



**Reference Paper: to accompany the  
release of the WIK Mobile Network and  
Cost Model**

**February 2007**

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## List of abbreviations and terms

ACCC	Australian Competition and Consumer Commission
Access Pricing Principles	ACCC's <i>Access Pricing Principles – Telecommunications a guide</i> , July 1997
Act	<i>Trade Practices Act 1974</i>
CDMA	Code Division Multiple Access
Commission	Australian Competition and Consumer Commission
cpm	Cents per minute
CSP	Carriage Service Provider
CPP	Calling Party pays
DCITA	Department of Communication, Information Technology and the Arts
EBITDA	Earnings before interest, taxation, depreciation and amortisation
ECPR	Efficient Component Pricing Rule
EPMU	Equi-Proportionate Mark-Up
FL-LRIC	Forward-looking long-run incremental cost
FL-LRIC++	Forward-looking long run incremental cost plus two mark-ups; one to account for the recovery of common costs and the other to reflect a 'network externality surcharge'
FTF	Fixed-to-fixed
FTM	Fixed-to-mobile
H3GA	Hutchison 3G Australia Pty Ltd
HTAL	Hutchison Telecommunications (Australia) Limited
Hutchison	Together HTAL and H3GA
Hutchison Undertakings Final Decision	Hutchison's undertakings with respect to the supply of its Mobile Terminating Access Service (MTAS), Final Decision, June 2006
GSM	Global System for Mobiles
LRIC	Long run incremental cost
LRMC	Long run marginal cost
LTIE	Long term interests of end users
MNO	Mobile Network Operator

MSR		Mobile Services Review
MTAS		Mobile Terminating Access Service
MTAS Report	Final	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, June 2004
MTAS Pricing Principles Determination	Pricing	Pricing Principles for the Mobile Terminating Access Service, 30 June 2004
MTF		Mobile-to-fixed
MTM		Mobile-to-mobile
Optus		Optus Mobile Pty Limited and Optus Networks Pty Limited
Optus Undertaking Decision	Final	Optus's undertaking with respect to the supply of its Domestic GSM Terminating Access Service (DGTAS), Final Decision, February 2006
POI		Point of interconnection
PSTN		Public Switched Telephone Network
RAF		Regulatory Accounting Framework
SAOs		Standard Access Obligations
SIO		Services in operation
Telstra		Telstra Corporation Limited
TSLRIC		Total service long-run incremental cost
TSLRIC+		Total service long-run incremental cost plus a mark-up to account for a contribution to organisational-level common costs
Vodafone		Vodafone Australia Pty Ltd
Vodafone Undertaking Decision		Assessment of Vodafone's mobile terminating access service (MTAS) Undertaking, Final Decision, March 2006

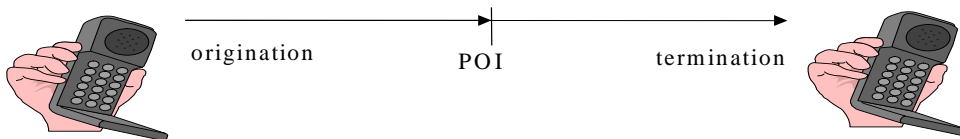
# 1. Background to MTAS Regulation

## 1.1. What is the Declared Service MTAS Service?

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

### MTAS

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 between these two networks will exist. The main network elements of providing the MTAS are illustrated in Figure 2.1 below.



*Figure 2.1 – Termination, origination and the POI*

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

An example of how the MTAS is used in the provision of a FTM call is depicted in Figure 2.2 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.

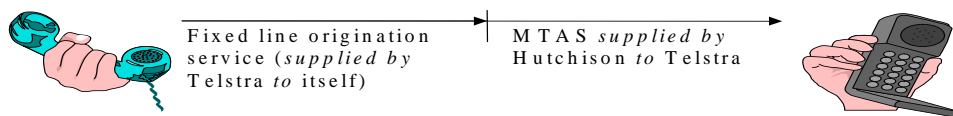


Figure 2.2 - Use of the MTAS to supply a fixed-to-mobile call

The MTAS is therefore an essential input into the provision of calls to mobile phone users where the mobile phone user is on a different network to the individual who originates the call. This is the case irrespective of whether the call terminates on a second generation (2G) GSM or CDMA network, a 2.5G or 3G mobile network.<sup>1</sup>

## 1.2.MTAS Pricing Principles Determination

At the time of declaring the MTAS, the ACCC published the *MTAS Pricing Principles Determination*, which will expire after 30 June 2007.

