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 11.

440 Telstra Corporation Limited, *Submission in Response to the ACCC's Discussion Paper on the Draft MTAS Pricing Principles Determination for the Period 1 July 2007 to 31 December 2008* (Telstra Submission on *Draft Report*), August 2007,pp 24-25.

441 Telstra Submission on *Draft Report*, pp. 24-25.

442 Vodafone Submission on *Draft Report*, p. 11.

parties with extensive and comprehensive documentation to assist interested parties with their use of the WIK Model in order that they can make meaningful submissions.[443] The *WIK Report*, *WIK Model Discussion Paper* and the *WIK Reference Paper* were made available for the WIK Model (Version 1.0) consultation process during February and March 2007. In addition, the Commission provided the *Technical Specification Manuals* to interested parties during the *Draft Pricing Principles Determination* consultation process which comprehensively set out key relationships in version 1.1 of the WIK Model and relevant formulae used in version 1.1 of the WIK Model. The Commission also made available the WIK Model Report Addendum as part of this process.

Access to version 1.1 of the WIK Model was provided to interested parties for the purpose of making submissions on the indicative price of 9 cents per minute contained in the *Draft MTAS Pricing Principles Determination* to apply for the period 1 July 2007 to 31 December 2008. Access to the underlying code of the WIK Model was not required for the purpose of making submissions in that process.

Telstra in its submission raises a number of generic issues in relation to access to the WIK Model.[444] Many of the issues raised by Telstra in its current submission were raised in its early submission on the WIK Model consultation process and have been addressed in altering the access arrangements and providing additional technical material that became available. The Commission notes that interested parties have not raised any new specific issues in their submissions on the current access regime and the Commission's view on parties' specific submissions on the previous access regime is set out in detail in the Draft Report.[445] The Commission has not reproduced this material in this Report. Telstra like all interested parties that sign the *Access Deed*, have access to version 1.1 of the WIK Model for the period set out in the *Access Deed* subject to the terms of the *Access Deed*. The Commission has provided additional material to assist users of version 1.1 of the WIK Model not only with their submissions for the present process but also for future regulatory processes.

A.8. Other issues raised in the submissions on the Draft MTAS Pricing Principles Determination Report

A.8.1. Empirical evidence of the Network Externality Surcharge

Submissions on Draft PPD Report

Vodafone submits that the Tribunal accepted that externalities might validly be taken into account. Vodafone submits evidence from the UK to substantiate its claim that there is no reason to assume that marginal subscribers disappear in market with high levels of mobile or fixed penetration.[446]

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443 ACCC, *Draft Report*, p. 146.

444 Telstra Submission on *Draft Report*, pp 24-25.

445 ACCC, *Draft Report*, pp. 140-149.

446 Vodafone, *Submission to the Australian Competition and Consumer Commission – MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Vodafone Submission on *Draft Report*), August 2007, p. 34.

Vodafone submits that its own research shows that there is a significant proportion of marginal subscribers to mobile networks and that lower MTAS rates are likely to result in fewer mobile subscribers.[447]

Commission's views

A network externality is a benefit current subscribers receive when a new user subscribes to the network. This benefit is the value in the ability to contact or be contacted by this new subscriber. It is an externality as neither the subscriber nor the MNO pay for this benefit. As the number of subscribers on the network increases, the value of this unrealised benefit decreases. This decrease in benefit arises due to the probability of current subscribers contacting or being contacted by new subscribers is diminished. Therefore current network subscribers obtain a smaller benefit from the new subscribers as the network grows. MNOs have submitted in the past that due to the presence of network externalities in the mobile network, that a surcharge for network externalities should be included in the MTAS. As at March 2007, the mobile penetration rate in Australia was estimated to be 99 per cent.[448]

The issue of the Network Externality Surcharge (NES) has been considered by the Tribunal. It noted the difficulty in accurately accounting for externalities and including a NES.[449]

The Tribunal concluded that if externalities are to be considered in pricing services, they need to be surveyed with some degree of thoroughness and that in the absence of evidence it was difficult to be conclusive. It considered that it is not sufficient to include some externalities in the analysis and ignore others purely on an *a priori* basis that they matter less. Further, while the Tribunal does not rule out the possibility that taking into account externalities may be a valid part of coming to a reasonable price; it indicated that there are difficulties in the approaches that were put before it. Namely, the degree of empirical accuracy required about likely behaviour, and which was absent, for it to have confidence that a particular approach adopted leads to a well-based outcome.[450]

In response to the *Draft Report*, Vodafone submits that it has empirical evidence of the existence of network externalities. It submits that through research that it conducted that 61 per cent of mobile subscribers are unwilling to pay more than $150 for a replacement handset.[451] Vodafone submits that because Australian MNOs need to subsidise the cost of new mobile handsets in order to induce subscribers into obtaining replacement handsets, a network externality exists. It submits that in its

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447 ibid., p. 36.

