



Declaration of local telecommunications services

A report on the declaration of
an unconditioned local loop service, local PSTN originating and
terminating services, and a local carriage service under
Part XIC of the *Trade Practices Act 1974*.

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Important notice

Please note that these guidelines are a summary designed to give you the basic information you need. They do not cover the whole of the Trade Practices Act and are not a substitute for professional advice.

Moreover, because they avoid legal language wherever possible there may be some generalisations about the application of the Act. Some of the provisions referred to have exceptions or important qualifications. In most cases the particular circumstances of the conduct need to be taken into account when determining the application of the Act to that conduct.

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Abbreviations

ACA	Australian Communications Authority
ACIF	Australian Communications Industry Forum
Act	<i>Trade Practices Act 1974</i>
ADSL	Asymmetrical digital subscriber line
ATM	Asynchronous transfer mode
CAN	Customer access network
CAM	Customer access module
CDMA	Code division multiple access (wireless network technology)
Commission	Australian Competition and Consumer Commission
CPI	Consumer price index
DDAS	Digital Data Access Service
DMO	Data mode of operation (Telstra)
ETSI	European Telecommunications Standards Institute
FMO	Future mode of operation (Telstra)
GSM	Global systems for mobiles (wireless network technology)
HDSL	High speed digital subscriber line
HFC	Hybrid fibre coaxial cable
IRIM	Integrated remote integrated multiplexer
ISDN	Integrated services digital network
ITU	International Telecommunications Union
LAS	Local access switch
LMDS	Local multipoint distribution system
Long-term interests of end-users	Long-term interests of end-users of carriage services or of services supplied by means of carriage services. This term is defined in s. 152AB of the Act.
OSS	Operations support systems

PAPL	Permitted attachment private line
PSTN	Public switched telephone network (a fixed network)
RAU	Remote access unit (i.e. an RSS or RSU)
RIM	Remote integrated multiplexer (Also known as non-integrated remote integrated multiplexer)
RSS	Remote subscriber stage
RSU	Remote subscriber unit
ScaDSs	Small capacity distribution systems
TAF	Telecommunications Access Forum
UMTS	Universal mobile telecommunications system
WLL	Wireless local loop
xDSL	Refers to the ‘family’ of digital subscriber line services (i.e. ADSL, HDSL, etc).

Glossary

Asymmetrical digital subscriber line	A dedicated line from customer premises to a network exchange which can provide access speeds over 1.5 Mbits per second. It is a high bandwidth downstream service, with a lower bandwidth upstream service.
Access provider	Carrier or carriage service provider who supplies declared services to itself or other persons — see s. 152AR of the Act.
Access seeker	Service provider who makes, or proposes to make, a request for access to a declared service under s. 152AR of the Act.
Customer access network	The network which enables the connection of telephones and other customer premises equipment to switching technology. It consists of a network of conduits and pipes in the ground with a mixture of cables containing copper wires and optical fibres.
Customer access module	Equipment providing ring current, dial tone and battery feed to customers' equipment.
Declared service	An eligible service declared by the Commission under s. 152AL of the Act. Once an eligible service is declared, access providers are required to supply the service to service providers (i.e. access seekers) upon request — see s. 152AR of the Act.
Digital Data Access Service	This service supports dedicated digital private network services.
Eligible service	This term is defined in s. 152AL of the Act. An eligible service is a carriage service between two or more points (at least one of which is in Australia), or a service that facilitates the supply of such a carriage service.
Frame relay	Frame relay is a high speed packet switched network which supports access via digital leased lines and offers private network connectivity.

High speed digital subscriber line	A dedicated line from customer premises to a network exchange which can provide access speeds over 2 Mbits per second on existing copper pairs.
Hybrid fibre coaxial cable network	A network consisting of both fibre optic cabling and coaxial cabling. Fibre optic cable is used at the trunk level and may be used up to a 'service area' (possibly consisting of several hundred homes) or up to the curb. Coaxial cable is then run from either of these points into end-users' premises.
Integrated remote integrated multiplexer (see also remote integrated multiplexer)	This is similar to a RIM with the exception that the transmission protocol is integrated with the telephone exchange software. The need for a demuxing at the telephone exchange is eliminated because transmission from the remote unit is connected directly into the group level of the telephone exchange.
Local access switch	This equipment provides ring current, dial tone and battery feed to end-users, as well as switching calls locally to other local access switches. It also provides number analysis for call routing and call charge recording, and enhanced (or supplementary) services such as call waiting and call diversion.
Multiplexer (also known as a mux)	A device that combines two or more signals into a single composite data stream for transmission on a single channel.
Permitted attachment private line	This is a simple leased line service which provides transmission at voice frequency; the customer is expected to supply equipment to be used at either end of the line. By attaching a particular type of equipment, users are able to obtain high capacity transmission.
Remote subscriber stage	A customer access module of the LM Ericsson AXE telephone switching exchange located in buildings remote from the group switching function.
Remote subscriber unit	A customer access module of the Alcatel S12 telephone switching exchange located in buildings remote from the group switching function.

Remote integrated multiplexer (also known as non-integrated remote integrated multiplexer)	This device consists of a protective housing, cable and optical fibre terminating strips, and multiplexing equipment, erected in street-based housing. ‘Integrated’ means that the housing contains multiplexers that enable different services to be carried over the same transmission cable (i.e. special services, telephone services, public telephone services, ISDN services are all carried over the same transmission cable/fibre). Non-integrated means that the unit is not integrated with the telephone exchange switching software and performs a standard multiplexer function. It operates with another unit, usually situated in the telephone exchange, that demuxes the transmissions back to individual services.
Service provider	Defined in s. 86 of the <i>Telecommunications Act 1997</i> . Means a carriage service provider or a content service provider.
Small capacity distribution system	This system is a terminating device installed in streets. It consists of a protective housing and cable/wire terminating strips. It performs a cable/wire concentration function and enables individual wires in a large number of small capacity distribution cables to be connected to wires in a larger capacity main cable (i.e. 10 pair, 30 pair, 50 pair and 100 pair cables to 600 pair cable).
Wireless local loop	A system where fixed radio systems are used instead of cable pairs. A radio transmitter is fixed at customers’ premises and all telephone calls are transmitted over the radio system to a radio base station. The radio base station connects to a customer access module.

1. Introduction

On 19 March 1998 the Australian Competition and Consumer Commission (the Commission) commenced a public inquiry into whether to declare, under Part XIC of the *Trade Practices Act 1974* (the Act), particular services which it initially described as 'local call' and 'local interconnection' services. These services are essentially inputs used in the supply of communications services to end-users.

Once a service is declared a carrier or carriage service provider supplying the service to itself or another person must supply the service, upon request, to other service providers. Service providers are thus guaranteed access to the inputs they need in order to supply competitive communications services to end-users.

Terms and conditions of supply can be then set through commercial negotiation. Alternatively, they can be set by reference to the other regulatory processes which apply once a service is declared, namely, in accordance with an access undertaking accepted by the Commission, or through arbitration by the Commission in the event that the Commission is notified of an access dispute.

The decision to hold the inquiry followed earlier consideration of similar matters at the industry level through the Telecommunications Access Forum (TAF). Members of the TAF were unable to reach consensus as to whether services described as the 'local call service' and 'unconditioned local loop' should be declared and, accordingly, the matter was referred to the Commission.

The Commission can declare certain services (known as eligible services) where satisfied that declaration will promote the long-term interests of end-users. In considering whether declaration will promote the long-term interests of end-users, the Commission must have regard to the likely impact of declaration on competition, any-to-any connectivity and economic efficiency.

To stimulate discussion and assist its consideration of these matters during the inquiry, the Commission issued a discussion paper in April 1998 setting out the main issues as it saw them. Over the course of the inquiry the Commission held a public hearing, undertook market inquiries and released papers on technical feasibility and pricing issues in order to probe those matters in further detail. The Commission also issued a draft report in December 1998.

As a result of information received over the course of the inquiry including submissions on the draft report, the Commission is satisfied that declaration of the following services will promote the long-term interests of end-users of carriage services, or of services provided by means of carriage services:

- an unconditioned local loop service, which involves the use of unconditioned (copper) communications wire between the network boundary (on the end-user's side) and a point at which the wire terminates;
- local PSTN originating and terminating services, which involve the carriage of communications between customer premises equipment and a point on the trunk side of the local switch; and

- a local carriage service, which involves the supply of an end-to-end telephone call between two points within a standard zone.

Liberalising the supply of these services to service providers through declaration is expected to significantly influence the development of competition for local telephony services and high bandwidth carriage services, and enhance competition for long distance telephony services.

Declaration of the unconditioned local loop service, and the local PSTN originating and terminating services, enables service providers to connect their own networks to existing infrastructure in order to deliver new and innovative services to end-users in a more efficient way. This reduces the need for full duplication of communications networks while encouraging service providers to roll out their own infrastructure where this will be efficient.

The Commission expects that declaration of local carriage services will promote retail service competition and provide end-users with the ability to choose between local call suppliers. In addition, declaration is expected to facilitate the roll out of new infrastructure through lowering entry barriers and reducing investment risks.

This report describes each of the services which the Commission proposes to declare, along with the Commission's reasoning. It is structured as follows:

- Section 2 outlines the access regime and relevant provisions governing the declaration process, including details about the inquiry.
- Section 3 describes the eligible services which were considered by the Commission during the inquiry. Service descriptions were developed by the Commission based on those presented initially by members of the TAF. Detailed service descriptions are set out in Appendixes 1 to 4.
- Sections 4 and 5 identify the markets which were the focus of the inquiry, and the Commission's views on the effectiveness of competition in each market.
- Sections 6 to 8 set out the Commission's reasoning as to whether declaration of particular services will promote the long-term interests of end-users in terms of their impact on competition, any-to-any connectivity and efficiency.
- Section 9 addresses particular services, namely line related services such as 'line rental', which were subject to comment during the inquiry but not considered by the Commission for the purposes of declaration.
- Section 10 presents the Commission's conclusions and outlines the nature of work which the Commission considers necessary to implement the findings of the inquiry.

The Commission intends to execute the declaration instruments, and publish these instruments in the Commonwealth Gazette, as soon as practicable following the publication of this report.

2. The declaration process

Part XIC of the Act establishes an industry-specific regime for regulated access to telecommunications services. The regime provides for the Commission to declare certain services known as eligible services. These services are carriage services between two or more points (at least one of which is in Australia) and services which facilitate the supply of such carriage services. The Commission makes its decisions within the context of the primary object of Part XIC, which is to promote the long-term interests of end-users.

2.1. Declaration and regulated access

There is no general right of access to eligible services. The rights and obligations under Part XIC only apply in respect of those eligible services which are ‘declared’ by the Commission.

The declaration decision is, in essence, a decision by the Commission to apply the rules and regulatory processes in Part XIC of the Act to the eligible services covered by the declaration. Once an eligible service is declared, carriers and carriage service providers who provide the service either to themselves or to other persons are, unless otherwise exempt, required to comply with standard access obligations in relation to the service. In accordance with these obligations, the carrier or carriage service provider (i.e. the access provider) must supply the service on such terms and conditions as are agreed with a service provider seeking access (i.e. the access seeker) or, failing agreement, in accordance with an access undertaking accepted by the Commission or an arbitration determination of the Commission.

The emphasis of Part XIC is on encouraging access providers and access seekers to negotiate access to declared services without recourse to further regulatory intervention. In this regard Part XIC provides for the industry to establish an access code and for access providers to give access undertakings to the Commission setting out the terms and conditions of access. Where, however, the parties are unable to reach agreement on the terms and conditions of access, which is not otherwise covered by an approved undertaking, the Commission can conduct arbitration upon request from one of the parties.

2.2. How eligible services are declared

To ensure a smooth transition from the previous regulatory regime, an initial list of eligible services were deemed to be declared services under Part XIC of the Act. These services were specified in the Commission’s *Deeming of Telecommunications Services Statement* published on 30 June 1997. They were derived from agreements registered under the *Telecommunications Act 1991*.

The deeming process was a transitional measure and did not cover the services subject to this inquiry. Now that the Part XIC regime has commenced the Commission can declare other eligible services in one of two ways, namely:

- in accordance with a recommendation from the TAF ; or
- after holding a public inquiry, if it is satisfied that making the declaration will promote the long-term interests of the end-users of carriage services or services provided by means of carriage services.

2.3. The inquiry

The TAF considered proposals to declare ‘local call resale’ and ‘unbundled local loop’ services and was unable to reach a consensus view, either to accept or reject, the proposals. Consequently, in accordance with its rules of governance, the TAF referred the matter to the Commission. The Commission subsequently announced the inquiry on 19 March 1998.

The operation of the inquiry is governed by Part 25 of the *Telecommunications Act 1997*. On 24 April 1998 the Commission released a discussion paper outlining particular issues and calling for submissions. In response, submissions were received from 17 organisations or individuals. These submissions are listed in Appendix 5.

A public hearing was held in Sydney on 9 June 1998. Subsequently, the Commission sought additional information on relevant issues through one-to-one discussions with industry participants, and through releasing papers on technical feasibility and pricing issues.

On 10 September 1998 the Commission released a paper on technical issues prepared by the Commission’s consultant on technical matters, Cytec Pty Ltd. The technical advice paper provided an assessment of whether it is technically feasible to supply and charge for the services and included draft service descriptions for the services being considered in the inquiry. A list of the submissions received on this paper is set out in Appendix 5.

In response to issues raised in submissions regarding pricing matters the Commission released and sought submissions on a paper discussing possible approaches to pricing of the unconditioned local loop service, and local PSTN originating and terminating services, on 7 October 1998. A list of the submissions received on this paper is set out in Appendix 5.

On 23 December 1998 the Commission issued a draft report setting out its proposal to declare four services namely, the unconditioned local loop service, local PSTN originating and terminating services, and the local carriage service, along with its reasons. In response, submissions were received from 12 organisations; these are set out in Appendix 5.¹ Following receipt of these submissions the Commission undertook further one-to-one discussions to explore particular issues and seek additional information.

1 A copy of the public version of these submissions was placed on the Commission’s Internet website (www.accc.gov.au).

Submissions dealing with pricing matters were also received in response to the draft report. This report contains further discussion of possible pricing approaches which reflects the submissions received and additional analysis undertaken by the Commission. Nonetheless, for the purposes of the inquiry, it is not necessary for the Commission to come to a final view regarding appropriate prices for these services. Moreover, the Commission considers that prices should, in the first instance, be negotiated between access providers and access seekers. The discussion in this report may, however, assist commercial negotiations.

2.4. The long-term interests of end-users test

The test for declaration of each service covered by the inquiry is the long-term interests of end-users test. That is, the Commission must be satisfied that making the declaration will promote the long-term interests of end-users of carriage services or of services provided by means of carriage services.

In order to determine whether declaration will promote the long-term interests of end-users, s. 152AB of the Act provides that the Commission must consider the extent to which declaration is likely to result in the achievement of the following objectives:

- the objective of promoting competition in markets for carriage services and services supplied by means of carriage services;
- for carriage services involving communication between end-users, the objective of achieving any-to-any connectivity; and
- the objective of encouraging the economically efficient use of, and economically efficient investment in, the infrastructure by which carriage services and services provided by means of carriage services are supplied.²

In the Commission's view these objectives are essentially 'secondary objectives'.³ They are not ends in themselves but are the means by which the primary objective (of promoting the long-term interests of end-users) is to be realised.

Where declaration is likely to result in the achievement of one or more of these objectives, it will generally promote the long-term interests of end-users. For instance, if declaration is likely to promote competition in a market for the supply of local telephony services to end-users, then end-users are likely to benefit through lower prices and improved customer service. Similarly, encouraging efficient investment would be expected to promote end-users' interests through enhancing the efficiency with which telecommunications services are supplied. The enhanced efficiency would be generally reflected in lower prices. The Commission may also conclude that efficient investment will be likely to increase service diversity.

2 Subs. 152AB(2) of the Act.

3 Part XIC of the Act does not use the adjectives 'primary' and 'secondary' to distinguish between the objectives. Rather, the Commission uses these adjectives to assist in placing the competition, any-to-any connectivity and efficiency objectives within the context of the overall long-term interests of end-users objective.

With respect to any-to-any connectivity the Commission takes the view that the achievement of this objective will generally benefit end-users through facilitating increased communication between them. Any-to-any connectivity may also facilitate competition by ensuring that, when migrating between service providers, end-users do not lose their ability to communicate with other end-users.

The approach adopted by the Commission will generally involve case-by-case analysis to form a view about the likely result of declaration on the achievement of each secondary objective. Not only does this ensure that the Commission considers the impact of declaration in terms of each objective, but it also assists the Commission to reach a decision in terms of the overall effect on the long-term interests of end-users where declaration is likely to have mixed effects.

The analytical process used by the Commission generally involves three steps.

- First, the Commission considers the likely result of declaration in terms of each secondary objective.
- Second, the Commission considers whether the likely result of declaration on each secondary objective will promote the long-term interests of end-users.
- Third, the Commission must make an overall assessment of whether, having regard to the cumulative results of declaration on the secondary objectives, declaration will promote the long-term interests of end-users.

In some cases this three stage analysis may be undertaken as discrete steps whereas in other cases it may be appropriate to undertake the analysis simultaneously. For instance, in considering the likely result of declaration on competition, it may be useful to consider the impact in terms of price, quality and diversity of services supplied to end-users.

To consider the likely result of declaration on a secondary objective, the Commission finds it helpful to use a 'with and without test'. That is, the Commission considers the future without declaration and compares this to the future with declaration. This is not a test in its own right but is used to isolate the effects which are likely to occur as a result of declaration. Moreover, given that many aspects of the future will be speculative, the Commission may not be able to describe the future in a high degree of detail, or determine the full range of possible scenarios. The Commission will seek to examine those aspects of the future (primarily competition and efficiency considerations) which have a direct bearing on the issues before it.

Further details on the Commission's approach to applying the long-term interests of end-users test are set out in its publication, *Declaration of Telecommunications Services – a guide*, July 1999.

3. Eligible services

In the inquiry the Commission considered two types of services described in its discussion paper as 'local call services' and 'local interconnection services'. They are inputs to retail local telephony services, although some inputs can also be used for other communications services such as long distance telephony services and high bandwidth carriage services.

The Commission's declaration decision must be framed in terms of one or more 'specified eligible services'. It is these eligible services to which the standard access obligations in Part XIC of the Act apply and, accordingly, it is important that they be correctly specified. Too narrow a specification may unnecessarily limit the services which the access provider must supply to access seekers. On the other hand, too broad a specification may lead to uncertainty and have undesirable consequences in terms of innovation and investment.

Wherever possible, the Commission's preference is to specify services in functional, rather than technology-specific, terms. In the Commission's view this minimises any distortionary effects of declaration in terms of technological and innovative developments. It also leaves the access provider with flexibility to determine the most efficient way of supplying the service and gives greater flexibility to the access seeker in terms of the service that can be provided within the ambit of the declared service.

The documentation presented to the Commission by the TAF included several service descriptions, with each raising issues meriting examination. Accordingly, the Commission treated these service descriptions as examples and used the public inquiry process to develop and refine the service descriptions. In doing this the Commission sought to identify the basic elements or 'building blocks' which comprise fixed (as opposed to mobile) local call services, on the basis that the service descriptions were likely to represent a subset of those elements.

After considering material received during the inquiry, including in response to the technical advice paper which proposed draft service descriptions for comment, the Commission has developed specifications for four services each of which it considers to be an eligible service as defined in subs. 152AL(1) of the Act. These services are:

- unconditioned local loop service;
- local PSTN originating service;
- local PSTN terminating service; and
- local carriage service.

The first three services involve interconnection with the customer access network at various levels and hence, were described as 'local interconnection services' in the April discussion paper. Descriptions for each of these services are at Appendixes 1 to 3. The local carriage service was the service described as the 'local call service' in the Commission's April discussion paper. A description of this service is at Appendix 4.

3.1. The elements

In identifying the elements of a fixed local call service the Commission sought to differentiate between horizontal and vertical elements. Horizontal elements relate to the infrastructure used to provide a carriage service as well as the functions and capabilities of such facilities and equipment. They include:

- equipment located at customer premises;
- the distribution cable which connects the customer premises equipment (directly or indirectly) to a distribution frame in the exchange at which a switch is located. This cable may be one of several transmission media — copper wire, optic fibre, coaxial cable — or a combination of all or some of these;
- the local switch which switches calls directly to the called party (where both are connected to the same switch) or to another switch;
- a network of switches and cables between the local switch to which the calling party is connected and the switch to which the called party is connected; and
- a network for carriage of signals.

Sections 3.1.1. and 3.1.2. describe particular characteristics for these elements in relation to the Telstra Corporation Ltd and Cable & Wireless Optus Ltd networks.

Vertical elements are those which are used to enhance the basic service provided by means of the horizontal elements. In some instances vertical elements are provided by means of the network, whereas in other instances they are provided using separate infrastructure and resources. Where the local call service is supplied by a carrier to another service provider they include:

- enhanced call features (e.g. call waiting);
- billing information;
- customer information;
- directory information; and
- fault handling and rectification.

In addition, further vertical features are added when the call is supplied by the service provider to the end-user. These include marketing, customer care and billing.

3.1.1. The Telstra network

Telstra, pursuant to its future mode of operation (FMO) and data mode of operation (DMO), is making a number of changes to the architecture of its network.