Based on the available information at the time that the determination was made, the ACCC determined that the TSLRIC+ of supplying the MTAS in Australia was likely to fall in the range of 5 to 12 cpm. The 12 cpm price represents the conservative upper bound TSLRIC+ estimate of supplying the MTAS informed by international cost benchmarking analysis and the analysis of the RAF reports as contained in detail in the *MTAS Final Report*.

The indicative price related terms and conditions for the MTAS in the current *MTAS Pricing Principles Determination* are outlined in Table 1 below.<sup>2</sup>

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

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

The ACCC's decision to develop a bottom-up cost model builds on the analysis that informs the existing *MTAS Pricing Principles Determination*. In the *MTAS Final Report*, the ACCC stated that any reduction below 12 cpm could be supported by the development of its own bottom-up cost model or more extensive international benchmarking exercise:

<sup>1</sup> 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.

<sup>2</sup> *ibid.*, pp. 206-210 and Annexure p. 245.

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.<sup>3</sup>

The development of a purpose-built bottom-up cost model is considered an important supplementary tool to support the robustness and reliability of the international cost benchmarking and RAF analyses informing the indicative prices in the current *MTAS Pricing Principles Determination*. The development of such a model provides a strong basis for an efficient cost estimate of the supply of the MTAS below the conservative upper bound of 12 cpm.

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<sup>3</sup> 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.

## 2. Underlying Pricing Principles

### 2.1. ACCC's cost based approach to access pricing: Total Service Long Run Incremental Cost Plus (TSLRIC+)

The ACCC articulated its view in the *Access Pricing Principles* that for access services the access price should, in general, be based on the TSLRIC of providing the service.<sup>4</sup>

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.<sup>5</sup>

TSLRIC is interpreted by the ACCC as a forward looking measure of costs which means that the referable costs are those of the most efficient means possible and commercially available.<sup>6</sup> 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.<sup>7</sup>

The ACCC has previously outlined why it preferred to establish access prices with reference to the TSLRIC.<sup>8</sup> 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 the allocatively efficient 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,

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<sup>4</sup> ACCC, *Access Pricing Principles - Telecommunications - a guide (Access Pricing Principles)*, July 1997, p. 28. There may be exceptions to this. For example, there may be circumstances where a service has a limited time horizon. In such cases other pricing approaches may be more appropriate. Further, if the Commission arbitrates a dispute when an undertaking given by the access provider is in operation, it must not make a determination that is inconsistent with that undertaking (see s. 152CQ(5) of the Act). However, in general, the Commission expects TSLRIC to be consistent with the terms and conditions in undertakings.

<sup>5</sup> *ibid.*

<sup>6</sup> *ibid.* p. 29.

<sup>7</sup> *ibid.* p. 38.

<sup>8</sup> *ibid.* pp. 29-30.



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.<sup>9</sup>

## **2.2. 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 are unattributable 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.<sup>10</sup>

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.<sup>11</sup>

The criteria that need to be satisfied include:

1. 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. inclusion of common costs (incorporated into the access price) in the internal transfer price of a vertically-integrated firm.<sup>12</sup>

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

### **EPMU approach**

The approach preferred by the ACCC to the allocation of organisational-level costs is the equi-proportionate mark up (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.<sup>13</sup>

For many reasons the EPMU is considered preferable to other approaches for the allocation of organisational-level costs, in particular the overwhelming information

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<sup>9</sup> *ibid.* pp. 29-30.

<sup>10</sup> *ibid.* 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.

<sup>11</sup> *ibid.* p. 39.

<sup>12</sup> *ibid.* p. 40.

<sup>13</sup> *ibid.* p. 39.

requirements of the alternatives. The ACCC 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 universally accepted by regulators around the world.