448 Singapore Telecommunications Limited and Subsidiary Companies, *Management Discussion and Analysis of Unaudited Financial Condition, Results of Operations and Cash Flows for the Fourth Quarter and Financial Year Ended 31 March 2007*, p. 44.

449 Application by Optus Mobile Pty Limited & Optus Networks Pty Limited [2006] ACompT 8, 22 November 2006, at [287-91].

450 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited*, [2006], ACompT 8, at [287-291].

451 ibid., p. 4.

view because of the presence of the 'waterbed' effect that the Commission must give the NES serious consideration.[452]

The Commission considers that Vodafone's submission on network externalities only demonstrates that subscribers are not willing to pay for a new mobile handset while their current mobile handset is operating. The willingness to pay for a replacement mobile handset by the marginal subscriber can be driven by a number of factors such as income, contractual obligations, the functions the new handset provides compared with a subscriber's current handset, and many other factors. It does not reveal the value current mobile subscribers place upon new subscribers obtaining a subscription to mobile services. The purpose of the NES would be not to induce current subscribers into replacing handsets or remaining with a network but rather inducing non-subscribers into subscribing to a network. Further, the Commission does not consider that the presence or non-presence of a 'waterbed' effect has a direct link with the extent of a network externality. For the Commission's views on the 'waterbed' effect refer to section 3.8.

The Commission is not satisfied that Vodafone's submission demonstrates robust empirical evidence to illustrate the magnitude of network externalities in Australia. The Commission continues to believe that there is no theoretical or conceptual basis which would support the inclusion of an NES in the price of the MTAS.[453] The Commission notes that the Tribunal affirmed the Commission's views on network externalities when making its decision on the 2006 Optus Undertaking.[454]

A.8.2. Cost Parameterisation

Submissions on Draft Report

Telstra submits that if the Commission relies on a purely bottom-up cost model it should be properly reconciled with a top-down approach.[455]

Vodafone submits that the Commission has repeatedly rejected Vodafone's offer to provide Vodafone-specific information during the development phase of the WIK model. This accompanied our repeated requests that WIK be required to undertake a 'real world' calibration of the model. Vodafone provided confidential operator-specific data to the Commission in its initial submission.[456]

Vodafone submits that it has already indicated its willingness to enter into appropriate non-disclosure agreements with WIK-Consult, to facilitate calibration of the WIK model, which the Commission has rejected.[457]

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452 ibid., p. 34.

453 The Commission has expressed this view in section 3.6 of this report, and ACCC, *Optus's Undertaking With Respect to the Supply of its Domestic GSM Terminating Access Service (DGTAS) - Final Decision - Public Version*, February 2006, pp, xiii-xiv, 92-93, 96-99, and 108-110.

454 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [288-91]

455 Telstra Corporation Limited, *Submission in Response to the ACCC's Discussion Paper on the Draft MTAS Pricing Principles Determination for the Period 1 July 2007 to 31 December 2008* (Telstra Submission on *Draft Report*), August 2007, p. 26.

456 Vodafone Submission on *Draft Report*, p.7.

457 ibid., p. 8.

Vodafone submits that it remains of the view that without calibration against actual costs, the WIK model remains a theoretical construct.[458]

Commission's views

In respect of parameterisation of the WIK Model, the Commission considers criticism of it can be countered by provision of robust costing and pricing information by MNOs.

The Commission agrees with Telstra and Vodafone that some form of reconciliation for the cost parameters is required, however to this date only Vodafone has provided the Commission with any data relating to costs. The Commission agrees with Vodafone[459] that the MNOs, and not the Commission, are in the best position to provide these data, but it needs to be robust and independently verifiable. The Commission outlined several concerns it had with the reliability across a broad range of cost and asset information provided by Vodafone in its March submission, including representations about:

- the level of its actual OPEX (Annexure A.2.3 of the *Draft Report*)[460];
- asset lives (Annexure A.2.1 of the *Draft Report*)[461];
- common organisational costs on the cent per minute cost of the MTAS (Annexure A.2.4 of the *Draft Report*)[462]; and
- site sharing (Annexure A.2.5 of the *Draft Report*)[463].