Under the changes implemented as part of the FMO, customer premises equipment is connected by means of cable to ‘housing’ containing customer access module equipment. In most cases the cable establishing this connection will be a pair of twisted copper wires.

The customer access module equipment does not undertake switching; rather its function is to aggregate calls and provide battery feed, ring current and dial tone to the customer premises equipment. The types of customer access module equipment used in

the network includes small capacity distribution systems (SCaDSs), integrated and non-integrated remote integrated multiplexers (IRIMs and RIMs), and remote subscriber units (RSUs) and remote subscriber stages (RSSs) which are commonly referred to by Telstra as remote access units (RAUs).

Diagram 3.1. provides an example of the Telstra network architecture.

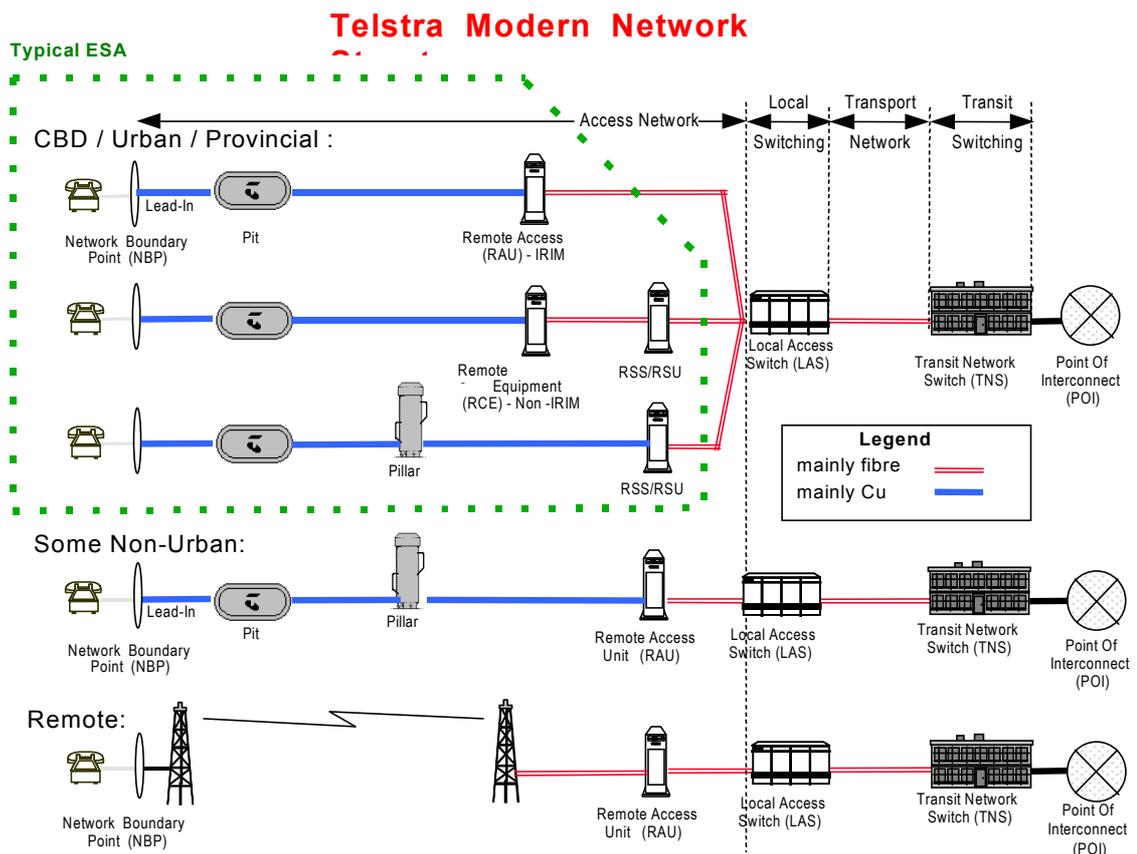


Diagram 3.1 Telstra network architecture (source: Telstra)

The type of housing used for customer access module equipment depends on the equipment involved. RAUs are usually located in former exchange buildings, whereas IRIMs and RIMs are located in street-based cabinets and SCaDSs in underground pits.

With the FMO, all traffic is routed from the customer access module to the local access switch (LAS), directly or by means of other customer access module equipment. The connection is an optical fibre connection.

Under the changes, announced as the DMO, it is understood that customers may be connected to new equipment at the customer access module. The customer access module will be connected to both an LAS (directly, or by means of other customer access module equipment) and a data/IP network. Voice traffic will be routed to the LAS for carriage using a circuit switched network. The signalling system will remain as the CCS#7 signalling protocol, which is provided by means of an overlay network. Data traffic will be routed to the data/IP network. Telstra envisages that eventually data and voice traffic will be handled by a single network.

Diagram 3.2. illustrates the proposed network architecture.

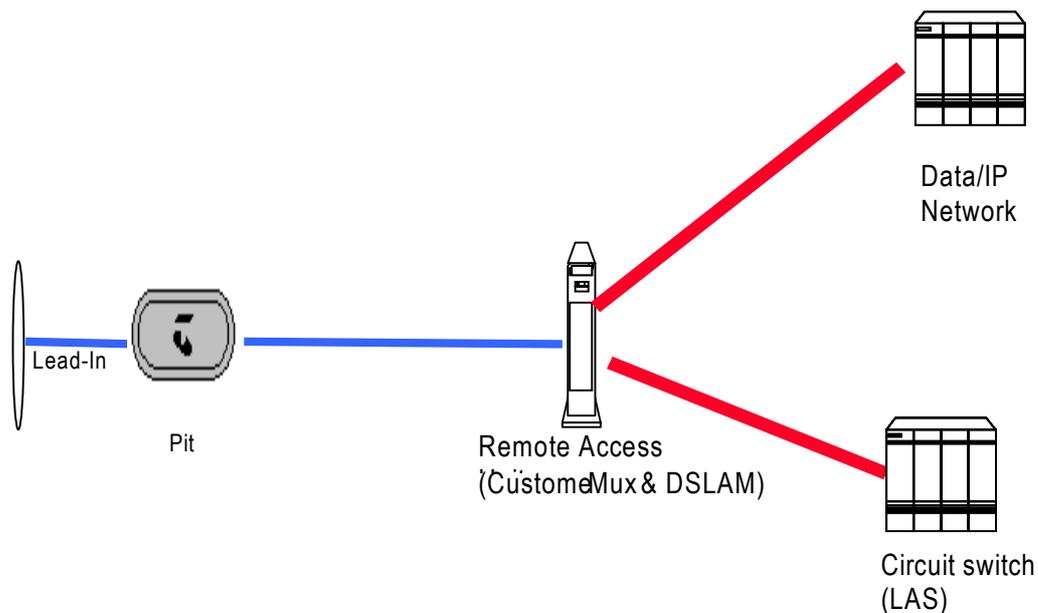


Diagram 3.2. Telstra proposed network architecture (source: Telstra)

3.1.2. The Cable & Wireless Optus network

The Cable & Wireless Optus network is different to the Telstra network in that distribution to customers' premises is via a coaxial cable. Each coaxial cable carries communications to and from all customers connected to the same cable. Addressing information ensures that only the intended addressee accesses the communication. The

coaxial cable terminates at a fibre node, after which the transmission medium is optical fibre to the local switch.

This network is used not only for telephony, but also for high speed data and analogue pay television. Diagram 3.3. provides an example of the network architecture.

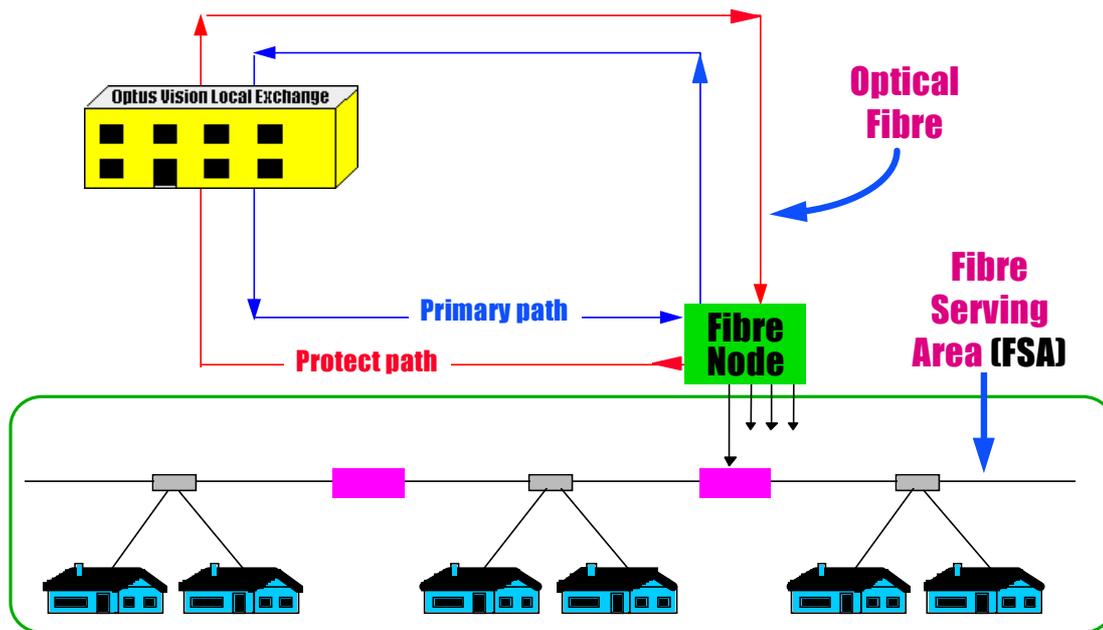


Diagram 3.3. Cable & Wireless Optus network architecture
(source: Cable & Wireless Optus)

Situated at the local switch is an ETSI V5.2 interface. This interface operates in conjunction with the local switch to allocate telephony capacity among end-users connected to the network making or receiving calls. Once a call is completed the capacity is made available to other callers.⁴ Hence, the distribution cable and the ETSI V5.2 interface should be considered as a single network element.

3.2. Degree of unbundling

In developing appropriate service descriptions the Commission considered whether to prepare them for individual elements or whether to bundle particular elements together, leading to partial unbundling of network services. Unbundling services completely to

⁴ This is to be distinguished from the Telstra network where in most cases there is a dedicated connection between each end-user and a remote access unit or similar device.

their component elements ensures that access seekers need only acquire the individual elements they want, but has the potential to increase costs for the access provider.

During the inquiry the Commission was encouraged to adopt the unbundling approach used in the United States. For instance, AAPT Ltd in its submission suggests that each of Telstra's local network elements should be broken down and every element should be declared separately:

If Telstra's local network presently constitutes a natural monopoly then, ... each separate network element presently bears natural monopoly characteristics. As each network element may be characterised as a separate eligible service, then each network element should be declared as a separate access service. An access seeker could then obtain access to each network element it requires to operate its competitive service.⁵

A similar view was put forward by Macquarie Corporate Telecommunications which advocated an approach where:

... the unbundled horizontal and vertical elements [would] be identified (subject to technical and operational feasibility) and separately declared as eligible services ... [providing] for all possible levels of interconnection and access ... [with] an access seeker ... able to specify any particular bundle of those eligible services (again subject to technical and operational feasibility).⁶

One of the principal reasons for Macquarie's approach is to gain enhanced transparency of the costs involved with the different network elements. Macquarie is of the view that the lack of cost transparency 'places Telstra uniquely in possession of information as to the costs associated with the operation of that network. This information gives it an important advantage in its "build" decision.'⁷ This appears to be based on the view that, by adopting a network elements approach, the access price would be based on the costs of actual network usage.

The issue of transparency is an important argument in favour of full unbundling. On the other hand, full unbundling could lead to loss of efficiencies through access providers needing to separate internal processes so that each element could be provided as a separate service. In the absence of demand for individual elements which access seekers would then combine with elements sourced in-house or from other carriers or carriage service providers, the Commission is of the view that full unbundling would not be warranted at this time.

Market inquiries indicate that most potential access seekers do not want to acquire all network elements individually, but rather will be seeking particular bundles of elements. Thus a partial unbundling approach is seen as better promoting the interests of end-users, taking into account the current demand for particular elements and the costs associated with unbundling. Accordingly, the service descriptions developed by the Commission represent the particular bundles of elements that would be most commonly sought by access seekers.

5 AAPT – Response to Discussion Paper (submission 1), p. 41.

6 Macquarie Corporate Telecommunications – Response to Discussion Paper (submission 1), p. 25.

7 *ibid.*, p. 26.

3.3. Inclusion of non-Telstra infrastructure

In addition to its preference for service descriptions that are technologically neutral, the Commission prefers that the description not specify the identity of the access provider. In the Commission's view this approach best reflects the intent of the legislation which has included a special process for exempting particular access providers from the statutory consequences of declaration — s. 152AT of the Act — and also for exempting a class of access providers — s. 152AS of the Act.

In this regard the explanatory memorandum states:

... A standard access obligation ... applies to any carrier or carriage service provider supplying a declared service (unless otherwise exempted from the obligation) ...

This mechanism could be used in circumstances where infrastructure investments of national or regional significance are proposed which would provide long-term and substantial benefits to end-users of carriage services and services supplied by means of carriage services, but would not proceed or would be severely hampered if the standard access obligations applied in their entirety. The provision is drafted in broad terms because ACCC judgments about the giving of an exemption and the precise nature of exemptions given need to be made on a case-by-case basis.⁸ ...

Under s. 152AT an access provider can apply to the Commission for an exemption from the standard access obligations. The Commission can grant an exemption where it is satisfied that to do so would promote the long-term interests of end-users of carriage services or of services provided by means of carriage services. The same test is applicable for class exemptions under s. 152AS.

3.4. Unconditioned local loop service

This service involves access to unconditioned cable such as twisted copper pairs in the customer access network. It is described as a service for the use of copper-based communications wire between the boundary of a telecommunications network (on the customers' side) and a point where the copper terminates.

The service description is intended to cover the situation in which an end-user chooses to churn from one service provider (e.g. Telstra) to another service provider for services provided over the line. In such a situation the access seeker would acquire use of the line. It is also intended to cover the situation where a line has been deployed but is not currently being used to supply services to end-users.

With this service there is no prescribed bandwidth. This is because the access seeker is receiving the use of the twisted copper pair without conditioning or specific carriage technology. This enables the access seeker to add its own carriage technology in order to supply, for example, high speed data carriage services to end-users or alternatively multiple telephony services to medium and large corporates (supplying up to 30 voice channels on a single copper pair) or a combination of voice and data services.

8 Explanatory memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 — clause note for ss. 152AL and 152AT.

For instance, AAPT submits that such a service would enable:

... connection of xDSL modems to these lines which could achieve bandwidth in excess of 2 Mbit/s... AAPT would be able to fully exploit the functionality of its switching technology, which is able to provide intelligent network, virtual private network, flexible billing alternatives and personalised features.⁹

The service description is at Appendix 1.

3.4.1. The infrastructure

These services, on which xDSL technologies could be used, would be supplied by means of the (copper) customer access network. Given that new networks tend to involve the use of transmission media other than copper, it is Telstra's network which would fall within this description. Telstra advises the Commission that, while the use of optical fibre in its network is increasing, approximately 85 per cent of its customer access network is copper from the end-user to the exchange building at which a switch was formerly located and which now houses an RAU.

In this case the Commission has departed from its general preference for service descriptions which are technologically neutral. This is for two reasons.

- The key reason why access seekers want direct access to the customer access network is to use xDSL carriage technology. This technology will enable access seekers to provide end-users with high bandwidth carriage services. It has been specifically designed for use on copper networks as opposed to (say) optical fibre networks which, traditionally, have not been subject to the same bandwidth limitations as copper networks.
- Additionally, access to copper wires involves different considerations as compared to other transmission media. For instance, with hybrid fibre coaxial cable or optical fibre, the carriage technology is integrated with the transmission media to an extent that separation or unbundling would involve more complex issues.

In releasing the technical feasibility report prepared by Cytec, the Commission asked whether the service description should involve the supply of an unswitched transmission service for telephony or ISDN services. The Commission also questioned whether the service description should cover unused fibre. While some submissions supported extending the service description to cover such services, the greatest interest was in relation to access to copper pairs. Accordingly, in light of the above considerations, the service description is confined to copper communications wire.

9 AAPT – Response to Discussion Paper (submission 1), p. 44.

3.4.2. Telstra's bitstream access service

During the inquiry Telstra suggested that if the Commission was minded to declare a service involving access to copper pairs, it should declare a managed xDSL service that Telstra subsequently described as a 'bitstream access service'. In early December 1998 Telstra provided a draft service description.

Telstra describes the service as:

... an End-to-End service that provides a bitstream service between an end-customer and a Point of Interconnect (POI) with the Access Provider's network. Access Seekers gain access to the customers by connecting to the POI...

... The Access Seeker's port at the POI may have bit rates of between 2 Mbps and 34Mbps/s, depending on the access infrastructure. The interface at the Access Seeker's port at the POI will operate to open protocol standards nominated by the Access Provider.

In its market inquiries the Commission asked whether a managed service provided by Telstra would be regarded as a substitute for the unconditioned local loop service. While responses were based on the limited information service providers had received from Telstra about the managed (or bitstream) service, the expressed preference was for declaration of a service which enabled direct access to the copper network. The Commission accepted this and, for the reasons outlined in section 6.1., considered that supply of the unconditioned local loop service would be likely to generate benefits superior to those generated by relying solely on the supply of a bitstream access service.

Furthermore, the Commission is concerned that were it to consider declaration of a service not yet provided by Telstra, it would be questionable whether Telstra would become subject to an obligation to supply the service to access seekers. Under Part XIC of the Act access providers are only subject to standard access obligations in relation to declared services if they supply the service to themselves or third parties. Given that Telstra is still developing the service, there is a possibility that the service that Telstra chooses to supply may be different to the service described to the Commission.

That said, the Commission does not wish to discourage Telstra supplying such a service (or for that matter any other wholesale service) as it may meet the needs of at least some access seekers, and is encouraged by Telstra's more general development of wholesale services. On the limited information available about such a service, however, it would be difficult for the Commission to conclude that the bitstream service would adequately meet the needs of all access seekers.

3.4.3. Point of interconnection

With the unconditioned local loop service the point of interconnection is at or associated with the point at which the copper wire terminates. This will be the end-user side of a customer access module.

Under the network architecture that Telstra is currently implementing, the point at which copper terminates is moving towards the customer. This means that, over time, the point of interconnection would be likely to move closer to the end-user.

For instance, where Telstra installs an IRIM, the copper terminates at that point rather than at the exchange building housing an RAU and which formerly housed the local switch. Nevertheless, Telstra advises that approximately 85 per cent of copper wires in its customer access network currently terminate at these exchange buildings (which house RSSs and RSUs).

3.4.4. The jumper

The jumper is the cable which connects the customer line from the point at which it terminates (i.e. the main distribution frame) to the access seeker's electronic equipment. Potential access seekers sought to have this jumper included within the service description.

In the Commission's view this is not necessary. The standard access obligations provide that the access provider must, if requested by an access seeker, permit interconnection of the access provider's facilities with those of the access seeker. The 'jumper' serves precisely this function. Accordingly, the Commission is of the view that the standard access obligations would require the access provider to permit the installation of a jumper between the point at which the customer line terminates and the access seeker's electronic equipment. Whether the access provider or access seeker installs the jumper is a matter for negotiation between the access provider and access seeker.

3.4.5. Spectral unbundling

Access seekers using the unconditioned local loop service to supply carriage services to their customers would be responsible for the provision of all carriage services that the customer wishes to receive over the line. Access seekers may, however, choose to 'split' particular services (e.g. voice and data services) and contract with a carrier for the transmission of particular types of services (e.g. voice services) over that carrier's network. These wholesale arrangements would be matters for resolution by means of commercial negotiation and are not specified in the service description for the unconditioned local loop service.

3.4.6. Regulation affecting use of this service

An access seeker providing services to end-users by means of the unconditioned local loop service would be subject to the same regulatory requirements as any other service provider supplying those services. This may include requirements about pre-selection and number portability under the Telecommunications Act. In addition, the Australian Communications Authority advises that this may include interception capability obligations under Part 15 of the Telecommunications Act.¹⁰

10 Australian Communications Authority – Response to Draft Report, p. 5.

3.5. Local PSTN originating and terminating services

These services involve carriage of telephone calls between customer premises equipment and a point of interconnection at or associated with a local switch. Access seekers can use these services to carry calls made and received by end-users connected to the access provider's network.

For example, if an end-user connected to the Telstra network wanted to make long distance calls using AAPT, AAPT could acquire a local PSTN originating service from Telstra in order to route long distance calls onto its network. Thus, when the end-user makes a long distance call, Telstra would originate the call and carry it to the local switch closest to the end-user. Telstra would then switch the call onto AAPT's network and AAPT would then be responsible for carrying the call. If a call is made to an end-user connected to (say) the Cable & Wireless Optus network, then AAPT would carry the call to the switch closest to the called party. At this switch AAPT would hand the call over to Cable & Wireless Optus which would then switch and carry the call to the called party.

The service description for these services is at Appendixes 2 and 3.