### **2.3. Network externality surcharge (NES)**

As the ACCC has outlined, for example in the Optus Undertaking Final Decision,<sup>14</sup> it considers that, while the concept of a network externality has intuitive appeal for some telecommunications services, it considers that a surcharge on termination to fund subscription subsidies is inappropriate in relation to the supply of the MTAS in current Australian circumstances.

The ACCC has various reasons for this view. For example, it considers that the empirical importance of ‘network externalities’ is likely to be low or non-existent in a highly mature mobile market such as Australia as the marginal social benefits derived from additional subscribers is likely to decline with population penetration of mobile subscription reaching zero at saturation.

In addition, if these benefits do exist, individuals (and to some extent mobile network operators) have a number of methods – other than subscription subsidies funded out of above-cost charges for the MTAS – to ensure these external benefits are considered (or ‘internalised’) by individuals in their consumption decisions. For instance, parents or employers may pay for their children or employees to have a mobile subscription. Further, mobile operators may be able to target late subscribers through specially designed (or ‘targeted’) retail packages. Such forms of internalisation would reduce the extent to which all mobile subscriptions need subsidisation, and therefore the necessity for substantial ‘taxes’ on MTAS prices.

Further, the ACCC 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.

### **2.4. Efficient Operator benchmark**

One of the key factors reflected in the long term interests of end users (LTIE) criterion is the impact of any access pricing outcomes that encourage economically efficient use of, and investment in, telecommunications infrastructure.

More broadly, the ACCC has focused on the concepts of dynamic, productive and allocative efficiency. These concepts are outlined in the *Access Pricing Principles*.<sup>15</sup>

The efficient operator is accounted for in the context of productive efficiency whereby

as the [access] price will be based on the cost of providing the service using the most efficient means commercially available it will encourage access providers to continually improve their performance with the aim of achieving best practice and lowering cost. The competitive pressure

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<sup>14</sup> ACCC, *Optus’s undertaking with respect to the supply of its Domestic GSM Terminating Access Service (DGTAS), Final Decision*, February 2006 (*Optus Undertaking Final Decision*), pp. xiii and 92.

<sup>15</sup> ACCC, *Access Pricing Principles*, pp. 17-18.

generated in dependent markets will also encourage firms to improve productivity and reduce costs.<sup>16</sup>

The ACCC 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.<sup>17</sup>

The ACCC has also outlined previously that the question of efficient operator could encompass scenarios that are 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,<sup>18</sup> 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.<sup>19</sup>

## 2.5. Technological neutrality

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 ACCC 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.<sup>20</sup>

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.<sup>21</sup>

## 2.6. Neutrality concepts for different call types

The *Access Pricing Principles* 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.<sup>22</sup> For example, the APP 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.<sup>23</sup>

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<sup>16</sup> *ibid.*, p. 18.

<sup>17</sup> ACCC, *Assessment of Vodafone's mobile terminating access service (MTAS) Undertaking*, Final Decision, March 2006 (Vodafone Undertaking Final Decision), pp. 33-34.

<sup>18</sup> *ibid.*

<sup>19</sup> <http://www.hutchison.com.au/hutchison2004/hutchison2004staging/object/attachment/docs/ACF5D.pdf>, accessed January 2007

<sup>20</sup> ACCC, *MTAS Final Report*, p. 22.

<sup>21</sup> *ibid.* p. 23.

<sup>22</sup> ACCC, *Access Pricing Principles*, p. 15.

<sup>23</sup> *ibid.*, p. 15.

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

In the *MTAS Final Report*, the ACCC 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.<sup>24</sup>

The ACCC 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 ACCC considered that, given this incentive exists, it was appropriate that the service description should apply equally to termination of FTM and MTM calls.<sup>25</sup>

Since the release of the *MTAS Final Report*, the ACCC 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 ACCC concluded in that matter that there was no evidence provided by any party to support a differential rate, 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.<sup>26</sup>

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<sup>24</sup> ACCC, *MTAS Final Report*, p. 26.

<sup>25</sup> *ibid.*, p. 27.

<sup>26</sup> 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. 22.