The Commission considers that one of the key outcomes of the Tribunal Decisions in reviewing both the Vodafone Undertaking and Optus Undertaking decisions (which Vodafone has conveniently ignored in its submissions on the WIK Model) is whether the costs incurred by either operator were efficient and further, about the reliability of Vodafone's data used to parametise the PwC model. Specifically in relation to the costs parameterising the PwC Model the Tribunal noted:

> We are not satisfied that Vodafone's costs were efficiently incurred.[464]

Further, in relation to the reliability of empirical inputs populating the PwC Model developed for Vodafone the Tribunal noted:

> The end result of our analysis of what have been described as empirical flaws in the two PwC models is that we are not satisfied that the costs produced by either model generate a total cost of providing the VMTAS of 16.15 cpm…Our analysis shows that the total cost of providing the VMTAS is at least 4 cpm less than 16.15 cpm. [465]

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458 ibid., p.9.

459 ibid., pp. 7-9.

460 ACCC, *Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008 - Report*, June 2007, (*Draft Report)*, pp. 105-106.

461 ibid., pp. 90-92.

462 ibid., pp. 110-111.

463 ibid., pp. 114-116.

464 *Application by Vodafone Network Pty Ltd & Vodafone Australia Limited* [2007] ACompT 1, 11 January 2007, at [62].

465 ibid. at [262].

While these comments relate to a different model and different process, the Commission is understandably cautious about accepting prices without verification of these data from a variety of sources. In this regard, no other interested party has provided a submission that demonstrates specific asset values are unreasonable and Vodafone has not provided supporting documentation for its submissions. In response, the Commission has reviewed the equipment prices provided by Vodafone and provides an assessment of these prices based on those used in the PwC model (refer to Annexure A.5.2). As the Commission is not in a position to verify the information provided by Vodafone it has decided to adopt the prices based upon European benchmarks.

A.8.3. Network design

Submissions on Draft PPD Report

Optus submits that the WIK Model is not capable of estimating the forward looking costs of supplying the MTAS as the model designs a physical network that is incapable of providing mobile service of the quality and service delivery standard provided by MNOs in Australia.[466]

Optus submits that the MTAS should be estimated by reference to the costs of real world MNOs and not solely by reference to a hypothetical scorched earth network.[467]

Optus submits that the estimated cost of the MTAS using a hypothetical efficient mobile network designed by a bottom-up scorched-earth model is not practically achievable by an existing mobile network operator.[468]

Optus submits that modern equivalent asset (MEA) prices understate the capital investment of a mobile network operator in Australia today, since equipment prices have fallen in recent years.[469] Consequently, the networks of existing mobile network operators in Australia are highly unlikely to be as cheap as the hypothetical networks designed by models such as the WIK model, even if those networks were designed efficiently at the time they were built.[470]

Optus submits that the WIK Model is 'irrelevant'[471] as the cost estimates are not achievable by existing MNOs and WIK Model does not provide an estimate of the efficient cost of supplying the MTAS.[472]

Optus submits that the Commission has not adequately addressed Optus's submissions on the disadvantages of a scorched earth approach[473] and that it is not

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466 Optus, *Optus Submission to [the] Australian Competition and Consumer Commission on [the] Draft MTAS Pricing Principles Determination 1 July 2007 to 31 December 2008* (Optus Submission on *Draft Report*), August 2007, p. 7.

467 ibid., p. 9.

468 ibid., p. 10.

469 ibid., p. 12.

470 ibid.

471 ibid., p. 8.

472 ibid., p. 3.

473 ibid., p. 10.

possible for existing MNOs to achieve the WIK Model outcomes as the design of these legacy networks is no longer likely to be optimal.[474] Optus considers that the network design algorithm does not provide the assumed service quality were it to be deployed and fails to take into account all the practical considerations that a new entrant would face in actually building a network, such as approval for base station sites.[475]

Optus submits that the scorched-earth approach is inappropriate and that the WIK Model must include higher costs faced by a new entrant.[476]

Commission's views

The Commission considers that the use of a scorched-earth approach to network design is consistent with examining the costs of an efficient operator providing the MTAS in Australia. However it notes that for the reasons given in Annexure A.1 of the *Draft Report* and Annexure A.5 of this report, that the Commission has accounted for a number of factors that would otherwise be ignored in a scorched-earth approach.

Optus has throughout its submission confused network design terminology and the approach to cost parameterisation. It has also made submissions on 'reasonableness' of prices determined, confused cost and price concepts and introduced statutory criteria which are not relevant to the making of a pricing principles determination. These issues are discussed below.

The Commission has distinguished in the report some of these issues including the difference between network design (scorched earth and scorched node) and calibration of the model using top-down (actual cost) or bottom-up (efficient cost) data. The Commission addresses the issue of an efficient cost estimate and top-down and bottom-up modelling in a separate section.