3.5.1. The Domestic PSTN Originating and Terminating Access Services

Under the transitional arrangements for establishing the current regulatory regime, the Commission prepared and published a statement entitled *Deeming of Telecommunications Services* (the Deeming Statement). This statement was prepared pursuant to s. 39 of the *Telecommunications (Transitional Provisions and Consequential Provisions) Act 1997* and resulted in certain services being regarded as declared under Part XIC of the Act.

This statement described two services, namely Domestic PSTN Originating and Terminating Access Services. These services are similar to the local PSTN originating and terminating services in that they involve the carriage of communications at a 3.1kHz bandwidth to or from a point of interconnection.

The main difference between the originating and terminating services specified in the Deeming Statement and those considered during this inquiry relates to the point of interconnection.

The service description for the Domestic PSTN Originating Access Service provides:

'Point of Interconnection' or 'POI' means an agreed location which:

(a) is a physical point of demarcation between the networks nominated by the AS and the AP; and

(b) is associated (but not necessarily co-located with) one or more gateway exchanges of each of the networks nominated by the AS and AP in respect of the POIs nominated by the AP...

... The AS may request a point of interconnect with the AP's network at a location other than one specified by the AP. The AP must, to the extent technically feasible, permit the location of a point of interconnect at that location.¹¹

11 Similar, although not identical, provisions are included in the service description for the Domestic PSTN Terminating Access Service.

Hence, unlike the local PSTN originating and terminating services, where interconnection would be associated with the local switch closest to the end-user with the Domestic PSTN Originating and Terminating Access Services interconnection is associated with a gateway exchange. Telstra has established gateway exchanges generally at the trunk exchange (i.e. transit network switch) level of its network, although some regional gateway exchanges are at local exchange (i.e. LAS) level.¹²

The term ‘gateway exchange’ is not defined in the service description for the Domestic PSTN Originating and Terminating Access Services, although it is a term used in the 1992 access agreement between Telstra and Cable & Wireless Optus (then known as Optus) which formed the basis for developing these service descriptions. It appears that agreement defines a gateway exchange to be an exchange that has been equipped for interconnection (as distinct from one at which interconnection would be technically feasible).

Telstra submits that the description for the Domestic PSTN Originating and Terminating Access Services provides for an access seeker to request interconnection at the local exchange level and so there is no need to declare local PSTN originating and terminating services.¹³ Cable & Wireless Optus advises the Commission that it has been seeking interconnection at local exchanges where it is not currently interconnected and, to this end, has requested information from Telstra as to the technical feasibility of access. To date, however, it has been unsuccessful in securing interconnection through this process.

In the Commission’s view there is a level of ambiguity as to whether the term ‘gateway exchange’ refers only to exchanges already containing interconnect equipment or to any exchange where the Commission considers interconnection to be technically feasible. With the former interpretation, interconnection would only occur at Telstra’s local exchanges in instances where Telstra has installed interconnect equipment whereas, with the latter, interconnection would be available at all local exchanges.¹⁴

One option to remove any ambiguity would be to vary the declaration for the Domestic PSTN Originating and Terminating Access Services. However, the Commission considered the scope of this inquiry did not extend to variations to the existing Domestic PSTN Originating and Terminating Access Service declarations. Accordingly, the Commission used the inquiry to consider declaration of services involving interconnection at the local switch closest to the end-user.

12 Local access switches are closer to the end-user than trunk (or transit network) switches. See Diagram 3.1. for an outline of the Telstra network architecture.

13 Telstra – Response to Discussion Paper (submission 1), pp. 45–46.

14 In section 7 of this report the Commission concludes that it appears to be technically feasible to supply and charge for a carriage service that involves interconnection at the local switch level of Telstra and Cable & Wireless Optus networks.

3.5.2. The infrastructure

These services would be supplied by means of a public switched telephone network. Both Telstra and Cable & Wireless Optus operate such networks.

3.6. Local carriage service

Local carriage services would be used by service providers to supply local calls to end-users. The access provider would be responsible for carriage of the call between the calling party and called party — the local carriage service. Access seekers would then re-supply this service to end-users. In re-supplying the local carriage service to the end-user the service provider may seek to ‘value add’ or simply resell.

For the purposes of declaration, the focus of the service description is on the local carriage service which would be supplied by the carrier to the service provider. In essence this service would involve the supply of an end-to-end voice grade carriage service between two points within a standard zone.¹⁵ Vertical elements which can be self-supplied, or competitively sourced, by the service provider are not included. A more detailed description is in Appendix 4.

3.6.1. Local call zone

Technological developments have eroded many of the distinctions between a local call and a long distance call. Notwithstanding the developments in technology, a distinction between local and long distance calls has been retained in the Telecommunications Act.

This distinction could, therefore, form the basis of specifying the relevant geographical boundaries for a local call and has been used by the Commission in the service description. Drawing on s. 227 of the Telecommunications Act, for a call to be a local call both the calling party and the called party must be located within the same standard zone.

3.6.2. The infrastructure

The service is provided by means of a public switched telephone network capable of carrying communications at a 3.1kHz bandwidth. Currently Telstra and Cable & Wireless Optus operate networks which fall within this description.

3.6.3. Wholesale and resale services

Both AAPT and Macquarie Corporate Telecommunications drew distinctions between a wholesale local carriage service and a resale version of the service, suggesting that the Commission should declare two services. In Macquarie’s view the resale service would involve the resupply of an untimed local call, whereas the wholesale service involved the supply of a local call service based on network usage.¹⁶

Each ‘service’ involves the provision of an end-to-end voice bandwidth call where both the calling and called party are in the same local call zone. Accordingly, the only difference between the two services appears to be related to pricing; the resale service

¹⁵ The term ‘standard zone’ is defined in s. 227 of the Telecommunications Act.

¹⁶ Macquarie Corporate Telecommunications - Response to Technical Advice Paper, pp. 1–2.

would be priced as an untimed call whereas the wholesale service would be priced according to the costs for network elements involved in carrying the call.

These differences appear to relate to the terms and conditions of access, not the description of the actual service supplied. Accordingly, the Commission has only developed a description for one service: the local carriage service.¹⁷ The service description is silent on the issue of pricing structure. In the Commission's view this matter is more appropriately dealt with as part of the terms and conditions upon which access providers comply with the standard access obligations.

Moreover, in developing this description the Commission has not included vertical features which can be competitively supplied. In the Commission's view billing, marketing, customer service and customer care/help-desk activities should not be part of the service description for declared local carriage services, thus providing maximum scope for service providers to engage in retail competition.

3.7. Line related services

Service providers who supply local calls to their customers by means of re-supply arrangements supply these services as part of a package that includes 'line rental' and supplementary services. In addition, these service providers arrange the connection of new services on behalf of their customers. Accordingly, some service providers suggested that these services be declared along with the local carriage service, either as part of a single bundled service, or individually as separate services.

3.7.1. Line rental

End-users directly connected to a Telstra or Cable & Wireless Optus customer access network are charged a monthly fee representing 'line rental'.¹⁸

Under the current arrangements for the supply of local carriage services between Telstra and service providers, line rental is bundled with the call product. Hence, when an end-user transfers from Telstra to a service provider, the service provider becomes liable to Telstra for both line rental and calls made on the line. Reflecting these arrangements the Commission questioned whether line rental should be included in the service description for the local carriage service.

In response to this question, submissions received expressed differing viewpoints. Cable & Wireless Optus advocated inclusion of line rental within the service description on the basis that this would enable service providers to give end-users a single bill for all telephony services. AAPT, Macquarie Corporate Telecommunications and Telstra advocated leaving line rental out of the service description. Both AAPT and Macquarie suggested that line rental is in fact a separate service.

17 In this regard, Macquarie noted that local call resale is a particular type of local call service and accordingly, only one service description is necessary: *ibid.*, p. 1.

18 Cable & Wireless Optus suggests that the term 'line rental' is a misnomer because the end-user is not actually renting the line, but rather is paying a fee for the ability to make and receive calls.

With telephony services where there is a distinction between call types (e.g. local calls and long distance calls), the Commission sees merit in the argument that line rental represents a service separate from local calls. It is a service common to all call types. Accordingly, given that the local carriage service is a service used to supply local calls to end-users, the Commission is of the view that line rental should not be included within the description of the local carriage service.

Excluding line rental from the service description means that service providers wishing to give end-users a single bill for local calls and other call products would need to establish arrangements which enabled them to bill the end-user for line rental. In this regard, AAPT suggested that an access line service should be declared as a separate service.¹⁹

During the inquiry, with the exception of Cable & Wireless Optus, submissions tended to focus on the supply of a local call service rather than on the supply of a line rental (or access line) service. Following the receipt of submissions on its draft report the Commission gave further consideration to line related services (including line rental). In its view such a service should not be considered for declaration at this stage. The Commission's reasons are set out in section 9.

3.7.2. Supplementary services

Supplementary services are services such as call waiting, call forwarding, distinctive ring, abbreviated dialling and calling line display; they are also referred to as 'enhanced basic services'. Many of these services are provided by means of modules which are bundled with the switch. In seeking submissions on the paper prepared by its consultant on technical issues, Cytec, the Commission queried whether the supply of these services should be included in the service description.

The Commission accepts the position advanced by AAPT and Macquarie Corporate Telecommunications that 'enhanced basic services' form part of the switch and signalling software, which are associated with all calls and not just local calls. Therefore, they tend to be related to the access line rather than the type of call made on the line and, accordingly, would seem to be more appropriately included in a service description for the access line. For the reasons set out in section 9, the Commission does not propose to consider the declaration of such a service at this stage.

3.7.3. Service activation

In seeking submissions on the paper prepared by Cytec, the Commission asked whether service activation should be included within the service description.

Industry feedback suggests that service activation is better classified as forming part of the access line rather than forming part of a local carriage service. For instance, Macquarie Corporate Telecommunications stated that:

19 AAPT – Response to Discussion Paper (submission 1), p. 54.

... these elements [referring to supplementary and directory services] are not part of any wholesale long distance service, and that there is no legislative nexus between the access line and local calls which would lead to their inclusion. For the same reason Macquarie can see no reason to include line rental and service activation in any service description.²⁰

And, AAPT stated:

... AAPT does not agree that service activation and line rental should be included in any local call service description. As with supplementary services [ie enhanced basic services], these features are independent of a local call carriage service.²¹

In the Commission's view, service activation is distinct from a local call service and is related to the access line, and would seem to be more appropriately included in a service description for the access line. For the reasons set out in section 9 the Commission does not propose to consider the declaration of such a service at this stage.

3.8. Operations support systems

During the inquiry, it was suggested that particular service descriptions include operations support systems (OSS) and that OSS should be declared as a separate service. OSS is an aspect of access that has received considerable attention in the United States.

The US Federal Communications Commission explains:

... Specifically, the term OSS refers to the computer systems, databases, and personnel that incumbent carriers rely upon to discharge many internal functions necessary to provide service to their customers. Thorough understanding of OSS involves a number of complex and technical matters. Nondiscriminatory access to the OSS functions, however, rests on a fairly straightforward concept: efficient and effective communication between the retail service provider (*i.e.*, the new competitor) and the wholesale provider (*i.e.*, the incumbent carrier). By "efficient and effective communication," we mean that the competing carrier must be able to access the customer data necessary to sign up customers, place an order for services or facilities with the incumbent, track the progress of that order to completion, receive relevant billing information from the incumbent, and obtain prompt repair and maintenance elements and services it obtains from the incumbent.

... To ensure efficient and effective communication between incumbents and competing carriers, competing carriers must obtain access to the same OSS functions (that is, functions provided by the relevant databases, computer systems and personnel) that incumbent LECs [Local Exchange Carriers] use to provide retail services to their own customers. The databases contain information, such as the types of telecommunications service that are available to customers, address verification, telephone number availability, available dates for installation of services, and other key items of information necessary to formulate and process a customer's order for service. The customer representatives of incumbent LECs generally have immediate, electronic access to these databases which enables them to formulate and submit orders, often while customers are on the line. Various systems and databases have also been developed to resolve customer complaints about service and to ensure accurate and timely billing. Competing carriers are dependent on the carrier for the processing of their orders and for repair and maintenance services...²²

20 Macquarie Corporate Telecommunications — Response to Technical Advice Paper, p. 2.

21 AAPT — Response to Technical Advice Paper, p. 3.

22 Notice of Proposed Rulemaking, In the Matter of Performance Measurements and Reporting Requirements for Operations Support Systems, Interconnection, and Operator Services and Directory Assistance, CC Docket No 98-56, RM-9101, 17 April 1998, paragraphs 9–10.

3.8.1. Description of OSS

In the context of this inquiry, Cable & Wireless Optus described OSS as:

...a mechanism whereby services can be added, deleted, maintained and built. Typically, elements of the operational support system reside in software at the local area switch.²³

Another description was advanced by AAPT, which suggested:

... Operations support included maintenance, network performance, network testing and network conditioning.²⁴

To consider what action, if any, might be appropriate in the declaration context, the Commission sought to develop a description of OSS which sets out particular activities that would take place where access seekers obtain access to OSS. These activities can be grouped into four main features that would be relevant to most declared services.

- Pre-ordering. This involves access to customer information stored on the access provider's databases (e.g. information on service features, ability to retain telephone number on relocation, end-user information necessary for transferring the service from one provider to another). It also involves access to line information (e.g. where the line terminates, whether it can support xDSL technology).
- Ordering and provisioning. This involves the raising and lodgment of service orders, as well as the ability to check on the progress and fulfilment of orders.
- Fault handling. This involves the lodgment of fault notifications and the scheduling of appointment times, where required. It would also involve the ability to check on the progress, diagnosis and rectification of faults.
- Billing. This includes the provision of call event information, recurring charges and once off charges.

3.8.2. OSS and service descriptions

These features appear to involve both the provision of information by access providers to access seekers, and the manner in which communication between access providers and access seekers occurs. For example, access seekers are likely to want electronic systems for these arrangements.

In the Commission's view these are matters that are more concerned with the manner in which an access provider complies with the standard access obligations, rather than with the nature of the service. In this regard the Commission notes that relevant standard access obligations include the obligation to (upon request):

- supply the declared service (in order that an access seeker can provide carriage and/or content services) — paragraph 152AR(3)(a);

23 Cable & Wireless Optus — Response to Technical Advice Paper, p. 23.

24 AAPT — Response to Technical Advice Paper, p. 6.

- provide minimum service levels in relation to the technical and operational quality of the declared service supplied to access seekers — paragraph 152AR(3)(b);
- provide minimum levels of service in relation to fault detection, handling and rectification - paragraph 152AR(3)(c); and
- give billing information to access seekers — subs. 152AR(6).

While there can be a ‘grey area’ between describing a service and the terms and conditions upon which the service is supplied, the Commission’s preference is to treat OSS issues as a matter more appropriately addressed through the terms and conditions of supply. These arrangements can be developed bilaterally or as part of an industry-wide approach rather than through inclusion within the description of the service to be declared. Moreover, if an access provider and access seeker are unable to agree on the arrangements, subs. 152CP(2) of the Act provides that in arbitrating a dispute about access to a declared service, the Commission can make a determination about ‘any matter relating to access’ by the access seeker to the declared service.

In light of these considerations the Commission has not included reference to OSS in the description of the services that it proposes to declare. However, if this proves to be an inadequate way of handling these issues, the Commission will consider whether particular declarations should be varied, or other measures undertaken to ensure appropriate levels of OSS access.

4. Markets

In considering how declaration of particular eligible services might promote the long-term interests of end-users, the Commission must consider whether declaration is likely to promote competition in markets for particular services; namely, markets for carriage services and services supplied by means of carriage services.

Declaration of an eligible service is likely to promote competition where the following conditions are present.²⁵

- the eligible service is an input that is used, or could be used, for the supply of carriage services or services provided by means of carriage services (often referred to as ‘downstream services’); and
- competition in the market for the supply of the eligible service is unlikely to be effective in the future and this is likely to have a detrimental impact on competition in markets for downstream services.

Where competition in the market for the supply of the eligible service is already effective (and is likely to remain effective), then declaration of the eligible service is unlikely to lead to any significant changes in quantity, price and other terms and conditions of the supply of the eligible service. On the other hand, if competition in the market for the supply of the eligible service is ineffective (and is likely to remain ineffective), then declaration of the eligible service could lead to changes in the quantity, price and other terms and conditions of the supply of the eligible service. This in turn could lead to increased competition in markets for downstream services. For instance, where the eligible service was not supplied, or was available only at a very high price, declaration could lead to improved access to the eligible service and enable more efficient competitors to enter the downstream markets, and thereby promote competition in those markets.

The Act directs the Commission’s attention to the market(s) in which competition may be promoted. In most cases this is likely to be the market(s) for downstream services rather than the market in which the eligible service is supplied (where these markets are separate). That said, the Act does not prohibit the Commission considering conditions affecting supply of the eligible service where this will assist in examining the likely impact of declaration on competition in the relevant (e.g. downstream) markets.

Accordingly, in this inquiry, the Commission sought to identify the markets in which competition may be promoted as a result of declaration of the eligible services under consideration. With a view to understanding the likely impact of declaration on competition in these markets, the Commission also examined features affecting competition for supply of the eligible services.

25 In saying this, the Commission is not intending to limit the situations in which declaration is likely to promote competition but rather, to provide an example of situations in which declaration would be expected to promote competition.

4.1. Market definition principles

Identification of the relevant markets provides the Commission with a field within which it can meaningfully analyse the effectiveness of competition with and without declaration.

Markets involve four dimensions: product, geography, function and time. The process of market definition involves identifying the sellers and buyers which effectively constrain the price and output decisions of firms supplying the service(s) under consideration.

To begin the market definition process it is necessary to identify the service under consideration and the firm(s) supplying that service. For instance, if the Commission wanted to identify the market in which the eligible service is (or would be) supplied, the market definition process would start with the access provider and its supply of the eligible service. If, instead, the Commission wanted to identify the downstream markets in which declaration may promote competition, the market definition process would start with access seekers and the downstream services that they would supply using the eligible service.

Once the relevant service and source(s) of supply have been identified, they are then described in terms of the product, geographic and functional area of supply. The market boundaries are then extended to include all other sources and potential sources of close substitutes with which the firm supplying the service would compete. In terms of s. 4E of the Act:

... “market” means a market in Australia and, when used in relation to any goods or services, includes a market for those goods or services and other goods or services that are substitutable for, or otherwise competitive with, the first-mentioned goods or services.

As noted by the High Court:

... This process of defining a market by substitution involves both including products which compete with the defendant’s and excluding those which because of differentiating characteristics do not compete.²⁶

To identify services that are ‘substitutable for, or otherwise competitive with’ the services under consideration, the Commission uses the ‘price elevation test’. The resulting market is the smallest area over which a profit maximising monopolist could impose a small but significant and non-transitory price increase. In addition, the Commission takes account of ‘commercial reality’ to ensure that the market which it identifies accurately reflects the arena of competition.²⁷

The availability of close substitutes (on both the demand and supply sides) constrains the ability of suppliers to profitably divert prices or quality of service from competitive levels. Generally, a greater range of substitutes points to a broader market in which

26 *Queensland Wire Industries Pty Ltd v. BHP Ltd* (1989) ATPR ¶40-925, p. 50, 008 per Mason CJ and Wilson J.

27 See, for instance, paragraphs 5.49 and 5.66 of the merger guidelines, 1999.

individual participants have less power, and consequently competition is more effective.

In identifying relevant markets, Part XIC of the Act does not require the Commission to take a definitive stance on market definition. Furthermore, over time, declaration itself might affect the dimensions of these markets, particularly in relation to the functional dimension. Accordingly, market analysis under Part XIC should be seen in the context of shedding light on how declaration would promote competition rather than in the context of developing 'all purpose' market definitions.

4.2. The eligible services and downstream services

4.2.1. The unconditioned local loop service

The unconditioned local loop service involves the use of unconditioned copper pairs between the network boundary at an end-users' premises and a point (at a customer access module) at which the copper terminates. This point might be at a main distribution frame inside a telephone exchange building or inside equipment housing (e.g. street-based furniture) closer to the end-user.

Telstra does not supply this service to other firms but would be the predominant supplier of this service by virtue of its ownership of its copper customer access network which is located throughout Australia. While new networks are being rolled out in particular areas, they tend to involve the use of different transmission media, namely optical fibre, coaxial cable, and wireless technology.

Information received by the Commission indicates the unconditioned local loop service will be used by access seekers as a component for the supply of high bandwidth end-to-end services for the carriage of voice or data communications or both. They propose to attach electronic equipment to the line (e.g. HDSL or ADSL modems) in order to supply these services to end-users. Access seekers advise the Commission that they would also use the unconditioned local loop service to supply telephony services either with, or independently of, an xDSL service such as ADSL.

One example of how such a service could be provided involves co-location of the access seeker's equipment with Telstra's customer access module. This would involve establishing a connection (i.e. a 'jumper') between the point at which the copper cable is terminated (i.e. the main distribution frame) and the service provider's 'card' in the co-located facility. The card contains a number of ports (e.g. 12 or 24 ports — one for each copper pair) and provides the electronic circuitry for the relevant carriage technology (e.g. HDSL). The service provider would run or lease a transmission link from the card (co-located facility) to its own exchange. Diagram 4.1. illustrates how this process would work.