In respect of the network design employed in a model, an optimised network may not employ the same number of network elements ('nodes') in the same configuration as an actual optimised network. An actual network may or may not involve overbuild for commercial objectives. For example, some decisions about network deployment may not relate to servicing a customer in a particular way, which over time may or may not be the optimal means of deployment of infrastructure, something Optus recognises.[477] As Optus points out, these legacy decisions may indeed be impacted by new information, better use of existing technology or new technology.[478] The WIK Model's approach to network design attempts to deploy an optimised network that may not account for all of these legacy issues, but it is incorrect to characterise the calibration of the WIK Model as entirely scorched-earth that does not account for the realities of actual MNOs' networks. This is a separate issue to whether or not the costs of the network elements deployed in a network reflect efficient costs or not. This distinction needs to be made so as not to confuse cost-related (parameterisation) and network deployment (calibration) issues.

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474 ibid., p. 11.

475 ibid., p. 12.

476 ibid., p. 13.

477 ibid., p. 11.

478 ibid., p. 9.

Explanation for why the WIK Model has been developed as a scorched-earth model is contained in section 3.7.2 of this Report, including the statutory and policy constraints and Tribunal guidance that require the Commission to consider optimised network configurations. Even so the WIK Model is not a pure scorched-earth model and certain network elements have been altered and increased to address concerns raised by interested parties in the earlier submissions and to account for actual networks deployed in Australia and mirror a scorched-node approach. How the WIK Model has been calibrated to reflect the 'nodes' of actual MNOs is outlined in Annexure A.2.2 but repeated for completeness below:

- a minimum of 2 SMSCs from 1 SMSC (as outlined in the Annexure: WIK Model Outcomes (refer to the *Draft Report* Annexure A.1.1.3.5);
- recognition of transient population in POAs encompassing airport precincts, industrial areas and military bases in version 1.1 (as outlined in the *Draft Report* Annexure A.1.1.3.1);
- incorporation of unbilled minutes in version 1.1 (as outlined in Annexure A.6.3);
- more appropriate routing factors for the HLR (as outlined in Annexure A.3.2.3.1 of the *Draft Report*);
- an increase in the number of MSC switching machines from five to nine achieved by reducing the number of ports per MSC (as outlined in Annexure A.1.1.3.4 of *the Draft Report*);
- elimination of the traffic reduction factor by setting it to zero (refer to Annexure A.3.1.3.2 of the *Draft Report*);
- allowing the ability to (in version 1.2) and imposing restrictions to better reflect the influence of dual-band and single-band radio frequencies of actual MNO networks (refer to Annexure A.4.2);
- uplifting the number of BTS macrocells with three sectors (two TRXs per sector) by 37.7 per cent (refer to Annexure A.4.2); and
- allowing BTS macrocells to be deployed in urban areas and BTS picocells in suburbs (refer to Annexure A.4.2).

The Commission contends that rather than dismiss the scorched-node approach it has attempted to better calibrate the model to actual MNO data and concerns. The Commission has invited MNOs to provide data including about their network elements. Subsequent to receiving responses from the MNOs on element numbers, the Commission increased the number of the most expensive BTS macrocells by 37.7 per cent to ensure that a reasonable outcome was achieved.[479] In addition, where certain deficiencies at the POA level where identified by the Commission, it engaged WIK to further refine the calibration of the network for more precise BTS deployment and to modify the WIK Model to include individual uplift factors for macrocells and microcells.[480]

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[479] Refer to Annexure A.4.2 for discussion on BTS mix and uplift factors.

[480] Refer to Annexure A.4.2 for discussion on airport POAs.

The Commission has increased the number of BTS macrocells and picocells, subsequent to modifications made in the latest version of the WIK Model. The WIK Model has used an increment or up-lift factor or .2 or 20 per cent for picocells, and in light of submissions from interested parties the increment factor for macrocells with three sectors (two TRXs per sector) of 0.377 or 37.7 per cent has been used in all scenarios.

The Commission considers that the approach it has adopted to calibrating the WIK Model to better reflect actual MNOs networks and built-in features of the WIK Model which increase the number of key elements deployed is reasonable and adequately accounts for concerns raised by MNOs in their submissions for the purposes of making a pricing principles determination.

The Commission notes that many remaining issues in respect of calibration of the WIK Model to better reflect the realities relevant for Australian MNOs, are based on a position of having asymmetric information. The MNOs are in the best position to provide information that they consider appropriate to refine the calibration of the WIK Model and MNOs have been given the opportunity to provide this information at several junctures. If they have chosen not to do so, but continue to criticise the Commission for not appropriately calibrating the WIK Model, the Commission can give limited weight to these submissions.

That said, the Commission recognises, as Optus submits it would be unreasonable to set the MTAS price in reliance on the WIK Model[481], the Commission has outlined certain constraints in Annexure A.2 of the report. However, for the period 1 July 2007 to 31 December 2008, the Commission has made an indicative price of 9 cpm, compared with a TSLRIC+ estimate of 6.1 to 6.6 cpm, which is the result of calibration the WIK Model for the realities of actual MNOs' networks.