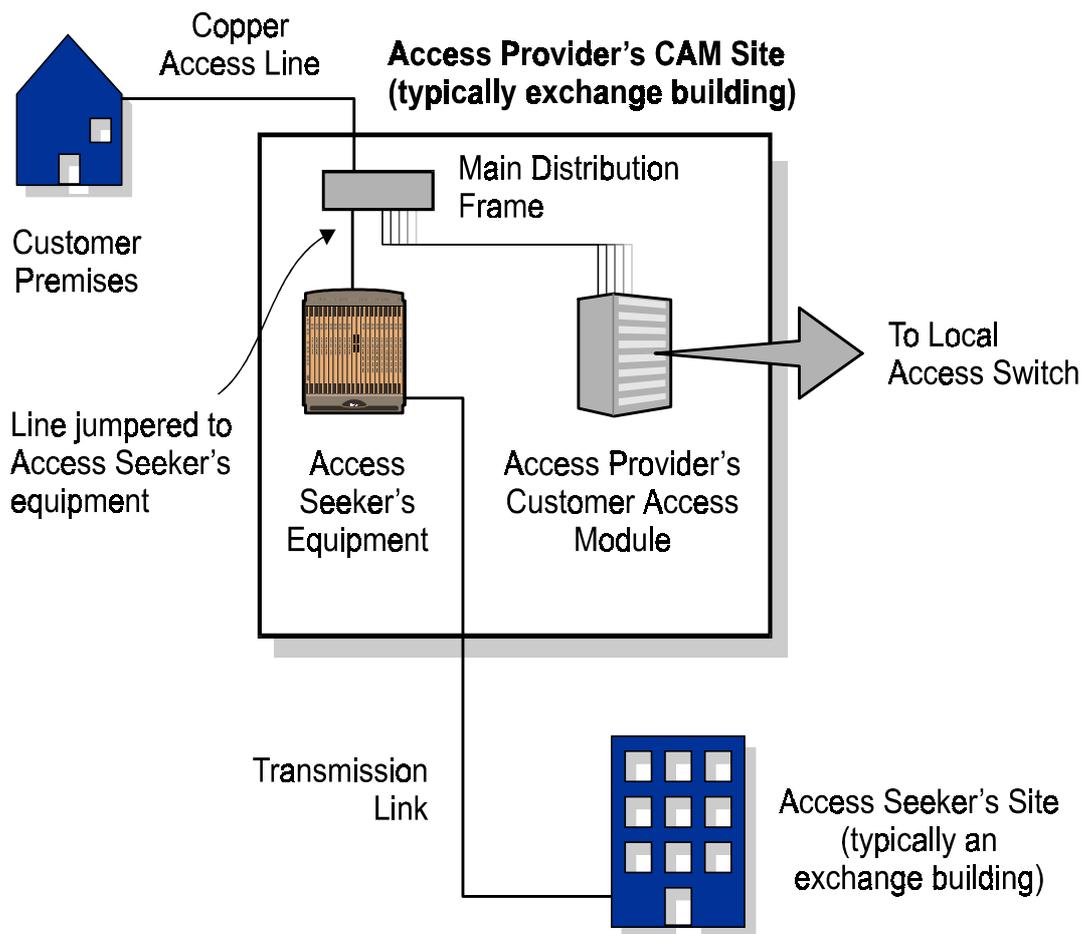


Diagram 4.1. Use of the unconditioned local loop service (source: AdvaTel)

4.2.2. The local PSTN originating and terminating services

The local PSTN originating and terminating services involve the carriage of communications between equipment at the customer's premises and the access provider's local switch, along with switching provided by means of the local switch. The access seeker interconnects at the trunk side of the switch and runs or leases a transmission link to its own exchange. Diagram 4.2. illustrates how this process works.

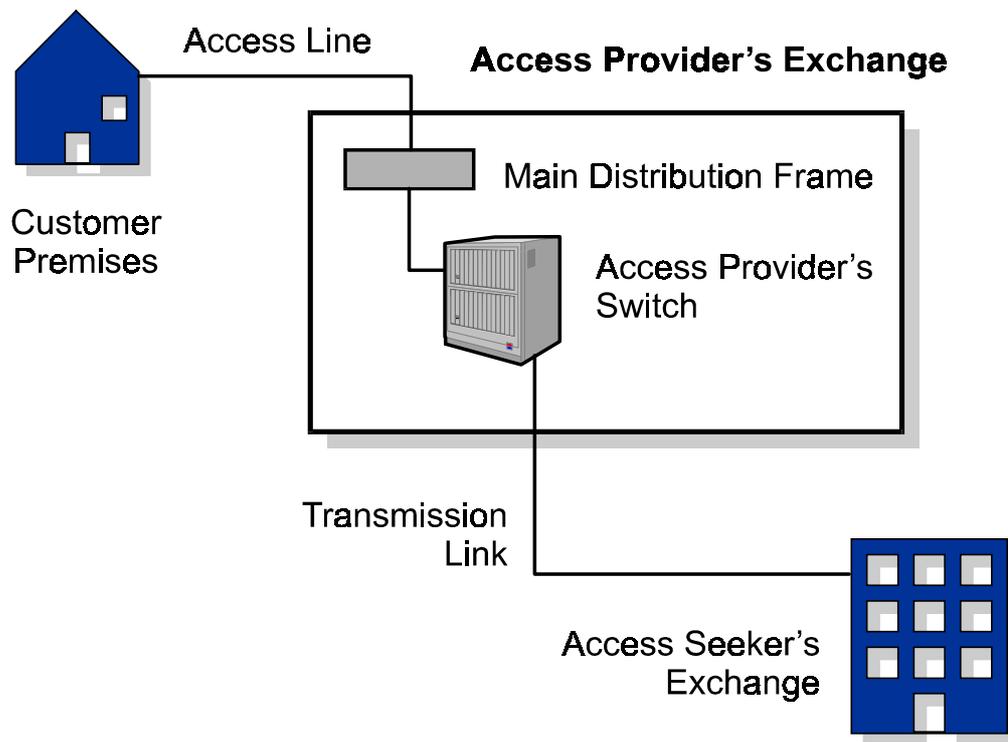


Diagram 4.2. Use of the local PSTN originating or terminating service
(source: AdvaTel)

The potential suppliers of the local PSTN originating and terminating services include Telstra and Cable & Wireless Optus. Telstra currently allows interconnection at a limited number of exchanges containing local switches (i.e. LASs).

Information received by the Commission indicates that these services would be used by access seekers to provide end-to-end voice bandwidth services (i.e. both local telephony services and long distance telephony services) to end-users.

4.2.3. The local carriage service

The local carriage service involves the supply of a voice bandwidth carriage service end-to-end between two points within a local call area. Telstra currently supplies a similar service to other service providers under commercial arrangements; although, other carriers with end-users directly connected to their networks could be potential suppliers of this service. Information received by the Commission indicates that this service will be used by access seekers to supply local telephone calls to end-users.

4.3. Relationship between the eligible services

As shown in Diagram 4.3. each of the eligible services under consideration have common components.

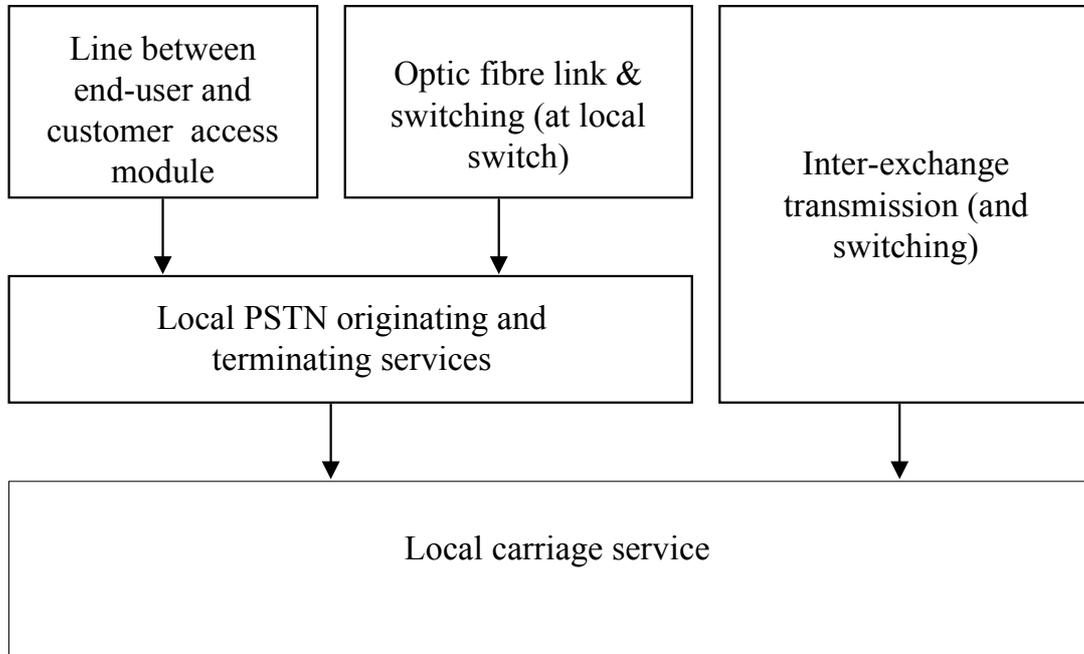


Diagram 4.3. Components of a local carriage service

For the majority of end-users (i.e. about 98–99 per cent), the line to the customer access module will include twisted copper pair wires. In most instances the copper wire runs all the way to the building in which the switch was located under the previous network design; but increasingly, the copper wire will run to a point closer to the end-user. Nevertheless, at present, information from Telstra suggests that around 85 per cent of connections to end-users involve the use of twisted copper pairs from the end-user to the former exchange building (at which customer access module equipment — either an RSS or an RSU — will now be situated).

The unconditioned local loop service is a service for the use of twisted copper pair lines between the end-user and a customer access module. From Diagram 4.3. it can be seen that, except for those instances in which a medium other than copper is used for this line (about 1–2 per cent), the unconditioned local loop service is both an eligible service in its own right and a component of local PSTN originating and terminating services as well as the local carriage service. Accordingly, the features affecting competition for supply of the unconditioned local loop service are likely to also affect competition for the supply of local PSTN originating and terminating services and the local carriage service.

4.4. Which markets are relevant?

Each of the eligible services is used, or could be used, as an input for the supply of downstream services to end-users, namely:

- the unconditioned local loop service could be used for high bandwidth carriage services and/or telephony services;
- the local PSTN originating and terminating services could be used for long distance and/or local telephony services;
- the local carriage services could be used for local telephony services.

Section 152AB of the Act specifically directs the Commission's attention to the markets in which declaration may promote competition. Accordingly, to consider whether declaration of each service would be likely to promote competition, the Commission sought to identify the markets in which the downstream local and long distance telephony services and high bandwidth carriage services would be supplied.

To assist in the analytical process the Commission also sought to identify features affecting competition for the eligible services under consideration. In this regard it focused on the market in which the unconditioned local loop service would be supplied. As noted above, the features affecting competition in this market are likely to also have a direct bearing on competition for supply of the local PSTN originating and terminating services and the local carriage service.

4.5. Delineating relevant market boundaries

4.5.1. Supply of the unconditioned local loop service

While Telstra does not currently supply this service to other firms, information received by the Commission indicates that there is demand from access seekers for such a service in central business district, inner city and suburban areas, and in regional (or country) towns. The service is an input or wholesale service which access seekers would combine with other inputs to form carriage services supplied to end-users (and possibly other service providers).

The fact that this service is not currently supplied to third parties is no objection to the existence of such a market. As stated by Deane J in *Queensland Wire*:

... A market will continue to exist even though dealings in it be temporarily dormant or suspended. Indeed, for the purposes of the Act, a market may exist for particular existing goods at a particular level if there exists a demand for (and the potential for competition between traders in) such goods at that level, notwithstanding that there is no supplier of, nor trade in, those goods at a given time - because, for example, one party is unwilling to enter any transaction at the price or on the conditions set by the other...²⁸

28 op cit., p. 50,013.

Also in that case, Dawson J stated:

... It must be sufficient to constitute a market that there is a product for exchange, regardless of whether exchange or negotiation for exchange has actually taken place...²⁹

Functional dimension and the costs of unbundling

The Commission considered whether the market in which the (input) unconditioned local loop services would be supplied should encompass subsequent stages of production. In this regard it was submitted that there are high transaction costs involved in separating stages of production. Accordingly, it was submitted, the Commission should not include the unconditioned local loop service in a market for inputs required to supply high bandwidth carriage services. As a result there would be no separate wholesale market for access to copper pairs.

Where there are overwhelming efficiencies of vertical integration between two (or more) stages, it is inappropriate to separate them for the purposes of market definition. In such a situation, market coordination between buyers and sellers would be superseded by in-house coordination.³⁰

In some cases the vertical structure of an industry will be indicative of the relative efficiency of market coordination vis-a-vis intra-firm coordination. However, for recently deregulated industries, where the industry has traditionally been organised as a vertically integrated government-owned monopoly, it is difficult to draw conclusions about the efficiency of such a structure or its future sustainability.

The development of competition since deregulation in July 1997 suggests that entry is likely to occur at several levels by both integrated and non-integrated service providers. For instance:

- In order to terminate calls made to end-users connected to other networks, service providers (e.g. Telstra) acquire particular carriage services, namely terminating services, from other service providers (e.g Cable & Wireless Optus).
- Service providers operating long distance transmission networks purchase originating and terminating services from Telstra in order to form end-to-end carriage services that are supplied as wholesale services to service providers or as retail services to end-users.
- Some service providers focus on performing retail activities (e.g. Macquarie Corporate Telecommunications and RSLCom) by purchasing wholesale call services from carriers. In this regard Telstra supplies wholesale local and long distance call services and Cable & Wireless Optus supplies wholesale long-distance services.

The development of technology which enables copper lines (that were previously limited to voice bandwidth services) to carry communications at much faster speeds, coupled with new bandwidth intensive applications, has created demand for an

29 *ibid.*, p. 50,015.

30 Brunt M, 'Market Definition' Issues in Australian and New Zealand Trade Practices Litigation, (1990) 18 ABLR 86.

unbundled service where none previously existed. While there are transactions costs involved in supplying the unconditioned local loop service to other firms, the Commission was not convinced that these costs are likely to be so high as to result in overwhelming efficiencies of vertical integration.

The Commission notes that Telstra currently supplies a service with similar functional characteristics to the unconditioned local loop service to both service providers and end-users — permitted attachment private lines (PAPLs), suggesting that the costs of unbundling are relatively modest. Also, Telstra has recently announced that in August 1999 it will launch a service that will allow service providers to supply high bandwidth carriage services using their own equipment, subject to Telstra's approval.

Telstra provided estimates of these costs to the Commission; however, because the information was confidential in nature, the Commission was not able to test the magnitude of the costs. That said, the fact that many service providers wish to acquire the unconditioned local loop service to combine with their own carriage technology and switching suggests that they will be able to compete effectively with more integrated suppliers such as Telstra.

In addition, the Commission is cognisant of the words of Mason CJ and Wilson J in *Queensland Wire* where they said:

... if the defendant is vertically integrated, the relevant market for determining degree of market power will be at the product level which is the source of that power...³¹

The Commission also considered whether functionally adjacent stages of production³² nevertheless should be included in order to capture the relevant arena of competition. This may be appropriate where substitutional possibilities at the adjacent functional level would constrain Telstra's behaviour in supplying the unconditioned local loop service. For instance, if substitutable services at the adjacent functional level are supplied by means of inputs other than the unconditioned local loop service, then it may be appropriate to expand the market to include those services.

While some service providers such as Cable & Wireless Optus do use different inputs (e.g. HFC transmission media) to supply services (at adjacent, and subsequent, functional levels) which are substitutable for services supplied by means of the unconditioned local loop service, this is very limited. Accordingly, the pricing of services using these inputs is unlikely to generally constrain supply behaviour in respect of the unconditioned local loop service. By and large the unconditioned local loop service is a component of most services supplied at functionally adjacent and subsequent levels. In light of these considerations the Commission did not include

31 op cit., p. 50,008.

32 A 'functionally adjacent' stage of production is represented by the product that is produced/ supplied at the next functional level. For instance, in the case of the unconditioned local loop service, a functionally adjacent stage of production might include the local PSTN originating service which consists of the unconditioned local loop service plus switching services. It is to be distinguished from subsequent stages of production which, using the same example, might include retail long distance telephony calls supplied to end-users; retail long distance telephone calls could be seen as consisting of the local PSTN originating service plus long distance transmission and termination.

functionally adjacent and subsequent stages of production within the market in which the unconditioned local loop service would be supplied.

Substitutes

The next step for the Commission was to consider those services which access seekers would regard as substitutable for the unconditioned local loop service. In this regard the Commission considered other ‘fixed’ customer access technologies, notably optical fibre, hybrid fibre coaxial cable (HFC), as well as wireless technologies.

The Commission was urged to regard optical fibre connections as a substitute for copper lines. For instance, Level 3 Communications Inc. stated:

Level 3 disagrees with the Commission's conclusion that fiber optic connections (which necessarily include conditioning technology) are not a close substitute for copper connections... Although fiber optic cable cannot carry xDSL services, it can (as noted herein) carry extremely high bandwidth services, depending on the type of channel units utilized. Indeed, fiber optic cable has virtually unlimited bandwidth capacity.³³

The Commission notes that, in terms of fixed network architecture, optical fibre is increasingly used in preference to copper. With new networks optical fibre is used (sometimes combined with coaxial cable) for customer connections, and in existing networks copper is being replaced with optical fibre. It is noted, however, that around 80—85 per cent of customer connections to the former exchange building are still copper based.

Telstra suggested that there are a range of already declared services available which can ‘more than provide’ the functionality of the unconditioned local loop service and thus should be regarded as substitutes, namely:

- the Domestic PSTN Originating and Terminating Access Services;
- the Conditioned Local Loop Service;
- the Integrated Services Digital Network Originating and Terminating Services;
- the Digital Data Access Service; and
- the Transmission Service.³⁴

Each of these services involves the combination of other inputs (e.g. electronic equipment) with a particular transmission medium (e.g. copper wire, optical fibre or wireless) to form services that would be supplied at adjacent and subsequent functional stages of production. Accordingly they are unlikely to be regarded as close substitutes by most access seekers who want the unconditioned local loop service because of its unbundled properties. As noted above the Commission did not consider it appropriate to include functionally adjacent stages of production in this market.

It is, however, important to ensure that the roll out of alternative customer access infrastructure that can be used for substitutable services is not overlooked for the purposes of competition analysis. Accordingly, the Commission included intra-firm

33 Level 3 Communications Inc. — Response to Draft Report, p. 3.

34 Telstra — Response to Discussion Paper (submission 1), pp. 36–37.

transactions using fixed networks within the market to ensure that the relevant arena of competition was captured. In terms of wireless customer access networks, the Commission only included those networks that could be used for substitutable downstream services. Thus, it included transactions for services that could be supplied by means of LMDS technology. It did not, however, include transactions using current mobile networks.

The Commission also noted that substitutable services may, in the future, be provided by means of satellite technology. For example, Telstra (together with the SkyBridge Limited Partnership) is considering the deployment of broadband satellite services from the year 2002. It is, however, expected that the use of satellite services will be limited to rural and remote areas. The extent to which satellite customer access technology is likely to be competitive with fixed copper lines is unclear.

Geographic dimension

The demand for the unconditioned local loop service in central business districts, inner city and suburban areas, and in regional (country) town locations suggests that the market should be treated as a national market. On the other hand, the roll out of additional customer access infrastructure by new entrants and existing players in particular locations (notably central business district areas) suggests that the features affecting competition in these locations are different from those in other areas. There is a risk that these features may be overlooked if the market were treated as national. The Commission did not, however, consider the extent of roll out to be of sufficient scale to warrant the identification of separate geographic markets at this stage. That said, this dimension of the market may change in the future.

Temporal dimension

This market is concerned with the supply of services using twisted copper pairs. Its existence is largely due to a combination of legacy technology (where copper wire was the predominant medium used for telephony services) and technological developments which enable higher bandwidth to be extracted from the copper network than previously thought possible. While future developments, including the replacement of copper wires with alternative transmission media, may change the dimensions of this market, these changes are likely to take a considerable period of time, particularly for customer access infrastructure serving residential and small business end-users.

The Commission has not included the full range of wireless customer access services in this market, although it does note that future developments may lead to a greater 'convergence' of fixed and wireless markets. These developments include increasing substitution between fixed services and second generation (i.e. GSM and CDMA) mobile services, and the development of third generation (i.e. UMTS) mobile services. In light of uncertainty regarding the timing and extent of any convergence, the Commission preferred to treat most wireless services as being outside the scope of this market.

Conclusion

The information received during this inquiry suggests there is a national market for the supply of fixed customer access services (predominantly by Telstra) to service

providers. Wireless customer access services supplied by means of LMDS technology are also in this market. Inter-firm activity in this market (i.e. transactions between firms) is largely dormant, but there is the potential for transactions involving the supply of the unconditioned local loop service to service providers.

4.5.2. Supply of fixed telephony services

Telephony services are used for the carriage of both voice and data (e.g. Internet traffic) communications on a dial-up basis. In Australia the supply of these services from fixed phones involves distinctions between local calls and long distance calls. Local calls are calls where both the calling and called party are located in the same zone;³⁵ all other calls are long distance calls.

The Commission understands that access seekers would use the local PSTN originating and terminating services to supply long distance telephone calls. They may also use these services to supply local telephone calls, although a pre-selection determination of the Australian Communications Authority may be necessary for the service to be fully exploited in this way.³⁶ The local carriage service would be used by access seekers to supply local telephone calls to end-users generally as part of a bundle of local and long distance telephony services.

Fixed local telephony services are currently supplied to end-users by carriers, for example Telstra and Cable & Wireless Optus, and by service providers re-supplying Telstra's local call services. Fixed long distance telephony services are supplied to end-users by several carriers including Telstra, Cable & Wireless Optus and AAPT, and also by service providers re-supplying long distance call services.

Service providers currently re-supplying fixed local and long distance telephony services to end-users include Cable & Wireless Optus, AAPT, Macquarie Corporate Telecommunications, Switch Telecommunications, PowerTel Limited, RSLCom and Primus Telecommunications (Australasia) Pty Ltd. These service providers undertake the retail dimensions of call services, i.e. marketing, customer care, billing and so on. Some service providers focus on operating at the retail level, while others re-supply call services in order to achieve national coverage together with their own network (e.g. Cable & Wireless Optus) or as part of a business strategy leading to the roll out of their own infrastructure.

Local calls v long distance calls

In defining the relevant markets for telephony services the Commission considers it unhelpful to examine demand side substitution by asking whether one call (e.g. a local call to a particular end-user) is substitutable for another call (e.g. a long distance call to a different end-user). Such calls would be quite different services that are unlikely to be substitutable from a functional perspective.

Rather, demand side substitution would seem to be best assessed from the perspective of alternatives available to make certain types of calls. For instance, if an end-user did

35 Refer to definition on standard zone in section 3.6.

36 For a more detailed discussion of this point, see section 7.1.1.

not want to purchase local call services from Telstra, what alternatives would be available in order to make local calls? Accordingly, in order to assess the range of demand side substitutes the Commission sought to identify the particular bundles or 'clusters' of services typically purchased by end-users.

It may be appropriate to define markets by reference to a cluster of services, being a bundle of related services, in cases where the costs of unbundling mean that suppliers of the component services are unable to defeat a small but non-transitory price increase by a hypothetical monopolist supplying the whole bundle of services. These unbundling costs could be costs incurred directly by the purchaser (e.g. additional transactions costs) or additional costs incurred by suppliers of single services (e.g. economies of scope) which are then reflected in the relative prices of the bundled and unbundled services. These unbundling costs, like other determinants of the relevant market, may change over time.

For example, when the Commission considered the Westpac/Challenge merger in 1995, it took the view that there was a cluster market for banking services. The subsequent development of effective competition from single product suppliers resulted in a different approach in 1997 when the Commission considered the Westpac/Bank of Melbourne merger. In that case a number of separate product markets were identified for home loans, personal loans, transaction accounts and credit cards, but a smaller 'cluster' market for small business banking services was identified, based on the credit risk and information advantages of supplying a full range of services to small businesses.

Currently all local call services are supplied to each end-user by a single service provider, along with line rental (i.e. the access line). That is, end-users are billed for line rental by the supplier of their local call services. The bundling of line rental by service providers suggests that both local calls and line rental should be considered as a cluster of services from the perspective of end-users.

In considering whether long distance calls (national and international) are part of the same market, the Commission notes that many end-users purchase long distance calls from a different service provider to the one that provides their local telephony services.

There does, nevertheless, appear to be a significant proportion of end-users that prefer to purchase national long distance and international calls from the local telephony services provider. By dealing with a single supplier, end-users receive 'one bill' for both their local and long distance telephony requirements and have a single point of contact for service inquiries. Many end-users see this as being more convenient and, for some businesses, one bill facilitates more effective cost management. Also, this is the form in which end-users have traditionally received these services.

Despite this preference for one supplier of local and long distance telephony services for a significant proportion of end-users, the Commission does not regard these services as forming a single bundle or cluster of services. Rather, the Commission considers these services to be in separate markets. With pre-selection and over-ride dial codes for long distance services, end-users can shop around for long-distance offers and choose a service provider for the supply of all long distance calls or for particular long distance calls on a call-by-call basis.

Accordingly, rather than combining both fixed local and long distance telephony services into a single market, the Commission considers that long distance calls are supplied in a separate market. In order to take account of the different purchasing behaviour of end-users for whom 'one bill' is particularly important, these end-users are characterised as a 'one-bill' sub-market or segment within the long distance market.

Whether the supply of national long distance and international calls should be seen as occurring within the same market was not a matter on which the Commission received submissions during the course of the inquiry. With current pre-selection arrangements end-users must choose a single service provider for both national long distance and international calls (known as 'single basket pre-selection'). Over-ride dial codes do, however, enable end-users to use different service providers for national and international long distance calls on a call-by-call basis. On balance, for the purposes of examining the impact declaration is likely to have on competition, the Commission did not believe it necessary to form a definitive view. It decided to treat national long distance and international calls as being supplied in the same market.

Business v residential customers

It was suggested during the course of the inquiry that the supply of long distance telephony services should be seen as occurring in separate markets based on the types of customers being supplied with the services. That is, there are separate markets for residential and business end-users.

Information received by the Commission indicates that suppliers consider there to be different demand characteristics for residential and business customers. In particular it was suggested that residential customers are generally more price sensitive than business customers. For example, residential customers tend to take advantage of pricing deals by using over-ride dial codes and purchase calls on a call-by-call basis, whereas business customers tend to make purchasing decisions at the time of entering into a contract with a supplier and tend to take all long distance services from that supplier. It was suggested that, therefore, suppliers have different pricing strategies for residential and business customers.

It was noted that the traffic profiles for residential and business customers are different. The majority of long distance calls by business end-users are made during business hours, while the majority of long distance calls by residential end-users are made outside business hours.

It was also suggested that high quality billing and account management procedures are significant considerations for business customers and that service providers respond to this in their marketing and supply procedures. Billing procedures for residential customers, on the other hand, can take the form of simple correspondence. Furthermore, it was claimed that business customers prefer to purchase long distance services and other telecommunications services from the single supplier, while residential customers are more likely to purchase long distance services and local call service from different suppliers.

The above factors suggest that there may be separate residential and business markets for long distance services. Alternatively, these customers could be seen as separate segments of the same market. The Commission is of the view that, for the purposes of

the inquiry, it is not necessary to take a definitive position on this issue. It decided to treat residential and business customers as segments of the long distance telephony services market.

Substitutes — wireless services?

The Commission considered whether mobile or other wireless services were substitutes for fixed telephony services. Traditionally it has been considered that end-users are generally unlikely to regard mobile telephony services as substitutes for either fixed local calls or long distance calls due to the price differences between mobile and fixed services. During the course of the inquiry it was suggested that substitution between mobile services and fixed services is increasing. It was also suggested that the pricing of mobile services has been converging with that of fixed services and that further convergence is likely to occur.

It was noted that developments of new ‘multipurpose’ products which combine the characteristics of both fixed and mobile phones are likely to result in increasing substitution between mobile and fixed telephony services. For example, Hutchison Telecommunications (Australia) Pty Ltd proposes to introduce a product which operates like a mobile handset, but can be used for local calls when used within the customer’s registered local area.³⁷

The Commission is of the view that, although substitution possibilities between fixed and mobile services are increasing, it does not appear that mobile telephony services should be included within markets for fixed services at this stage. They are unlikely to constrain the pricing of fixed local and long distance telephony services to such an extent that mobile services ought to be included in the same markets as fixed services. This may change in the future but if and when is presently unclear.

Telephony services can also be provided over wireless local loop (WLL) networks. WLL services can be provided using a variety of technologies, and can be used for a range voice and data services. For example, Bass Coast Shire Council is establishing the Bass Coast Network, which will provide radio-based local telephony and data

services connected with microwave links.³⁸ To date, however, there has been limited deployment of WLL networks in Australia. The services may constrain the pricing of fixed services within the area of deployment, suggesting they should be included within the market. The limited area of deployment does, however, suggest that the competitive significance of these services is likely to be limited, at least for the foreseeable future.

Hence, for the foreseeable future, end-users are likely to view substitutes for fixed local calls from one service provider (e.g. Telstra) as being limited to fixed local calls from another service provider (e.g. Cable & Wireless Optus). Similarly, end-users are likely

37 Address to NOW99 by Barry Roberts-Thomson, 19 May 1999.

38 The Bass Coast Council, with assistance from the Department of Communications, Information Technology and the Arts, plans to construct a broadband digital wireless network to provide radio-based local telephony and data services to residential and business customers. Communities in this region will benefit from free local calls between subscribers, cheaper calls outside the STD zone and improved speed for Internet access.

to view substitutes for fixed long distance calls from one service provider (e.g. Cable & Wireless Optus) as being limited to fixed long distance calls from another service provider (e.g. AAPT). Within particular locations other substitutes may exist (such as the WLL services deployed by the Bass Coast Shire Council).

Geographic dimension of local and long distance markets

Substitutability tests tend to be of limited use when delineating the geographical dimension of telecommunications markets. A local call made in Perth, for instance, is unlikely to be substitutable for one made in Melbourne. Accordingly, in delineating the geographic dimension of telecommunications markets, the Commission looks to factors such as the area over which major suppliers operate to ensure that it describes the relevant arena of competition.

The Telstra fixed public switched telephone network extends nation-wide and it uses this network to supply services to end-users. The networks of Telstra's major competitors (Cable & Wireless Optus and AAPT) are also located in various parts of Australia. They use these networks and inputs purchased from other carriers to supply services to end-users nationally.

Moreover, both local and long distance telephony services supplied by Telstra, Cable & Wireless Optus and AAPT tend to be priced on a national basis, rather than on a regional or State basis. In general, the prices of these services do not differ according to the location of the customer acquiring the services; i.e. a call from Perth to Melbourne is generally priced according to the same pricing structure as a call from Melbourne to Brisbane. Similarly, Telstra's charges for local calls made in Perth are in general the same as its prices for local calls made in Melbourne.

Additionally, local telephony services are subject to price parity regulation. This regulation provides that the average price Telstra can charge residential/charity customers in non-metropolitan areas for untimed local calls must not exceed the average price charged to residential/charity customers in metropolitan areas for untimed local calls in the previous year. Similar rules apply in respect of local calls supplied by Telstra to business customers.³⁹

That said, within particular cities there may be pricing variations for particular customers. For instance, the Commission understands that high volume customers such as large corporates and government users are more likely to be able to negotiate non-standard call prices, whereas residential end-users in suburban areas tend to be offered only standard prices. In the main, these corporate and government end-users are likely to be concentrated within central business districts.

Accordingly, the Commission considered whether these differences should lead to geographically distinct markets in order to capture the relevant competitive constraints within those areas. In the Commission's view, the identification of business and residential segments within the local and long distance markets adequately captures any competitive differences and, accordingly, it is not necessary to delineate separate geographic markets.

39 Telstra Carrier Charges — Price Control Arrangements, Notification and Disallowance Determination No.1 of 1999, made pursuant to the *Telstra Corporation Act 1991*.

Functional dimension — local telephony service market

The fixed local telephony services market involves the supply of local call and line rental services by service providers to end-users. Telstra is a fully vertically integrated service provider, whereas other service providers tend to be less integrated or only operate at the retail level. In examining the impact of declaration on competition the Commission's inquiries were concerned with the supply of services to end-users and, accordingly, the Commission did not form a view as to whether wholesale transactions would occur within this market.

Functional dimension — fixed long distance telephony services market

The fixed long distance telephony services market involves the supply of long distance telephony services by service providers to end-users. Although Telstra is a fully vertically integrated supplier, the market is also characterised by partially integrated and non-integrated service providers. Some service providers focus on performing retail activities (e.g. Macquarie Corporate Telecommunications and RSLCom) by purchasing wholesale long distance services from carriers. As with the local telephony services market, in examining the impact of declaration on competition, the Commission's inquiries concerned with the supply of services to end-users and, accordingly, the Commission did not form a view as to whether wholesale transactions would occur within this market.

4.5.3. Supply of high bandwidth carriage services

The Commission understands that the unconditioned local loop service will be used by access seekers as an input to supply carriage services with bandwidth at around, and exceeding, 1.5 to 2 Mbits per second to end-users. These services are generally referred to as high bandwidth carriage services, high speed data services or 'advanced' carriage services. They are carriage services as distinct from the content services which they can be used to carry (e.g. Internet applications such as the World Wide Web).

An important feature of these services is that they are 'open' 24 hours a day. This is to be distinguished from 'dial up' services which are only provided for the duration of the call.

Currently the main feature affecting the supply of high bandwidth carriage services to end-users is the transmission medium used in customer access networks (often referred to as the 'last mile'). As explained by the US Federal Communications Commission:

... No matter how fast the rest of the network is, a slow last mile can deny the promise of advanced telecommunications capability...⁴⁰

Accordingly, these services are sometimes described by reference to the medium or technology used to supply the service.

40 Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Notice of Inquiry, 6 August 1998, paragraph 3.

The unconditioned local loop service would be used to supply high bandwidth carriage services by means of xDSL technology. The term ‘xDSL technology’ refers to the type of electronic equipment attached to each end of the copper line. There are a number of xDSL technologies, each with different characteristics. HDSL and ADSL were suggested to the Commission as the main types that would be provided using the unconditioned local loop service in the foreseeable future.

HDSL is a relatively mature technology which enables copper pairs to carry communications at speeds of approximately 2 Mbits per second in both directions.⁴¹

ADSL, on the other hand, is a relatively new technology which enables copper pairs to carry communications at up to 8 Mbits per second downstream (i.e. to the end-user) and at slower speeds upstream. It is currently being deployed in the United States and Canada where it is being promoted for use by large corporations, small businesses and residential users.⁴² Telstra is trialing a version of ADSL in Australia. It is particularly well suited for Internet access or for the supply of broadcast services such as video (or virtual video) on demand. It can also be used for carriage of both data and voice communications simultaneously by adding a ‘splitter’ to the line, which essentially separates voice communications from data communications.

To consider how declaration might promote competition, the Commission sought to identify the market(s) in which these high bandwidth services would be supplied. This process commences by identifying the range of substitutes.

In terms of service substitutability, there appear to be three key dimensions:

- bandwidth — this affects the speed at which communications are carried and/or the number of channels that can be derived from a line;
- bit error rate — this is the incidence of errors occurring on the line;
- downtime — this is the guaranteed response time for fixing faults with the line.

High bandwidth carriage services using ADSL

Given that services using ADSL technology have not been deployed in Australia to date, it was difficult to be definitive about the range of substitutes. Information provided to the Commission by both carriers and equipment manufacturers, and overseas experience, indicates that access seekers would target such services at residential customers (although there will be some scope for business applications) in inner city, suburban and regional (country) town locations.⁴³

41 The actual bandwidth depends on factors such as length of the copper line and the level of interference from other lines. HDSL carriage technology can be used to carry both data or voice communications (for instance, it can provide 30 voice channels). However, the Commission understands that at present it tends to be used predominantly for data applications.

42 See <http://www.adsl.com/> for a summary of service deployment.

43 The ability to supply end-users in particular locations will, however, depend on the quality and length of the twisted copper pair line.

The Commission understands that there is likely to be substitution between different types of ADSL services. The main types that have emerged to date are ‘G.Lite’⁴⁴ and ‘ADSL Heavy (or full rate)’. In addition, other variants have been developed for the US market.⁴⁵ It is likely that the full range of substitution possibilities will, in part, depend on the work currently being undertaken within the Australian Communications Industry Forum (ACIF).⁴⁶

Additionally, the Commission understands that high bandwidth carriage services supplied by means of the Telstra and Cable & Wireless Optus HFC networks are also likely to be a substitute. HFC networks can be used for high speed Internet access and for the delivery of pay television. In Australia, Telstra supplies high speed Internet access using HFC as part of its Big Pond service, and Cable & Wireless Optus has announced plans to launch a similar service.⁴⁷ Cable & Wireless Optus states that its vision is to deliver multiple services (telephony, video and high speed data) via its broadband network.

High bandwidth carriage services supplied by means of mobile services are currently being developed particularly in relation to the deployment of third generation networks (i.e. UMTS). Enhancements to the current second generation systems (e.g. GSM) are also underway. These wireless services may be a future substitute, although to what extent is currently unclear.

High bandwidth carriage services using HDSL

High bandwidth carriage services using HDSL have been deployed in Australia, albeit to a limited extent. That said, Telstra has recently announced that it intends to supply an unmanaged service that would allow service providers to use their own HDSL equipment to provide high bandwidth carriage services. Telstra is also proposing to supply a managed point-to-point service that may be used to supply high bandwidth carriage services using HDSL to end-users. Information provided to the Commission by carriers and equipment manufacturers indicates that these services are targeted at providing high bandwidth services to business customers. This suggests that deployment will be concentrated in central business districts, suburban business hubs and regional centres.

These services tend to be used where the end-user has a dedicated line from one point to another. Such services are generally referred to as private network or leased line services.⁴⁸

44 The G.Lite form of ADSL will provide a downstream bandwidth of up to 1.5Mbit/s and up to 512Kbit/s upstream, depending on loop conditions.

45 See, for instance, the Diamond SupraSonic 1-Meg Modem, www.diamondmm.com.

46 This work is addressed in greater detail in section 10.

47 Cable & Wireless Optus press release, Cable & Wireless Optus and Excite@Home form joint venture company, 10 June 1999.

48 In its strict sense the term ‘leased line service’ refers to a dedicated connection between two points. It is, however, often used more broadly to include point to point services using both dedicated lines and public networks. The dedicated lines are used to connect customers to these networks.

To assess the degree of substitutability the Commission sought to place high bandwidth carriage services using HDSL and other carriage services within a spectrum of carriage services. At one end of the spectrum are low bandwidth services such as ISDN services (64kbits per second to 1984kbits per second) which are provided over copper pairs. Then there are high bandwidth carriage services provided over copper wires using HDSL technology, followed by other high bandwidth carriage services (such as Telstra’s Megalink and Digital Data Services) provided over copper pairs, and services where LMDS or optical fibre is used for the last mile. With LMDS, it appears that bandwidth up to 10Mbps per second is achievable.⁴⁹ Where the last mile for the service uses optical fibre (rather than copper pairs), bandwidth up to 155Mbps per second is currently achievable.

This is represented diagrammatically in Diagram 4.4.

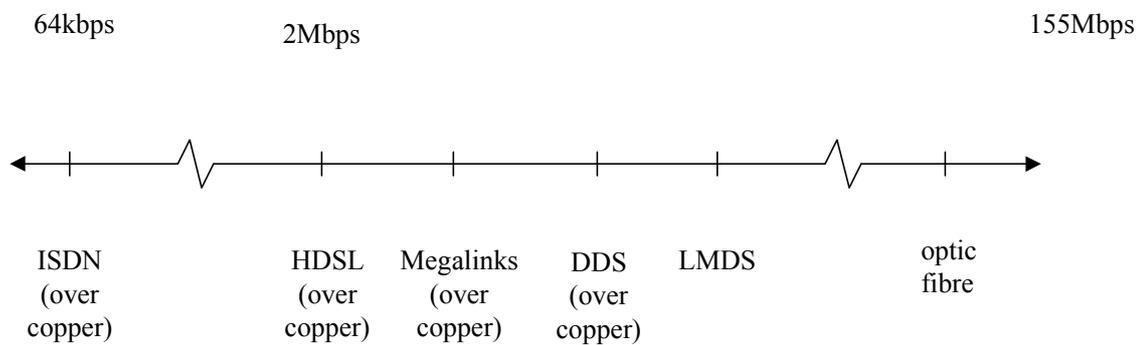


Diagram 4.4. Carriage services using particular ‘last mile’ technologies

These services have different characteristics, primarily in terms of reliability and bit error rates, which are particularly important for some end-users.⁵⁰ They can also be differentiated on the basis of bandwidth.

The Commission was urged to consider services as substitutes if they are part of a continuum of price/quality points among which consumers can select and substitute. This is not the relevant test for determining whether particular services are substitutes. The relevant test involves asking whether a hypothetical monopolist supplying high bandwidth services using HDSL could profitably raise the price of those services by a small but significant amount in a non-transitory manner. Where such a price increase would not be profitable due to consumers switching their demand to other services, then those other services should be regarded as substitutes.

To date, limited deployment of high bandwidth services using HDSL has been undertaken. In the main, service providers other than Telstra have undertaken deployment using Telstra’s permitted attachment private lines. In this way they can obtain high bandwidth services at prices that are considerably lower than available alternatives such as Telstra’s Megalink and Digital Data Services. There are also some

49 *Exchange* 11/16, 30 April 1999, p. 2.

50 For instance, for banks and stock exchanges the reliability and bit error rate dimensions of the service are critical.

quality differences between these services in terms of reliability and bit error rates although the price difference appears to be the most significant differential.

Given the limited deployment high bandwidth carriage services using HDSL to date, seeking to delineate the market by reference to current substitution possibilities for these services may provide a distorted picture of the competitive state of play. Accordingly, the Commission looked to how carriers and equipment manufacturers described these services and the use to which they would be put, i.e. 'commercial reality'.

The information received by the Commission suggests that the market includes other high bandwidth carriage services such as Telstra's Megalink and DDS suite of services. Moreover, there is scope for supply side substitutability between these services - both are supplied over copper pairs with the main difference being the electronic equipment attached to the line and reliability aspects. It also appears that high bandwidth services using LMDS are likely to be a future substitute within this market.