The Commission considers the approach taken to calibrate the WIK Model is reasonable and the WIK Model itself provides for the attributes of a network that reflect 'the efficiency of the network design and configuration'[482], alluded to by the Tribunal.

A.8.4. 'Waterbed' effect

Submissions on Draft PPD Report

The CCC submits there is no evidence to suggest a 'waterbed' effect as a result of the price reductions introduced by the Commission in the past four years.'[483]

Telstra submits that MTAS price drops have been passed-through to consumers and that further reductions will continue to be passed through.[484]

Vodafone submits that it does not deny that call prices have fallen whilst MTAS have fallen but it rejects that this allows the Commission to disregard the 'waterbed' effect.

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481 Optus Submission on *Draft Report*., p. 11.

482 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [116].

483 CCC, *Response to [the] Draft MTAS Indicative Prices* (CCC Submission on *Draft Report*), August 2007, p. 3.

484 Telstra Submission on *Draft Report*, p. 13.

Vodafone submits that the Commission must assume at least a 50 per cent waterbed and that the Commission's proposals will undermine the LTIE by more than $100 million per year.[485]

Commission's views

The Commission maintains the view that the 'waterbed' effect is not relevant for an Australian context. The reasons given are discussed in section 3.8 of this report.

Only Vodafone has raised the 'waterbed' effect as an issue that requires consideration.[486] It links the impact of a 'waterbed' effect to negative impacts on consumer welfare through a welfare model and subsequently the long-term interests of end-users. The Commission's views on this issue are covered in section 3.8 of this Report. Telstra submits that both the Commission and the Tribunal have dismissed the 'waterbed' effect.[487]

The Commission reiterates that this issue has been considered by the Tribunal and the Tribunal's conclusions in relation to this issue are outlined in section 3.8.

Further the Commission considers that establishing the existence of the 'waterbed' effect is empirical and the Commission provides data to demonstrate that the 'waterbed' effect is not in operation in an Australian context.

Vodafone has not disputed that MTAS rates have fallen at the same time that average retail mobile prices have fallen. This is the opposite of the effect predicted if a 'waterbed' effect was in operation. However, Vodafone notes that the fall in average retail mobile prices would have been greater in the absence of reductions in MTAS but it does not provide any empirical evidence to establish this.

Vodafone submits that a 50 per cent 'waterbed' effect should be assumed. This amount is based upon a decision made by the New Zealand Commerce Commission to accept not only Professor Hausman's work using New Zealand data and conditions (50 per cent to 65 per cent) but also work conducted by CRA on the behalf of Optus (33 per cent to 50 per cent) when making its decision on the magnitude of the 'waterbed' effect in New Zealand.[488] The Commission notes that the Tribunal did not accept the CRA submission on the 'waterbed' effect as evidence of a 'waterbed' effect being present in Australia. As Professor Hausman's submission relates to New Zealand market conditions, the Commission does not consider Professor Hausman's findings relevant to an Australian context.

Vodafone's claim of a 'waterbed' effect of at least 50 per cent does not reflect the empirical results proffered by Professor Valletti and Dr Genakos which state that there is *econometric evidence that introduction of regulation resulted in a ten per cent waterbed effect on average.*[489] The main conclusion of the paper is that the more intense competition in markets, the higher the market penetration and the higher the

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485 Vodafone Submission in *Draft Report*, p. 28.

486 ibid., pp. 24-27.

487 Telstra Submission on *Draft Report*, p. 12.

488 Commerce Commission, *Schedule 3 Investigation Into Regulation of Mobile Termination*, Final Report (Public Version), 9 June 2005, pp. 119-120.

489 Valletti, *Testing the 'Waterbed' Effect in Mobile Telephony*, Working Paper, June 2007, p. 25.

termination rates the higher the 'waterbed' effect.[490] The paper also notes that under conditions such as high mobile penetration levels and monopoly conditions that 'waterbed' effect is diminished or will not exist.[491] Even if there were no concerns about the analysis contained in the paper, only one of these conditions hold empirically in an Australian context, and that is high market penetration. In Australia, penetration levels are nearing 100 per cent and the two largest MNOs have a market share of approximately 75 per cent. In the presence of a highly concentrated upstream (wholesale) market, dominated by integrated MNOs, the presence of a 'waterbed' effect is unlikely. Further, the paper has a number of deficiencies such as:

- the pricing data from Teligen[492]:
  - are not quality adjusted to factor in that services offered by different MNOs will vary depending on quality of service, types of services offered, mix of free services, coverage, quality of handsets offered and other non-price factors, this may reduce the comparability of prices between countries, which may impact the validity of the results;
  - appears to be collected only from standalone MNOs (which represent about a quarter of the Australian market in gross revenue terms); and
  - the data only tracks 2G services (focuses on voice services)[493] and therefore ignores any cross-subsidisation than may be occurring with 3G services.
- the use of ARPU to confirm the presence of a 'waterbed' effect is misleading as it is a measure of revenue which drives both prices and call volumes. Revenue obtained from increased call volumes resulting from lower prices should not be attributed to the 'waterbed' effect;
- it has not been specified whether operators used in the study use the same technology platforms (technology may influence pricing behaviour on different services) or maintained the same platforms over the period examined;
- it is unclear what methodology has been used to collect information on termination rates[494] within countries (used to calculate the MTR index);
- the specifications used appear only to estimate 4 per cent to 27 per cent of the variation in prices (tables 1 to 4), EBITDA or ARPU when the sample is unrestricted, this suggests important variables are missing or there may be issues with the measures of prices, profit and revenue across countries;
- the sample size drops by at least two thirds for the regressions involving samples which include one unregulated MNO, which does not apply to Australia, as all MNOS are regulated. This provides better results in the paper for explaining the variation in price but may be misleading, as it is unclear how the unregulated competitor may impact on the regulated firms' 2G prices;

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490 ibid., p. 2.

491 ibid., p.20.

492 ibid., p. 14-15.

493 Teligen, *OECD Telecoms Price Benchmarking Baskets 2006 - T-Basket Implementation from February 2006 onwards,* Publication for OECD, p. 8

494 ibid.

- the use of a regulation dummy as an instrumental variable to overcome any biases in the regressions may not be sufficient to reduce the omitted variables bias;
- there appears to be a transposition error in table 5 of the working paper where the authors have mistakenly swapped the labels and the associated coefficients for 'ΔP/Δcompetitors' and 'ΔP/ΔMTR' in column 2 (for example in column 2 of the table, the coefficient that relates to ln(MTR) is -1.282, ln(competitors) is -0.289 and ln(penetration) is -0.768; and the derived coefficients in the section below is -1.282 for 'ΔP/Δcompetitors', -0.289 for 'ΔP/ΔMTR' and -0.768 for 'ΔP/Δpenetration';
- network effects, non-price factors and other factors are ignored when accounting for price increases in the dynamic analysis, all price increases are attributed to the regulation of the MTAS[495];
- direct network effects (internalised network externalities) are accounted for in the specification with interaction terms through the use of penetration levels[496] but indirect network effects (resulting in price increases due to exclusive content) are ignored; and
- the authors assume that examining theoretical outcomes from oligopoly markets is unwarranted as similar logic would apply to the two extreme waterbed scenarios given, no proof is given supporting this statement.

The Commission has maintained that the behaviour attributed to the 'waterbed' effect as a general principle may be inconsistent with profit maximisation (due to price, quantity and indirect effects) and has been insufficiently developed to date to provide a substantial understanding of the effects of a change in the MTAS charge on retail mobile prices.[497] Since the Optus Undertaking there has been no empirical evidence that has emerged to support a 50 per cent 'waterbed' effect operating in Australia. Refer to section 3.8 of this Report for details.

A.8.5. Retail FTM Passthrough

Submissions on Draft PPD Report

The CCC submits that pricing the MTAS above TSLRIC has resulted in market distortion that adversely affected fixed line-only carriers.[498]

Optus submits that Telstra has not completely passed-through decreases in the MTAS to its pricing for FTM calls.[499] Optus also submits that pointing to a simple decrease in

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[495] ibid., pp. 18-20.

[496] ibid., pp. 20-22.

[497] ACCC, *Optus's Undertaking with Respect to the Supply of its Domestic GSM Terminating Access Service (DGTAS) - Final Decision (Public Version)*, Report, February 2006, pp. 225.

[498] Competitive Carriers' Coalition (CCC), *Response to [the] Draft MTAS Indicative Prices* (CCC Submission on *Draft Report*), August 2007, p. 2.

[499] Optus Submission on *Draft Report*, p. 37.