Residential v business markets

Market inquiries indicated that certain services tend to be regarded as 'residential services' (e.g. high bandwidth carriage services supplied using ADSL), whereas others tend to be regarded as 'business services' (e.g. high bandwidth carriage services using HDSL). That said, these inquiries also indicated that the distinction between residential and business high bandwidth carriage services tends to be blurred due to the emergence of small office, home office and telecommuting applications. Moreover, services targeted at residential users may be also targeted at particular business customers (e.g. high bandwidth services using ADSL). Accordingly, the Commission was of the view that these services should be described as being supplied in a single market with separate, but overlapping, residential and business segments.

Geographic dimension

Given that the range of substitutes is likely to be influenced by location (reflecting the discrete roll out of alternative customer access infrastructure in particular locations), the Commission considered whether markets should be separated on the basis of geographic location. Given that the market is at a relatively early stage of development, it is not clear which approach is likely to be more appropriate. Accordingly, for the purposes of the inquiry the Commission treated the market as being a national market.

Functional dimension

This market involves the supply of high bandwidth carriage services to end-users. Access seekers may also use the unconditioned local loop service to supply high bandwidth carriage services to other service providers at the wholesale level. In examining the impact of declaration on competition the Commission's inquiries were concerned with the supply of services to end-users and, accordingly, the Commission did not form a view as to whether wholesale transactions would occur within this market.

Temporal dimension

This market is expected to grow significantly in the foreseeable future. As the market grows, particularly the residential segment, bundling of services (e.g. Internet access and high speed carriage) may change the market dimensions, particularly the product dimension. The Commission was cognisant of the potential for such developments. The inquiry was, however, concerned with competition for the provision of carriage services and the Commission considered it appropriate to focus on the market for high bandwidth carriage services.

Conclusion

Previous work by the Commission, in the context of its inquiry into competition in data markets, suggested there were at least two markets for ‘always on’ carriage services.⁵¹

- A national market for the supply of low bandwidth (up to around 2Mbits per second) services. This market includes ISDN and frame relay services (which use ISDN services for customer access).
- A market for the supply of high bandwidth (i.e. 2Mbits per second plus), high reliability services.

In that inquiry the Commission examined the market in which low bandwidth services are supplied. In the context of this inquiry the Commission is of the view that the relevant market is a market for the supply of high bandwidth carriage services to end-users. This market is national and would seem to include at least two discrete (but overlapping) customer segments, namely residential and business segments.

4.6. Conclusions

Information received by the Commission during this inquiry suggests the following markets as being the relevant markets:

- a national market for the supply of customer access services by service providers to themselves and other service providers — the customer access market;
- a national market for the supply of local telephony services by service providers to end-users — the local telephony market;
- a national market for the supply of long distance telephony services by service providers to end-users — the long distance telephony market; and
- a national market for the supply of high bandwidth carriage services by service providers to end-users — the high bandwidth carriage services market.

51 Australian Competition and Consumer Commission, *Competition in Data Markets*, November 1998.

5. Competitive state of play

To assess the impact of declaration on competition the Commission will generally examine the effectiveness of competition in the future without declaration. This provides the foundation for analysing the likely impact of declaration.

If competition in the relevant markets is already effective, then declaration of the eligible service is not likely to have much effect in terms of promoting further competition. In this regard the explanatory memorandum states:

... It is not intended that the access regime embodied in this Part impose regulated access where existing market conditions already provide for the competitive supply of services. In considering whether a thing will promote competition, consideration will need to be given to the existing levels of competition in the markets to which the thing relates.⁵²

Assessing the effectiveness of competition is not, however, a static analysis limited to a description of current conditions and behaviour. It is a dynamic analysis concerned with features affecting the competitive supply of services in the future. Nevertheless, current conditions will, in general, provide a starting point from which to consider the future effectiveness of competition.

When assessing the effectiveness of competition the Commission will tend to examine concentration levels, barriers to entry, the linkage between supply of the eligible service and the supply of downstream services, and relevant behavioural features (e.g. price changes over time, service differentiation).

5.1. Customer access market

The customer access market is a national wholesale market for the supply of customer access services. In the main these services are supplied by means of fixed networks, although some services can be supplied by means of wireless networks such as those using LMDS.

In this market, by virtue of its fixed public switched telephone network, Telstra would be the major supplier of customer access services, including the unconditioned local loop service. In addition to this network Telstra has an HFC network which it uses to supply high speed Internet services to end-users. Other carriers are also rolling out their own customer access networks.

5.1.1. Market share

Concentration level is an indicator of the level of competition. High concentration levels increase the scope for coordinated conduct, including both overt and tacit collusion. In some situations where one firm has a large market share, price leadership may be present. In other situations, a firm which supplies a sufficiently large percentage of a market may be in a position to engage in unilateral exercise of market power such that it can profitably 'give less and charge more' without being threatened by competing suppliers.

52 Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 – item 6, proposed s. 152AB.

To consider the level of concentration within this market the Commission calculated the market shares of suppliers. Market shares were calculated on the basis of number of connections, rather than on the number of customer premises 'passed' by particular networks. In the Commission's view, this would provide a better indication of inter-firm and intra-firm activity within the market.

On this basis, around 98—99 per cent of the market is served by the Telstra fixed customer access network. While the completion of current roll out plans and future network roll out will gradually erode Telstra's market share, Telstra is likely to remain the major supplier of customer access services for the foreseeable future.

However, high concentration levels do not necessarily mean that competition is ineffective. Where the market is characterised by low barriers to entry, incumbent firms may be constrained by the threat of potential competition to behave in a manner consistent with competitive market outcomes. However, if there are significant barriers to the entry of new suppliers to the market and concentration levels are high, then this may indicate that competition is unlikely to be effective.

5.1.2. Barriers to network roll out

Information received by the Commission indicates there are a number of features which limit the ability of new entrants and existing players to roll out customer access networks. These include:

- the need to obtain approvals from the relevant regulatory agencies, which include local government and environmental protection agencies, in order to deploy infrastructure. This approval process may take several months;
- negotiating access to facilities (e.g. ducts) and interconnection arrangements, which may take in excess of 12 months before access is achieved (although, the recently completed Facilities Access Code should enable access to ducts within shorter time periods);
- for wireless networks, the need to obtain spectrum in the 28/31GHz band (some of which was auctioned in February 1999) and the cost of customer equipment;
- economies of scale inherent in telecommunications infrastructure; and
- the sunk nature of the investment.

In terms of economies of scale, the telecommunications industry was at one time thought to demonstrate strong natural monopoly characteristics. That is, all levels of output relevant to the market demand could be served at a lower cost by means of a single network.

Given that the vast majority of costs for the customer access network — such as trench and cable costs — are fixed, significant economies of scale are likely to exist in the provision of the customer access network. These economies of scale are further reinforced by the significant economies of density that exist over the customer access network in metropolitan and central business district areas. Together, these economies are likely to limit the extent of network roll out in the foreseeable future. Notwithstanding these economies, competitors may still find it profitable to provide

dedicated lines for a small number of high volume customers, as their high demand can exhaust economies of scale on those particular lines.

Moreover, the sunk nature of the customer access infrastructure increases the riskiness of that investment. Modelling work by Commission consultants indicates that trench and cable costs account for about 70 per cent of the costs of building a new fixed customer access network. Both these and, in particular, trench costs are likely to be sunk to a large degree. This means that investment in alternative customer access networks is difficult to reverse without incurring large losses due to the limited alternative uses for the investment. If a customer access network is already in place, the risk of incurring losses on sunk costs such as trenches and cable is likely to be higher. This can add to the costs and prices of the new entrant and make it uneconomical for it to compete with an incumbent via its own customer access network.

These features, particularly the economies of scale and density, and the sunk nature of infrastructure costs, limit the ability of entry to constrain the behaviour of incumbents. Entrants are likely to face significantly higher costs given that they will not have the same scale as incumbents.

In such an environment, where the threat of entry is not sufficient to constrain a firm's conduct, actual entry is likely to be necessary. Actual entry would, however, need to be of sufficient scale; if the entrants were limited to serving only a small proportion of the market, entry may be insufficient to generate effective competition.

5.1.3. Impact of retail price regulation

During the inquiry, it was submitted that the main barrier to the roll out of customer access infrastructure was the retail price control arrangements. Relevantly, it was suggested that the local call price parity arrangement⁵³ are inhibiting the development of competition in certain geographic areas. That is, in order to meet the local call price parity requirements, Telstra may need to price below cost in certain high cost areas (such as rural or remote areas). As a consequence, entry is unlikely to occur in these areas.

While regulatory requirements to supply customers within a particular area at prices below cost would be expected to deter entry in those areas (unless mechanisms existed to 'compensate' suppliers for serving those customers), its significance should not be overstated. Such regulation is only likely to raise barriers to entry in respect of a limited number of customers in particular geographic areas. In the main, such regulatory requirements are unlikely to create a barrier to competition for most customers; it is the supply-side features described above that are the relevant barriers to entry.

53 These arrangements provide that the average price for supply of untimed local calls to particular classes of non-metropolitan customers must not exceed those charged for supply to the same class of metropolitan customers in the preceding year.

5.1.4. Roll out in major metropolitan areas

Telstra's fixed public switched telephone network currently accounts for approximately 98–99 per cent of connections in Australia. In addition, its HFC network, which can be used for high speed Internet access, passes 2.5 million homes.

The principal network operated by another carrier is the Cable & Wireless Optus fixed customer access network in both suburban areas and central business districts. More discrete deployment has been undertaken by other carriers.

The Cable & Wireless Optus suburban customer access network is an HFC network used for telephony and pay television. Information available to the Commission estimates that Cable & Wireless Optus passes about 2.2 million homes in Brisbane, Sydney and Melbourne. Around 170 000 local telephony customers have been connected to this network. The network is capable of servicing 630 000 homes and by late 1999 should be capable of servicing 1.35 million homes. The network was deployed utilising powers and immunities conferred by the *Telecommunications Act 1991* during the pre-1997 duopoly environment. Cable & Wireless Optus also has optical fibre rings in the central business district areas of Brisbane, Sydney, Melbourne, Canberra, Adelaide and Perth.

PowerTel has rolled out optical fibre in the central business districts of Brisbane, Sydney and Melbourne.⁵⁴ It is also rolling out transmission networks linking those cities. PowerTel's stated plan is to build ATM networks in the CBD areas of Brisbane, Sydney and Melbourne, together with a national switch network, which will provide voice, data, video, switching and transmission services. The Commission understands that PowerTel is proposing to spend \$217 million by January 2000. PowerTel has access to the ducts of Energex in Brisbane, EnergyAustralia in Sydney and CitiPower in Melbourne, and their combined customer base of approximately 2.5 million.⁵⁵ Therefore, PowerTel intends to provide wholesale services to carriers, service providers and resellers including separate telecommunications reseller arrangements with the three power utilities. It is intended that the three power utilities will be undertaking resale to their power customer bases.⁵⁶

WorldCom Australia Pty Ltd (soon to be known as MCI WorldCom) has recently entered the Australian telecommunications industry with the objective of deploying networks in Sydney and Melbourne. These networks will be used to supply 'the range of telephony, information and data communications, and emerging interactive services'.⁵⁷ WorldCom has completed its initial optical fibre cabling of Sydney and has

54 PowerTel is a publicly listed telecommunications carrier. Its majority shareholder is Williams Inc. Its other significant shareholder is Downtown Utilities Pty Limited, a consortium of three electricity distributors comprising CitiPower, EnergyAustralia and Energex.

55 EnergyAustralia covers a significant portion of Sydney, including all of the central business district, Gosford, Newcastle and the Hunter Valley. CitiPower covers the Melbourne central business district and near areas whilst Energex's area covers the south-eastern area of Queensland encompassing the Brisbane central business district, the Gold Coast and the Sunshine Coast.

56 Spectrum press release, Spectrum announces terms of offer to Power Utilities, 2 June 1998. (PowerTel was formerly known as Spectrum Network Systems Ltd.)

57 MCI WorldCom, 1999 Industry Development Plan.

commenced work in Melbourne. The planned total capital expenditure for its first five years of operation in Australia is around \$110 million.

United Energy Telecommunications Pty Ltd has been involved in providing high capacity broadband services on its optical fibre network in Melbourne on private networks of corporate customers.⁵⁸ United Energy's initial activities included resale of long distance, international and mobile services but United Energy has discontinued the resale businesses.

AAPT is currently rolling out optical fibre cables in the central business districts of Brisbane, Sydney, Melbourne and Adelaide, as well as in selected regional centres.⁵⁹ It has recently acquired spectrum in the 28 to 31 GHz range which it will use to supply services by means of LMDS technology. The Commission expects this technology will be used to access customers in city and metropolitan areas where buildings are difficult to access and where fibre deployment is uneconomic. AAPT sees the technology as being particularly relevant for small to medium enterprises as well as large corporations. It expects to have 20 nodes fully operational in Sydney by around December 1999. Subsequent sites will include Brisbane, Melbourne, Adelaide, Perth and several major regional centres.⁶⁰ AAPT was the only acquirer of such spectrum.

Primus is installing a cable network in the central business district areas of Sydney and Melbourne.⁶¹

ACTEW Corporation Ltd has plans to construct a telecommunications network in the Canberra region using optical fibre and copper transmission media. The services which could be offered over this network include telephony (including local calls), video, data and interactive services. ACTEW has constructed a pilot network and is conducting a trial. ACTEW will then decide whether to take the project to full Canberra deployment, subject to its success with the initial trial.

The Austar Group is constructing a cable system in Darwin for the purpose of pay television. Austar states that it is not currently planning to use the cable system for telephony or other telecommunications services (other than pay television).⁶²

58 United Energy Telecommunications, Industry Development Plan Summary (Public) Report September 1998, p. 4.

59 AAPT – Response to Discussion Paper (submission 1), p. 50.

60 AAPT press release, AAPT Unveils Australia's First LMDS Broadband Wireless Network, 27 April 1999.

61 C&M, Primus Confirms CBD Cable Rollout in Sydney and Melbourne, 22 June 1998, www.decisive.com.au

62 Austar Group, Industry Development Plan, 30 June 1997, p. 2.

5.1.5. Roll out in regional areas

There is also discrete deployment in regional areas.

Northgate Communications Australia Pty Ltd, a regional cable television and telephony service provider, was established in 1994. Northgate provided cable-based broadband telephony, data and pay-TV services in Ballarat, and in other regional centres around Australia. The Ballarat cable system has since shut down.⁶³

The Bass Coast Shire Council is establishing a wireless local loop network in Victoria's South Gippsland region.⁶⁴ The Bass Coast Network will provide radio based local telephony and data services, connected together with point-to-multipoint and point-to-point microwave links. The Network is currently at the trial stage.

Northpower is currently examining the opportunity to build a broadband telecommunications network in northern New South Wales offering basic telephony, data and Internet access services.

5.1.6. Network deployment and the pattern of competition

In suburban areas the Cable & Wireless Optus HFC network is the main alternative to Telstra's fixed customer access network. It is, however, limited in coverage and currently accounts for less than 2 per cent of customer connections. Central business districts are better served by alternative customer access infrastructure, particularly in Sydney and Melbourne where there are at least four optical fibre rings. In part, this would seem to be due to the increased density of high volume end-users within those areas.

To better understand the competitive differences in central business districts, the Commission sought information about the proportion of end-users in those areas who could be served using non-Telstra customer access infrastructure. The Commission received limited information, although what it did receive indicates that only a small proportion of end-users in central business districts are currently capable of being served by more than one customer access network. In the main these are major corporate and government end-users. This is likely to improve in the future, particularly with growth in the high bandwidth carriage services market. At this stage the extent to which this will improve is unclear.

5.1.7. Vertical integration

Vertical integration will not always be an issue of competitive concern. Where, however, the vertically integrated firm controls access to an 'essential' input for downstream services, then vertical integration can be used to limit the development of competition at the downstream levels.

Telstra currently serves approximately 98–99 per cent of the customer access market. Customer access services supplied in this market are inputs necessary to supply downstream fixed telephony and high bandwidth carriage services to end-users. Telstra

63 Northgate Annual Progress Report for Public Release, November 1997–31 October 1998, p. 5.

64 Bass Coast Shire Council — Response to Discussion Paper.

also operates in the markets for these downstream services and thus controls the majority of inputs necessary to supply those services to end-users.

5.1.8. Supply of the unconditioned local loop service

To date Telstra has not supplied the unconditioned local loop service to service providers. Moreover, despite the existence of demand for the service, Telstra appears unlikely to supply the service (in a manner which would meet this demand) without regulatory intervention. It has supplied a similar service, known as PAPLs, but this was primarily to security firms so that they could monitor alarm systems, and for other similar uses. It turned out, however, that service providers have used these services to establish high bandwidth carriage services by means of HDSL technology.

During the inquiry the Commission received complaints from service providers in relation to continuity of supply of PAPL services. In essence, service providers were concerned about proposals by Telstra to refuse to guarantee copper continuity. Use of xDSL services depends on continuous copper from one end of the line to the other. These matters were, and continue to be, of concern to the Commission in the context of Part XIB of the Act and, accordingly, the Commission has been investigating Telstra's behaviour. Telstra has provided safeguards for service providers who use the PAPL services in response to issues raised by the Commission; the safeguards expire in September 1999.

In late April 1999 Telstra announced that it would supply two new wholesale services that would replace the PAPL service. The first is a managed point-to-point service that may be delivered over either copper or fibre-optic lines. The second, which is more akin to the PAPL service, is an unmanaged service with which the service provider supplies its own modems. This service is subject to 'copper business rules' which address some technical issues such as interference. Telstra indicated that the services would only be supplied in capital city areas and, in the case of the unmanaged service, only where suitable copper infrastructure is available. The Commission understands that Telstra intends to announce further product details in late August 1999.

5.1.9. Regulation of market conduct

Currently Telstra is not subject to access regulation in respect of services such as the unconditioned local loop service. It is subject to access regulation in respect of downstream services for which the unconditioned local loop service is a component (e.g. the declarations for the Domestic PSTN Originating and Terminating Access Services, and for the Integrated Services Digital Network Originating and Terminating Services).

Telstra is also subject to general competition law (in particular s. 46 of the Act) and Part XIB of the Act, pursuant to which the Commission recently investigated Telstra's behaviour in relation to PAPL services. While these provisions have been used with

some success to open up potential markets,⁶⁵ there are significant difficulties in relying solely on this form of regulation.⁶⁶

5.1.10. Conclusion

The customer access market is characterised by high barriers to entry. Telstra is the main supplier of services in this market, currently supplying around 98—99 per cent of services. Limited roll out of alternative customer access infrastructure has occurred in discrete areas, particularly the central business districts of Sydney and Melbourne. While additional roll out will gradually erode Telstra's share of this market, Telstra is likely to hold the major part of this market for the foreseeable future.

The customer access services supplied in this market are used as inputs for the supply of services in downstream fixed telephony and high bandwidth carriage services markets. Telstra also operates in these markets and is thus in a position where it controls access to the majority of inputs necessary for downstream competition. This gives Telstra scope to limit the supply of customer access services to its downstream competitors.

To date, inter-firm activity within this market is largely dormant and likely to continue to be so in the absence of regulatory intervention. Moreover, information received by the Commission during the inquiry indicates that service providers have had limited success in negotiating access to a similar service, namely the PAPL service.

The Commission is of the view that conditions in the customer access market are not sufficient for effective competition and this is unlikely to change in the foreseeable future.

5.2. Local telephony market

This market involves the supply of local telephony services (i.e. fixed local calls and line rental) by service providers to end-users. As at 30 June 1998 annual revenue from the services in this market was approximately \$4.4 billion.⁶⁷

5.2.1. Market shares

Telstra is the main supplier of local telephony services. Its fixed public switched telephone network is used to provide approximately 10.3 million customer services.

Cable & Wireless Optus is Telstra's major competitor, although Cable & Wireless Optus' market penetration is limited to those locations where it has rolled out its network (i.e. suburban areas of Brisbane, Sydney and Melbourne, and central business

65 See *Queensland Wire*, op cit.

66 Hilmer F G, Rayner M and Taperell G, *National Competition Policy*, Report by the Independent Committee of Inquiry, Australian Government Publishing Service, August 1993, pp. 243–248.

67 This information was collated from Telstra's 1997—98 Annual Report and the Optus prospectus. The figure of \$4.5 billion consists of \$1770 million for basic access (Telstra), \$2664 million for local calls supplied by means of Telstra's network (including calls resold by service providers) and \$14 million for local calls supplied by means of the Cable & Wireless Optus network.

districts). Cable & Wireless Optus has recently announced that it has 170 000 local telephony customers directly connected to its suburban HFC network.⁶⁸

Although the number of local telephony customers directly connected to Cable & Wireless Optus has recently increased, this still represents a small share of the total number of local telephony customers.

Table 5.1. provides a breakdown of market shares calculated by the Commission based on revenue for the year ending 30 June 1998. Revenue figures for the financial year ending 30 June 1999 were not available to the Commission at the time of completing the inquiry. The Commission estimates that, as a result of increased take up of local telephony services from Cable & Wireless Optus, it now holds about 1—2 per cent of this market.

Service provider	Market share (%)
Telstra	94.0
Service providers re-supplying Telstra services (including Cable & Wireless Optus)	5.6
Cable & Wireless Optus (own network)	0.3
Others	0.1

Table 5.1. Local telephony market shares

5.2.2. Access to inputs for supply of local telephony services

As can be seen from Table 5.1., the main form of competitive activity in this market arises from the re-supply of Telstra's services. These services are supplied by service providers such as Cable & Wireless Optus, AAPT, Macquarie Corporate Telecommunications, Switch, RSLCom and Primus. That is, Telstra supplies local call services to service providers that then re-supply the services and add retail activities such as billing and customer care services.

Telstra has estimated that approximately 400 000 local telephony services in Australia (i.e. around 4.2 per cent) are provided by such service providers.⁶⁹ In 1997–98, these services account for approximately 6 per cent of Telstra's local call revenue,⁷⁰ although the Commission notes that this is a decrease from 9 per cent in the preceding year.⁷¹

68 Cable & Wireless Optus press release, Cable & Wireless Optus delivers on local telephony promise, 22 June 1999.

69 Telstra — Response to Discussion Paper (submission 1), p. 23.

70 Telstra 1997–98 Annual Report, pp. 44–45, www.telstra.com.au.

71 These figures are based on information in Telstra's 1997–98 Annual Report relating to the percentage of revenue derived from the supply of wholesale local calls and line rental (basic access) service. In 1997–98, 6 per cent of Telstra's local call revenue and 5 per cent of its line rental revenue was derived from wholesale activities (i.e. 6 per cent of local telephony revenue). In 1996–97, the corresponding figures were 10 per cent and 7 per cent respectively (i.e. 9 per cent of local telephony revenue).

The charges paid by service providers to Telstra represent a large proportion of the costs of supplying these services to end-users. In general, service providers resupplying Telstra's local telephony services (i.e. line rental and local calls) claim to do so at a loss. In this regard the charges paid by them to Telstra represent approximately 90–100 per cent of the revenue received by service providers from their customers for those services.

The effectiveness of competition for customer access services is likely to have a direct flow through effect on the effectiveness of competition for supply of line rental and call services to service providers. Customer access services are a necessary input for the supply of these services and represent a major portion of the costs associated with the supply of those services. The Commission's views about the effectiveness of competition in the customer access market lead the Commission to conclude that the supply of line rental and call services to service providers is not subject to effective competition. This is unlikely to change in the foreseeable future.

5.2.3. Existing regulation

Under the Telecommunications Act all service providers supplying local calls must provide customers with the option of untimed local calls.⁷² Service providers are also subject to minimum performance standards affecting the line rental service. These standards provide maximum timeframes in relation to the connection of access lines and the rectification of faults affecting the ability of end-users to make and receive calls.

In addition, Telstra is subject to specific price regulation for a number of services, including local calls and line rental. The price control arrangements applying to Telstra have been recently changed, and the new arrangements apply from 1 July 1999 to 30 June 2001.

The price control arrangements that operated before 1 July 1999 included annual price caps for particular services as well as:

- a cap of 25 cents per call for untimed local calls; and
- a local call pricing parity scheme whereby the average price charged to residential/charity customers in non-metropolitan areas for untimed local calls were not to exceed the average price charged to residential/charity customers in metropolitan areas for untimed local calls in the previous year. Similar rules applied in respect of business customers.⁷³

72 Section 223, Telecommunications Act. For non-residential and non-charity customers, this obligation is limited to voice calls.

73 Telstra Carrier Charges — Price Control Arrangements, Notification and Disallowance Determination 1997, made pursuant to the *Telstra Corporation Act 1991*.

The price control arrangements that came into effect on 1 July 1999 retain the local call price cap of 25 cents and local call pricing parity scheme. However, there have been changes to the annual price caps to set:

- a cap of CPI–0 per cent on a basket of local calls and line rentals for services to both residential and business customers;
- a low spending residential price cap of CPI–1 per cent on a basket of services, including local calls and line rentals — the average prices for this basket of services must fall by 1 per cent per year in real terms, with weightings calculated on the basis of spending of customers who make up the bottom 50 per cent of telephone bill size;
- a broad price cap of CPI–5.5 per cent on a basket of services, including local calls and line rentals. This price cap differs from the previous arrangements in the reduction of the ‘X’ factor (in CPI–X) from 7.5 per cent to 5.5 per cent;⁷⁴ and
- a requirement that Telstra must satisfy the Commission that it has made arrangements to ensure that pre-selected Telstra residential customers, who are among the 10 per cent of customers with the lowest telephone bills, will not face real increases in their bills before Telstra can increase the telephone line rental charge by more than CPI.

5.2.4. Line rental and local call prices

Pursuant to its price monitoring responsibilities under the Act the Commission examines the standard prices charged by Telstra to consumers for telecommunications services. With respect to local telephony services, the most recent study found that the standard price for Telstra’s untimed local call services supplied to end-users (i.e. 25 cents) did not change over the period 1992–98.⁷⁵

This study also found that annual line rental charges for a standard business service increased slightly in 1993 and again in 1994, then fell in 1996 to the current price of \$240. The annual residential line rental rose by 8 per cent in 1993 and by 4 per cent in 1994, and has remained at \$139.80 since 1994. As noted above, Telstra’s retail local call and line rental charges are subject to price cap constraints.

Telstra does, however, offer standard discount packages that provide modest discounts once monthly expenditure on calls has exceeded a certain threshold. For example, Telstra’s Flexi-Plans™ provide either a 5 per cent discount once \$10 of calls are made per month or, for business customers, an 8 per cent discount once \$25 of calls are made per month.

Telstra also offers packages where the line rental is increased and the local call charge reduced. For example, under Telstra’s EasySaver™ packages, business customers are offered either line rental at \$960 per annum with 15 cent local calls, or line rental at

74 This price cap also differs from the previous arrangements in the removal of analogue cellular mobile telephone services from the broad basket.

75 See Australian Competition and Consumer Commission, *Telecommunications Charges in Australia*, December 1998. In preparing the report the Commission engaged the Communications Research Unit (CRU) of the Department of Communications, Information Technology and the Arts to undertake the price monitoring and international benchmarking tasks.

\$1800 per annum with 12 cent local calls. Non-business customers are offered either line rental at \$180 per annum with 20 cent local calls, or line rental at \$240 per annum with 18 cent local calls. Whether or not savings are made with such packages would depend on the volume of calls made by the end-user.

Despite the discount packages offered by Telstra, Telstra's average untimed local call price in metropolitan areas during 1997 was 24.20 cents for residential/charity customers and 23.51 cents for business customers.⁷⁶ More recent information was available to the Commission indicating a slight reduction in average prices during 1998.

The standard discounts offered by Telstra tend to be matched by other service providers re-supplying local call services over Telstra's network. In addition, Cable & Wireless Optus' standard charge for untimed local calls made from its network is 20 cents with 15 cent calls on special days such as Christmas and ANZAC day.

A number of comparative price studies were available to the Commission. These included a study prepared for the Commission by the Communications Research Unit (of the Department of Communications, Information Technology and the Arts), the Productivity Commission⁷⁷ and Analysis Pty Ltd. The studies conducted by the Communications Research Unit and the Productivity Commission found that local call prices in Australia were high relative to other countries for short held calls. For longer held calls, which were the focus of the Analysis study, Australia performs better than other countries.

5.2.5. Conclusion

It is difficult to draw meaningful conclusions from these comparative studies due to the number of variables involved. More informative, however, is the pattern of price changes in Australia over the past seven years. While a small proportion of customers (e.g. large corporations) have received reductions in call prices, for the majority of end-users prices have remained relatively static.

Telstra is the major supplier in this market holding around 94 per cent of the market at the retail level. In the main, competition occurs through re-supply of Telstra's services. Supply of the most significant input used by Telstra's competitors is not, however, subject to effective competition. Cable & Wireless Optus has gained 170 000 directly connected customers and this is expected to grow. Also, there is the potential for new entrants to provide local call services to end-users in discrete areas. It is unclear if and when the take up of Cable & Wireless Optus services, and services from other service providers, will reach a level where they can exercise competitive pressure on Telstra.

These factors lead the Commission to conclude that conditions for effective competition do not exist in this market. In the Commission's view this is unlikely to change markedly in the foreseeable future.

76 This information was obtained by the Commission in accordance with its responsibilities to monitor Telstra's compliance with the local call pricing parity scheme. At the time of writing the average 1998 prices were not publicly available.

77 Productivity Commission, International Benchmarking of Australian Telecommunications Services, Research Report, 1999, pp. 104-105.

5.3. Long distance telephony market

This market involves the supply of fixed long distance domestic and international telephony services by service providers to end-users. The total value of the market is estimated to be in the order of \$5.2 billion per annum.⁷⁸

5.3.1. Market shares

The main supplier of national and international long distance services is Telstra, with Cable & Wireless Optus as its main competitor in this market. However, since full deregulation in July 1997 there has been a number of new entrants, such as AAPT, One.Tel and Primus, offering long distance services.

The Commission was able to seek information on market shares from a number of sources. The information available to the Commission suggests that market shares based on revenue for the 1997–98 financial year are likely be as follows.

Company	market share
Telstra	76%
Cable & Wireless Optus	19%
Others	5%

Table 5.2. Estimated retail long distance market shares — 1998

Table 5.3. shows the revenue shares of Telstra, Cable & Wireless Optus, AAPT and other service providers for the domestic long distance and international telephony market segments, as estimated by Merrill Lynch.

Company	Domestic long distance	International
Telstra	80%	60%
Cable & Wireless Optus	15%	23%
AAPT	3%	6%
Service providers & others	2%	11%

Table 5.3 Estimated shares of domestic and international segments — 1998⁷⁹

In addition, the Commission examined the shares prepared by Paul Budde Communication Pty Ltd — Table 5.4.

⁷⁸ Merrill Lynch & Co, *Telstra Corporation In-depth Report*, 2 December 1998, p. 6.

⁷⁹ *ibid.*

Company	1998 (est)	1996	1994
Telstra	55%	64%	74%
Cable & Wireless Optus	25%	24%	22%
Service providers	20%	12%	4%

Table 5.4. Retail long-distance market shares — 1994–1998⁸⁰

The market shares provided in Table 5.2 accord with the financial information reported by Telstra and Cable & Wireless Optus, whereas the market shares estimated by Paul Budde Communications appear to be somewhat inconsistent with this information. Relevantly, for the financial year ended 30 June 1998, Telstra reported retail revenues for long distance services of \$3 223.3 million,⁸¹ Cable & Wireless Optus reported retail revenues of \$828 million,⁸² and AAPT reported revenue of \$278.2 million.⁸³

The introduction of the legislated duopoly in 1992 and full deregulation in 1997 has resulted in Telstra's market share declining due to increased competition in this market. In particular, there appears to have been greater competition in the international telephony services segment of the market. The effect of the increased competition in the market is noted by Cable & Wireless Optus, which states that in the 1998 financial year it experienced declines in long distance customer numbers and the number of pre-selected lines decreased by 17 per cent due to increased competitive activity from existing competitors and new entrants.⁸⁴ It has been forecast that Telstra's market share will continue to decline slightly in the next couple of years.⁸⁵ However, although Telstra's market share has declined in recent years, Telstra has still retained the major share of the long distance telephony market.

5.3.2. Access to inputs for long distance services

Some service providers acquire end-to-end long distance services from carriers and re-supply long distance services to end-users. Other service providers, with their own

80 Paul Budde Communication Pty Ltd, Telecommunications Strategies Report 1998–1999, www.budde.com.au.

81 This figure is based on Telstra's national long distance international call revenues reported in Telstra's Annual Review 30 June 1998, and excludes revenue derived from wholesale activities.

82 Cable & Wireless Optus prospectus, p. 67. This figure excludes revenue derived from the supply of wholesale services to other domestic and international operators, but includes revenue from value added services.

83 AAPT press release, AAPT Financial Results Summary, 20 August 1998.

84 Cable & Wireless Optus prospectus, pp. 68-9.

85 Merrill Lynch forecasts that Telstra's share of the domestic long distance market segment will fall to 74.0 per cent and for the international segment will fall to 57.5 per cent in the financial year ending 30 June 2000.

transmission infrastructure, purchase originating and/or terminating services and combine these inputs with their own.

Due to the limited roll out of alternative customer access infrastructure to date, in order to supply end-to-end long distance services, it is currently necessary for service providers to acquire originating services from their competitors. In addition, they will need to acquire terminating services to achieve any-to-any connectivity. These services are acquired from the carrier to whom the particular end-user (making/receiving the call) is connected. By reason of its control of the customer access network with approximately 98–99 per cent of connections in Australia, Telstra is the main supplier of these services.

To acquire these inputs, service providers currently purchase the Domestic PSTN Originating and Terminating Access Services from Telstra. Payments for these services represent a significant component of the costs of service providers supplying long distance telephony services. Accordingly, the terms and conditions on which Telstra supplies these services has a heavy impact on the ability of service providers to compete in the market.

To gain an indication of the proportion of costs represented by originating and terminating services, the Commission has undertaken a study which compares Telstra's proposed access charges for originating and terminating access with its retail national long-distance (STD) prices.⁸⁶ Table 5.5. shows the weighted average access charges and STD prices and the percentages of the charges to the charges to prices for a 2.5, 4.5 and 10 minute call.

Call length (minutes)	2.5	4.5	10
Weighted average STD price (cents)	65.50	105.90	216.99
Weighted average access charge	24.04	42.14	91.91
Access charge as a % of STD price	36.71	39.79	42.36

Table 5.5. Comparison of average access charges and STD retail prices

The Commission's analysis demonstrates that the margin between Telstra's STD prices and the proposed access charges is highly variable, but that in any case, access charges are a substantial proportion of STD prices. For a competitor supplying national long distance services with traffic profiles similar to Telstra, the average access charge will be around 37 per cent of the average STD price for a 2.5 minute call. If Telstra's Flexi-Plan discounts are taken into account this proportion may be slightly higher.

The quantum of the charge for originating and terminating services is influenced by the point at which service providers interconnect with Telstra's network. With

86 The study is one of a number undertaken by the Commission to assist in its assessment of Telstra's PSTN undertaking. The study utilised the retail price structure applying from 18 January 1999. Averages are weighted on the basis of call times, distances and geographic location of the parties. For further details see *Comparisons of the Access Charges in Telstra's PSTN Undertaking with Telstra's Retail National Long Distance Prices (Revised)*, June 1999, www.accc.gov.au.

interconnection at a relatively high level in the network, Telstra carries a greater proportion of each call.

5.3.3. Retail features — customer preferences for ‘one bill’

As outlined in section 4.5.2, a significant proportion of end-users prefer to purchase local and long distance telephony services from a single supplier. Submissions received by the Commission during the inquiry argued that competitive benefits arise from bundling local and long distance calls. That is, customers are more likely to choose a single service provider that is able to provide ‘one bill’ for the full range of telecommunications services, than choose multiple service providers and be billed separately for different services.

Accordingly, the ability to supply end-users of local and long distance telephony services with ‘one bill’ from a single service provider was highlighted as being an important aspect of rivalrous behaviour for long distance services. Cable & Wireless Optus, Macquarie Corporate Telecommunications and AAPT submitted that there are a large proportion of end-users who are unlikely to consider alternative sources of supply for long distance services unless the supplier of those services can provide the convenience of a ‘one stop shop’.

Telstra appeared to dismiss the competitive advantage of a single telecommunications bill for its long distance competitors as either ‘false or overstated’. Telstra advised that there is no evidence that business customers place any weight on single bill effects in purchasing long distance services and that, as a result, any single bill effects would have to occur in the supply of these services to residential customers.⁸⁷ Telstra also argued that experience in the United States indicated that firms re-supplying local calls focus almost exclusively on business customers.

The convenience of ‘one bill’ is a feature highlighted in Telstra marketing material. For instance, Telstra *Telepath*TM product involves the provision of a single bill for Telepath One number, fixed phone line and mobile phone services. In a press release issued in May 1997, Telstra stated that the single bill will be of great benefit to Telstra residential and small business customers, and that Telstra customers wanted the flexibility of a single bill option. Importantly, the press release stated:

The Single Bill Option is planned to be available to *all* Telstra customers in the future [emphasis added].⁸⁸

In this press release Telstra also referred to a telephone survey, conducted by Opinion Research in the United States, which reported that 69 per cent of customers preferred a single telecommunications bill.⁸⁹ Moreover, the behaviour of other service providers in

87 Telstra — Response to Discussion Paper (submission 1), p. 25.

88 Telstra press release, Telstra's TelepathTM offers time-saving Single Bill option, 12 May 1997, www.telstra.com.au

89 According to Price Waterhouse, a telephone survey on home communications needs and preferences was conducted by Opinion Research Corporation between 6 March and 9 March 1997, among a national probability sample of 1 005 adults comprising 503 men and 502 women 18 years of age and older, living in private households in the continental United States. A majority of consumers

Australia, along with Australian market research, reinforces the importance of ‘one bill’ as a marketing strategy. This strategy is currently employed by service providers

including AAPT and Macquarie Corporate Telecommunications. Cable & Wireless Optus is also planning to integrate its information technology systems, the stated aim being to offer a single bill to all customers for all of the company’s products and services. The provision of single billing is one of the strategies that Cable & Wireless Optus will be employing in 1999 to increase its long distance customer base.⁹⁰

As described in section 4.5.2, the line rental and local call services purchased by service providers are used to supply retail services to end-users. The supply of these services enable service providers to supply end-users with local telephony services and, in turn, to provide ‘one bill’. In this regard the impact of the conditions upon which line rental and local call services are supplied to service providers are not confined to the local telephony service market.

5.3.4. Existing regulation

As noted in section 5.2.3, Telstra is subject to price regulation on a range of retail telecommunications services, and revised price cap arrangements came into operation on 1 July 1999.

Under the previous arrangements the following price caps applied to long distance services:

- an overall annual price cap of CPI–7.5 per cent for a basket of services, including long distance services; and
- individual annual price caps on certain services, including long distance services supplied to residential end-users.

In recent years reductions in long distance prices by Telstra have contributed significantly to the achievement of the CPI–7.5 per cent target. It is likely, however, that competition in the supply of long distance services has been a more effective driver in reducing long distance prices than the retail price cap. An exception to this appears to be for calls designated as community and pastoral calls, for which Telstra offers lower STD prices, and which constitute a small percentage of national long-distance calls.⁹¹

The relevant price cap arrangements that apply from 1 July 1999 are as follows:

- an overall price cap of CPI–5.5 per cent for a basket of services, including long distance calls; and
- a low spending residential price cap of CPI–1 per cent for a basket of services, including long distance services.

prefer to purchase multiple (or bundled) communications services from a single company on a single bill.

90 Cable & Wireless Optus prospectus, p. 68.

91 Australian Competition and Consumer Commission, Comparisons of the Charges in Telstra’s PSTN Undertaking with Telstra’s Retail National Long Distance Prices (Revised), June 1999, p. 2.

In addition to retail regulation, particular inputs used for the supply of long distance telephony services are also subject to specific regulation. The declaration of Domestic PSTN Originating and Terminating Access Services provides that the terms and

conditions of access to these services can be regulated pursuant to the mechanisms under Part XIC of the Act.

In this regard the Commission recently rejected Telstra's undertaking for the Domestic PSTN Originating and Terminating Access Services.⁹² In the assessment of Telstra's undertaking the Commission formed the view that the costs an efficient firm would incur in providing these services are around 2 cents per minute, which is significantly below Telstra's proposed charges in the undertaking. The Commission is also currently arbitrating access disputes in relation to these services.

5.3.5. Call prices

Since this market was open to competition in 1992 there have been significant reductions in retail prices. It has been estimated that there have been reductions in the prices of national long-distance calls of up to 45 per cent and international calls by up to 75 per cent.⁹³

According to information prepared for the Commission by the Communications Research Unit (of the Department of Communications, Information Technology and the Arts), the standard prices of Telstra's national long distance calls have fallen by approximately 26 per cent during the period 1992 to 1998, while the standard prices of Telstra's international calls have fallen by approximately 27 per cent.⁹⁴

92 See Australian Competition and Consumer Commission, *Assessment of Telstra's Undertaking for Domestic PSTN Originating and Terminating Access — Final Decision*, June 1999.

93 Figures from the Department of Communications, Information Technology and the Arts, www.dca.gov.au

94 Estimates prepared for the Commission, based on Public Switched Telephone Service Standard Tariff, and data provided by Telstra to the Commission. See Australian Competition and Consumer Commission, *Telecommunications Charges in Australia*, December 1998.

Table 5.6 shows the price index of the weighted average STD call price excluding discounts, holding consumption patterns constant, between 1992 and 1998.

Year	Overall weighted average STD [®] call price (dollars)	Change from previous year (per cent)	Index (1992=100)
1992	1.98	-	100
1993	1.83	-8	92
1994	1.83	0	92
1995	1.82	0	92
1996	1.59	-13	80
1997	1.51	-5	76
1998	1.46	-3	74

Table 5.6. Overall weighted average STD[®] call price and price index, excluding Flexi-Plan[®] discounts.⁹⁵

Table 5.7 shows changes in Telstra's international call prices between 1992 and 1998, holding consumption patterns constant and ignoring discount plans.