FTM prices is not the same as demonstrating a promotion of competition in the FTM market.[500]

Telstra submits that consumers benefit from reduced MTAS rates through reduced mobile rates, reduced FTM prices, reduced prices across a basket of services, and improved service.[501] Telstra argues that there is 'an overwhelming amount of data,' such as the *Telecommunications Market Indictor Reports* and the analysis presented by Access Economics, that lower MTAS prices have been passed-through to consumers in the form of lower FTM prices.[502]

Vodafone submits that it agrees with the Commission that FTM prices have fallen by more than 12 per cent over the first two years of the previous pricing principles. However, the benefits for end-users have varied significantly: FTM prices fell by 10.9 per cent for residential end-users but actually increased by 7 per cent for small business customers.[503]

Vodafone submits that if Telstra is able to maintain its historic trend in terms of expanding FTM margins then Vodafone estimates that it will retain over $570 million in additional margin over the 18 month period to which the draft PPD applies.[504]

Vodafone submits that price control baskets applied to Telstra means that even if partial pass-through produces lower FTM prices for Telstra customers and even if the remaining MTAS benefits are passed through in full via reduction in other services in the basket, Telstra is still able to retain its non-MTAS cost efficiencies whilst appearing to exceed its overall basket obligations.[505]

Commission's views

There was general consensus that FTM passthrough has been occurring, however a number of submissions were received by interested parties on the extent of passthrough.

The Commission considers as outlined in section 3.9 of this report that there has been pass through of MTAS reductions in FTM prices. The Commission also considers that the FTM pass-through has accelerated in the period after which the Commission commenced releasing pricing principles determinations. The Commission has clearly demonstrated the acceleration of pass-through since the first introduction of the MTAS pricing principles on 1 July 2004.

The Commission acknowledges that the extent of pass-through can always be improved, and it encourages the integrated carriers to continue pass-through of lower MTAS rates to FTM retail rates.

The Commission has outlined its response to Vodafone's initial submission on Telstra's FTM margins (refer to section 3.9 for details). The Commission is not in a position to comment on the value of the reduction in MTAS rates to Telstra and the

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500 ibid., p. 38.

501 Telstra Submission on *Draft Report*, p. 13.

502 ibid., p. 13.

503 Vodafone Submission on *Draft Report*, p. 20.

504 ibid., p. 21.

505 ibid., p. 22.

direct cost to LTIE as outlined by Vodafone. Further, it notes that there is no substantiation of the data, or the underlying assumptions made to derive them.

As Vodafone would appreciate the issue of backdating is considered on a case-by-case basis in the context of the particular dispute.

In relation to Optus's submission about MTAS pass-through, the Commission continues to believe that a closer association of the price of the service with the underlying efficient cost of providing the MTAS can place pressure on vertically-integrated providers of FTM services to reduce prices paid. The Commission acknowledged in the *MTAS Final Report* that even if pass-through was partial that this would not mean that competition would not be promoted in the market in which FTM services (reflected either through lower prices, improved quality of service or the creation of new services).[506] Further the Tribunal noted in its decision on the Optus Undertaking that:

> …operators in the fixed-to-mobile market – and in particular Telstra – may obtain some degree of windfall gains from lower mobile termination charges. (It might be expected that Optus' DGTAS charges would ultimately be lower as a result of Optus' undertaking not being accepted.) This is not sufficient in itself to justify DGTAS charges higher than those based on efficient costs.[507]

Telstra presents data in its submission regarding fixed-line services, which has also been raised by Vodafone. These data are discussed in section 3.10 of this report.

A.8.6. Statutory Criteria

Submissions on Draft Report

Optus submits that Section 152AB of the Act outlines the objects of Part XIC of the Act , to promote the LTIE and the relevant objectives.[508]

Optus submits that it is not reasonable for the Commission to use the WIK Model or its other corroborating evidence in order to satisfy itself for the purpose of forming a conclusion whether the MTAS price may or may not:

- promote competition in the relevant markets;[509]
- encourage the economically efficient use of, and investment in infrastructure;[510] and
- be in the legitimate business interests of the service providers.[511]

Optus submits that the conclusions made by the Commision are not valid with regard to:

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506 ACCC, *Mobile Services Review – Mobile Terminating Access Services: Final Decision on Whether or not the Commission Should Extend, Vary or Revoke its Existing Declaration of the Mobile Terminating Access Service*, (*MTAS Final Report*), June 2004, pp. 123-125.

507 *Application by Optus Mobile Pty Limited & Optus Networks Pty Limited* [2006] ACompT 8, 22 November 2006, at [89].

508 Optus Submission on *Draft Report*, pp. 36-37.

509 ibid., p. 39.

510 ibid., p. 40.

511 ibid., p. 41.

- promoting competition in the relevant markets;[512]
- encouraging the economically efficient use of, and investment in infrastructure;[513] and
- the legitimate business interests of the service providers.[514]

Commission's views

The Commission notes Optus's submission in relation to statutory criteria in Part XIC of the Act for certain regulatory processes. Some of these issues where relevant have been considered in relevant sections of this Report. However, the Commission wishes to point out that these are matters generally relevant to declaration, undertaking and arbitration processes and the Commission is not required to have regard to these statutory criteria for the purposes of making a pricing principles determination. That said the Commission has broadly addressed the issues raised by Optus as follows:

- Promotion of competition and FTM Pass-Through (Section 3.9)
- Legitimate Business interests (Annexure A.1.1 and A.1.3 – profitability of MNOS and no adjustment path)
- Economically efficient use of and investment in infrastructure (Annexure A.1.2 on investment)

A.8.7. Estimating the impact on the LTIE

Submissions on Draft Report

Vodafone submits that employing the same welfare model as the NZCC, the LTIE impact of the Commission's proposals lies in the range of +/- $13 million over the 18 month period of the Draft MTAS Pricing Principles Determination.[515]

Vodafone submits that OPTA notes that a potential dynamic effect of lower MTAS is less investment, while Ofcom notes there is an asymmetry risk of setting a MTAS rate that turns out to be too low.[516]

Commission's response

The Commission notes Vodafone's use of two models to model the net benefit or welfare change associated with a fall in the MTAS rate from 12 cpm to 9 cpm and has the following comments:

1. It is unclear to the Commission the full extent of all the assumptions made in arriving at the outcome by Vodafone. One example is the reliance on the assumption that a 50 per cent 'waterbed' effect applies, which is not supported by Australian empirical data.

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512 ibid., p. 39.

513 ibid., p. 40.

514 ibid., p. 41.

515 Vodafone Submission on *Draft Report*, p. 27.

516 Vodafone Submission on *Draft Report*, p. 31.

2. The model is based on static analysis and does not capture the impact and benefits that may arise from the producer surplus and second round impacts and benefits to consumers arising from lower wholesale (MTAS) prices.
3. The New Zealand Commerce Commission Welfare Model may be pertinent to a New Zealand context, but the Commission would need to be satisfied that the model and its underlying construct can be used to draw direct comparisons with Australia. It is unclear if any adjustments for Australian specific conditions have been factored in.

For these reasons the Commission does not consider the outcomes of either model can be relied on to evaluate the net benefits or costs arising from a fall in the MTAS.

A.9. MTAS Disputes Notified to Commission

Name of Dispute (access seeker/access provider)	Date dispute notified	Status of dispute
PowerTel / Vodafone	16 December 2004	Final Determination and Interim Determination made
Telstra / Vodafone	17 December 2004	Dispute withdrawn
Telstra / Optus	22 December 2004	Dispute withdrawn
H3GA / Vodafone	23 December 2004	Final Determination and Interim Determination made
PowerTel / Optus	23 December 2004	Dispute withdrawn
AAPT / Vodafone (2005)	27 January 2005	Final Determination and Interim Determination made
HTAL / Optus	24 February 2005	Final Determination and Interim Determination made
H3GA / Optus	24 February 2005	Final Determination and Interim Determination made
HTAL / Vodafone	24 February 2005	Final Determination and Interim Determination made
Primus / Vodafone	7 March 2005	Final Determination and Interim Determination made
AAPT / Optus	21 June 2005	Final Determination and Interim Determination made
Telstra / Optus	7 December 2005	Final Determination and Interim Determination made
Telstra / H3GA	19 December 2005	Final Determination and Interim Determination made
Telstra / HTAL	19 December 2005	Final Determination and Interim Determination made
Vodafone / H3GA	20 December 2005	Dispute withdrawn
Vodafone / HTAL	20 December 2005	Dispute withdrawn
AAPT / Vodafone (2006)	11 January 2006	Final Determination made
Optus / Telstra	12 January 2006	Final Determination and Interim Determination made
Telstra / Vodafone	7 February 2006	Final Determination and Interim Determination made
HTAL / Telstra	8 February 2006	Final Determination and Interim Determination made
H3GA / Telstra	8 February 2006	Final Determination and Interim Determination made
Optus / HTAL	2 May 2006	Final Determination made
Optus / H3GA	2 May 2006	Final Determination made
AAPT / HTAL	14 June 2006	Dispute withdrawn

AAPT / H3GA	14 June 2006	Dispute withdrawn
PowerTel / H3GA	12 July 2006	Dispute withdrawn
Telstra / Optus Mobiles	13 November 2006	Interim Determination made
Telstra / Optus Networks	13 November 2006	Interim Determination made
Optus Mobiles / Vodafone	20 December 2006	Dispute withdrawn
Optus Networks / Vodafone	20 December 2006	Dispute withdrawn
Optus Mobiles / Telstra	22 December 2006	Interim Determination made
Optus Networks / Telstra	22 December 2006	Interim Determination made
Telstra/Vodafone	17 May 2007	Constitution of Commission
Telstra/H3GA	17 May 2007	Dispute withdrawn
Telstra/H3GA	6 November 2007	Constitution of Commission
Telstra/Optus Mobile	13 November 2007	Constitution of Commission
Telstra/Optus Networks	13 November 2007	Constitution of Commission