Year	Overall weighted average call price (dollars)	Change from previous year (per cent)	Index (1992=100)
1992	9.59	-	100
1993	8.58	-11	89
1994	8.16	-5	85
1995	7.89	-3	82
1996	7.83	-1	82
1997	7.52	-4	78
1998	7.00	-7	73

Table 5.7 Overall weighted average international call price and price index, excluding Flexi-Plans^{®96}

95 Estimates prepared for the Commission, based on Public Switched Telephone Service Standard Tariff, and data provided by Telstra to the Commission.

96 Estimates prepared for the Commission, based on Public Switched Telephone Service Standard Tariff, and data provided by Telstra to the Commission. Weighted average prices for international calls are based on a sample of 25 countries representing more than 80 per cent of international call revenues in 1997.

The calculations did not include the Flexi-Plans offered by Telstra (which have enabled end-users to achieve greater reductions in call prices). Flexi-Plan discounts tended to vary between 12 per cent and 25 per cent. In introducing recent changes to national long distance prices, Telstra simplified its pricing structure by withdrawing several of its Flexi-Plans and reducing standard prices.

Telstra also offers a \$3 cap on maximum national long distance charges for calls made between 7 p.m. and 12 a.m. on weeknights. Peak and off-peak times also apply for international long distance calls, with peak times varying according to the call destination. As with national long distance calls, between 1992 and 1998 the amount of time charged at peak rates by Telstra has more than halved, on average, from 129 to 50 hours per week.⁹⁷ Telstra has recently introduced new international call rates, offering a choice of per minute call rates or half hour rates.⁹⁸

Other service providers offer a range of national and international long distance rates. Cable & Wireless Optus matches Telstra's \$3 deal on weeknight national long distance calls, while AAPT currently offers \$1.99 maximum charge for calls between 6 p.m. and 12 a.m. weeknights to AAPT pre-selected customers.

During the inquiry the Commission received a study undertaken by the Communications Research Unit comparing Telstra's long distance telephony charges with long distance charges in comparable countries.⁹⁹ Overall, it was found that Telstra's standard charges for national long distance calls are among the middle of the range compared with charges in other countries with telecommunications networks considered broadly comparable to those of Australia.

97 Based on Telstra's Public Switched Telephone Service Standard Tariff. See Australian Competition and Consumer Commission, *Telecommunications Charges in Australia*, December 1998.

98 Telstra press release, Telstra Unveils Massive International Price Reductions, 21 May 1999.

99 Australian Competition and Consumer Commission, *Telecommunications Charges in Australia*, December 1998. The Commission engaged CRU to undertake an international benchmarking study.

Table 5.8 shows the average price for a Telstra STD call and the price of a national long distance call for other countries, for a five minute call. A study undertaken by the Productivity Commission produced a similar ranking (with the exception of Canada).¹⁰⁰

	Peak (11.00a.m. weekdays)							Off-peak (8.00p.m. weekdays)						
	1992	1993	1994	1995	1996	1997	1998	1992	1993	1994	1995	1996	1997	1998
NZ					4.54	4.57	4.57					1.30	1.31	1.31
Canada					2.90	2.84	2.84					2.17	2.13	2.13
France	2.64	2.64	2.36	2.33	2.17	1.43	1.43	1.87	1.88	1.66	1.64	1.52	1.02	0.71
Australia	2.12	2.02	2.02	2.00	1.81	1.82	1.70	1.48	1.39	1.39	1.39	1.38	0.82	0.92
UK	1.58	1.63	1.21	0.93	0.97	0.87	0.78	1.19	1.22	0.82	0.59	0.57	0.47	0.42
Sweden	1.11	1.11	0.93	0.71	0.72	0.50	0.40	0.70	0.70	0.49	0.38	0.59	0.28	0.22

Table 5.8. National long distance call charges for five minute calls¹⁰¹

With respect to international long distance calls it was found that international calls originating in Australia from Telstra customers appear to be consistently more expensive than identical calls initiated in other countries such as Canada, the United Kingdom, France and New Zealand.

The Commission notes, however, that due to a complex range of factors, including usage patterns and regulatory differences, it is difficult to draw meaningful conclusions from these comparative studies. In addition, some studies do not incorporate offerings by other carriers and service providers which tend to be below those of incumbent carriers.

5.3.6. Conclusion

Competition in the market for long distance services has developed significantly since the first liberalisation measures were introduced in 1992 and particularly since full deregulation in 1997. Nevertheless, Telstra still remains the main supplier of long distance telephony services, particularly in relation to domestic (or national) long distance calls.

Telstra controls the supply of inputs representing a significant proportion of competitors' costs, namely the Domestic PSTN Originating and Terminating Access Services. While Telstra's supply of these services to its competitors is subject to access regulation, reducing competitors' reliance on Telstra would enhance the conditions for effective competition in this market.

¹⁰⁰ op cit.

¹⁰¹ Estimates prepared for the Commission, based on Public Switched Telephone Service Standard Tariff, and data provided by Telstra to the Commission. National long distance call charges are quoted as the overall weighted average price for STD calls for Australia and the price of a call to the longest distance zone for all other countries as Australia's STD zones are larger and more complex than most sample countries.

5.4. High bandwidth carriage services market

This market is a national market for the supply of high bandwidth carriage services by service providers to end-users — the high bandwidth carriage services market. These services are ‘always on’ and involve the carriage of communications at speeds around, and exceeding, 1.5—2 Mbits per second. In this market, there are two discrete (but overlapping) segments — a residential segment and a business segment.

5.4.1. Market size and growth

The Commission found it difficult to obtain information about the size of this market. Information to hand indicates that it is currently worth about \$1 billion per annum in revenue. This market is seen by service providers and equipment manufacturers as one which is likely to experience significant growth in the foreseeable future. The Commission was also cognisant of the fact that regulators in the United States and the United Kingdom expect demand for broadband residential services to grow.

In general, market growth forecasts were based on data traffic projections. Various projections were advanced including projections of a five fold increase in data traffic between 1999 and 2004, with data traffic set to exceed voice traffic around the year 2000.¹⁰²

Forecasts, by nature, tend to involve a degree of speculation. Accordingly, the Commission was concerned to examine the likelihood of market growth occurring.

A major driver for growth in this market is Internet usage. Again, the Commission was presented with projections for future Internet take up. The Australian Bureau of Statistics has, however, recently issued estimates of current Internet take up and past growth.

The ABS estimates that as at February 1999 just over 18 per cent of all households (1.3 million) had home Internet access. This is an increase of 50 per cent (423 000) over the February 1998 estimate. As at February 1999 there were also 745 000 households with a computer which intended to acquire Internet access in the next 12 months. By February 2000 there should be two million households with Internet access. Almost 90 per cent of Internet households access the Internet once a week or more. Moreover, the ABS estimates that, in the 12 months to February 1999, more than five million adults (37 per cent of the Australian total adult population) accessed the Internet compared with three million in the previous 12 months.¹⁰³

These figures provide support for predictions of market growth in the residential sector of the market. Further, the Commission notes that Telstra has recently committed to upgrading its network to ensure that it can meet this growth.¹⁰⁴ Also, Cable & Wireless

102 *Australian Financial Review*, 30 June 1999, p. 24, presenting Merrill Lynch estimates for Telstra.

103 Australian Bureau of Statistics, *Use of Internet by Householders*, Australia, 30 June 1999, Cat. No. 8147.0.

104 *Australian Financial Review*, 30 June 1999, p. 24 and *Australian Financial Review*, 2 July 1999, p. 44.

Optus has recently formed a joint venture with Excite@ Home to deliver high speed Internet services in Australia.¹⁰⁵

While these estimates focused on the residential segment of the market the Commission understands that the business segment is also expected to grow significantly in the foreseeable future. In part this is evidenced by the investment activity currently being undertaken by carriers in customer access infrastructure and long distance transmission infrastructure.

5.4.1. Suppliers and market shares

In the residential segment of the market there are likely to be two main suppliers - Telstra and Cable & Wireless Optus. Telstra currently offers high speed Internet access services by means of its HFC network. Cable & Wireless Optus has recently announced a similar service as part of its joint venture with Excite@Home. Telstra may also use ADSL technology over its copper customer access network to provide high speed Internet access. Firm plans in this regard have not yet been announced.

While the Cable & Wireless Optus HFC network enables it to provide end-users with an alternative supplier to Telstra, there are likely to be capacity constraints which affect the extent to which the Cable & Wireless Optus network will be sufficient to ensure competitive outcomes. Relevantly, the Cable & Wireless Optus network is confined to suburban areas of Brisbane, Sydney and Melbourne. Moreover, the Commission understands that with HFC networks, multiple users share a common cable. Accordingly, the speed that users experience is affected by the number of users on the network at any one time. Similarly, there may be limitations with ADSL technology which reduce the extent to which it can be made available for all end-users.

The business segment of the market is better served, with some end-users capable of being served by means of at least four customer access networks in Sydney and Melbourne. Nevertheless, the Commission understands that it is only a small proportion of business end-users who enjoy the benefits of this competitive activity.

During the inquiry the Commission sought to estimate market shares. Some people were unable to estimate shares and others refused to provide estimates. Accordingly, the Commission derived estimates from material prepared by Paul Budde Communication Pty Ltd. The estimates indicate that, on the basis of revenue, Telstra holds around 85 per cent of the market, with Cable & Wireless Optus being the next largest supplier. In any event, given that the market is expected to grow significantly over the foreseeable future, these estimates may not be a good approximation of future market shares.

5.4.2. Access to inputs

Customer access services are an input necessary to supply high bandwidth carriage services to end-users in this market. These services can be supplied by means of fixed

105 Cable & Wireless Optus press release, Cable & Wireless Optus and Excite@Home form joint venture company, 10 June 1999.

networks (copper, optical fibre, HFC) or certain wireless networks (LMDS) — they are services supplied within the customer access market.

Telstra is the main supplier of these customer access services and is thus in a position where it controls access to the majority of inputs necessary for competition in the high bandwidth carriage services market. In the Commission's view, the effectiveness of competition in the customer access market is likely to have a direct bearing on the development of competition in the high bandwidth carriage services market.

5.4.4. Existing regulation

Some services supplied in this market (namely, domestic leased line services) are subject to retail price regulation. They form part of a basket of services subject to price cap arrangements under the Telstra Corporation Act.

Particular inputs used to supply high bandwidth carriage services are already declared under Part XIC of the Act (e.g. the Digital Data Access Service). These declared services involve the combination of customer access services with particular carriage technologies. Unbundled customer access services are not declared. The supply of such services is, however, subject to general competition law.

5.4.5. Conclusion

While growth in this market could see the displacement of suppliers such as Telstra that hold a major share of the market, the Commission considers this unlikely in the foreseeable future. Telstra controls the majority of inputs necessary to supply high bandwidth carriage services to end-users and, for the foreseeable future, is likely to be in a position to restrict access to these inputs in order to limit the development of competition in this market. This may not affect all end-users, such as large corporations and government end-users, for whom it is economic to roll out additional customer access infrastructure. It is, however, likely to affect the vast majority of end-users, both business and residential end-users.

6. Declare the unconditioned local loop service?

In the previous section the Commission examined the effectiveness of competition in the future without declaration. Particularly, the Commission noted the relationship between the effectiveness of competition in the customer access market and the effectiveness of competition in the downstream markets. In this and subsequent sections the Commission considers whether declaration of each eligible service covered by this inquiry will promote the long term interests of end-users, in particular through promoting competition in those downstream markets. In this regard, it also considers whether declaration will affect the achievement of any-to-any connectivity and the economically efficient use of, and investment, in infrastructure.

6.1. Will declaration promote competition?

6.1.1. Principles

In forming a view about the likely impact of declaration on competition, the Commission must consider not only whether declaration would be likely to promote competition but also ‘the extent’ to which this would be likely to occur.¹⁰⁶ This suggests that the Commission ought to give greater weight to a situation where the likely effect of declaration on competition is substantial than where the effect is minor.

Competition is a process of rivalry and, therefore, it may be difficult to describe (in qualitative terms) the extent to which declaration would be likely to promote competition through simply examining its impact on that process. In many cases it will be more instructive to examine the extent to which declaration promotes competition from the perspective of end-users, i.e. to have regard to the likely results from increased competition in terms of price, quality and service diversity. This is consistent with the objective of Part XIC, and ensures that the Commission relates the competitive impact back to the test for declaration (i.e. promoting the long-term interests of end-users).

In determining the extent to which declaration is likely to promote competition the Act provides that:

... regard must be had to the extent to which the thing will remove obstacles to end-users of listed service gaining access to listed services.¹⁰⁷

The explanatory memorandum for this provision adds:

... it is intended that particular regard be had to the extent to which the particular thing would enable end-users to gain access to an increased range or choice of services.¹⁰⁸

106 Explanatory Memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 – item 6, proposed s. 152AB.

107 Subs. 152AB(4).

108 Explanatory memorandum for the Trade Practices Amendment (Telecommunications) Bill 1996 – item 6, proposed s. 152AB.

The Commission's consideration of pricing approaches is a separate process to the decision about whether any of the eligible services should be declared. Nonetheless, the extent to which declaration is likely to promote competition (with consequent benefits to end-users) will be influenced by the prices that access providers and access seekers negotiate for the declared services. Thus, in assessing the impact of declaration on competition (and also on economically efficient investment), the Commission has examined whether a pricing approach could be developed that would promote competition with due regard to other relevant matters set out in s. 152AH of the Act.

6.1.2. Use of the unconditioned local loop service

During the inquiry service providers advised the Commission that they would use the unconditioned local loop service to supply high bandwidth carriage services and local telephony services to end-users. Accordingly, the Commission considered the impact of declaration on competition in the high bandwidth carriage services and local telephony services markets.

6.1.3. The high bandwidth carriage services market

With this market is expected to experience growth in the foreseeable future, the Commission expects there to be significant demand by both residential and business end-users for high bandwidth carriage services. End-users in more densely populated areas are likely to be less costly to serve than those in other areas. Service providers advise that they are likely to use the unconditioned local loop service to target end-users in central business districts, inner city and suburban areas, and regional (country town) locations.

The majority of end-users are likely to be served only by the Telstra public switched telephone network. By gaining access to the unconditioned local loop service, service providers can provide end-users with an alternative source of supply for these high bandwidth carriage services. Thus, these end-users are no longer reliant solely on Telstra's choices in terms of service range and timing of deployment.

Moreover, by acquiring the unconditioned local loop service, service providers can offer a wider range of carriage services to end-users. They are no longer constrained to the services supplied by Telstra. This would be expected to place direct pressure on Telstra to develop better services and bring them to the market more quickly. In addition, they can achieve a greater degree of management of the services which they provide to end-users. This enables service providers to achieve increased control over the quality of services delivered to end-users.

In the United States, service providers have begun deploying high bandwidth carriage services to residential end-users using ADSL technology. The pricing package, on average, involves a connection charge of US\$100, a modem (or customer premises equipment) charge of US\$200, and ongoing monthly service charges of US\$50 - US\$60 per month. These monthly charges include Internet access.¹⁰⁹ This

109 Federal Communications Commission, Inquiry Concerning the Deployment of Advanced Telecommunications Capability to All Americans in a Reasonable and Timely Fashion, and Possible Steps to Accelerate Such Deployment Pursuant to Section 706 of the Telecommunications Act of 1996, Report, 2 February 1999, paragraph 87.

works out to be more expensive than services supplied by means of HFC networks in the United States; however, the charges may be expected to fall as the technology matures.

The price of similar services in Australia will depend on the costs of a number of inputs, including the cost of ADSL equipment and charges for the unconditioned local loop service. Information received by the Commission indicates that costs for ADSL equipment are likely to be similar to costs in the United States. Telstra provided the Commission with estimates of its annual costs for supplying the unconditioned local loop service. This information was confidential in nature and so the Commission was unable to fully test the quantum of these costs.

Even where end-users could be served by the Cable & Wireless Optus HFC network, there are likely to be benefits from access to the unconditioned local loop service. In some areas there could be capacity constraints which limit the ability of Cable & Wireless Optus to satisfy demand. Moreover, the presence of high barriers to entry and high market concentration provide scope for coordinated (or accommodating) action by network operators. Enabling other service providers to supply high bandwidth carriage services by means of the unconditioned local loop service minimises the scope for this to occur.

The unconditioned local loop service is unlikely to be supplied to access seekers in the absence of declaration (in a manner which would meet their demand). Declaration would ensure that those carriers and carriage service providers supplying the unconditioned local loop service to themselves are required to supply the service to other service providers upon request. This will be likely to promote competition in the market for high bandwidth carriage services.

As a result, this is expected to enable end-users in central business districts, inner city and suburban areas, and in regional (country town) locations to gain access to an increased range and choice of high bandwidth carriage services, thus removing obstacles to them gaining access to those services (subs. 152AB(4) of the Act) and, in turn, promoting their interests. These services can be used for Internet access, video on demand, remote local area network (LAN) access and interactive multimedia.

Telstra has questioned the extent to which service providers can introduce a greater range of carriage services. In its view, rigorous technical standards are required to prevent interference problems associated with xDSL technologies. Accordingly, it was of the view that innovation would be limited to the value added to the carriage services rather than the technologies themselves.¹¹⁰

While the process of establishing standards may involve limiting the range of electronic equipment that can be used with the unconditioned local loop service, it ensures that end-users are not limited to the technology choices made by the network owner. Moreover, if industry standards are developed in accordance with best practice approaches to regulation, they will tend to be outcomes based and minimise the extent to which they prescribe the means by which compliance is achieved. Accordingly, the

110 Telstra Research Laboratories, *The Customer Access Network: Broadband Services Provision*, Information Paper, May 1999.

Commission is of the view that it is possible to develop standards that will provide for a range of technologies, rather than being limited to the technologies provided by the network owner.

Additionally, the need for such standards in itself is a direct result of the innovation generated by competition. Such developments would not be likely in the absence of declaration with Telstra retaining full control of the infrastructure.

Telstra also submitted that declaration of the unconditioned local loop service would simply transfer 'a bottleneck from one service provider to another, while doing nothing for broader competitive access to the customer base'. In the Commission's view this ignores the variety of ways in which competition can be introduced to a market. Rather than promoting competition through the duplication of infrastructure, declaration of the unconditioned local loop service promotes competition for use of the customer line. In essence, Telstra will no longer have absolute control over the line. It will have to compete, along with other service providers, for use of the line by offering end-users a better service range, or lower priced services, than that offered by its competitors. In a very real sense there will be competition for the customer.

There are likely to be some end-users for whom declaration may have no impact, particularly those served by multiple customer access networks. These end-users are likely to be located in central business districts. If, however, all central business districts, or even those of Sydney and Melbourne, were excluded from the scope of the declaration instrument, there are likely to be many end-users in those areas who would be served by only one customer access network. These end-users would be disadvantaged vis-à-vis their suburban counterparts.

Accordingly, at this stage the Commission considers that the declaration obligations should apply to all geographic areas. At a future point in time it may be appropriate to adjust the geographic scope of the declaration instrument. With this in mind the Commission suggests a reconsideration of these matters in approximately five years.

Telstra has claimed that these benefits will not be realised for two to three years because the unconditioned local loop service could not be delivered to the market until late 2001. This would be due to the need to develop standards and make modifications to Telstra systems. The Commission is sceptical about the need to take this length of time to bring the service to the market and, in its view, there are measures that could be taken to bring the service to the market at an earlier date. These are covered in section 10.

6.1.4. Local telephony services market

Telstra holds around 94 per cent of this market and is responsible for providing the majority of services supplied to end-users by its competitors.

While Cable & Wireless Optus expects that it can grow its customer base of 170 000 at 5000 customers per week, even with growth continuing at this rate it is only likely to increase its market share by around 3 per cent per annum. Moreover, there are capacity constraints in that its HFC network is only rolled out in particular suburbs of Brisbane, Sydney and Melbourne. There is the potential for new entrants to roll out networks in

discrete areas. However, it is unclear if and when these developments will be sufficient to generate effective competition within the local telephony services market.

Potential access seekers advise the Commission that they plan to use the unconditioned local loop service to supply telephony services either independently of, or bundled with, high bandwidth carriage services (for instance, high bandwidth carriage services using ADSL). Accordingly, declaration is also likely to promote competition in the market for local telephony services. Potential access seekers were, however, unable to specify the types of customers to whom telephony services would be provided independently of advanced carriage services.

Where telephony services are provided either along with, or independently of, high bandwidth services this will enable end-users to gain access to an increased choice of telephony service providers, thus improving their access to those services (subs. 152AB(4) of the Act). Such end-users are likely to be located in central business districts, inner city and suburban areas and regional (country town) locations (i.e. the same areas in which access seekers using the unconditioned local loop service would supply high bandwidth carriage services). Increasing the range and choice of service providers is expected to provide greater scope for price competition in local telephony services.

6.1.5 Telstra's wholesale bitstream access service

Telstra suggested to the Commission that declaration of an alternative service, namely its proposed bitstream access service, would meet service providers' access requirements. While only limited information about this service is available, this service would involve Telstra managing the carriage of communications between the end-user and a point of interconnection higher in the network hierarchy than would be the case with the unconditioned local loop service.

Information received from service providers indicated that while it may meet the needs of some service providers, primarily Internet service providers, it would not meet the needs of most carriage service providers. For carriage service providers the unconditioned local loop service provides greater scope for service differentiation. Moreover, with the unconditioned local loop service, carriage service providers would not be reliant on Telstra's choices in terms of service range and timing of deployment as would be the case with the bitstream access service.

That said, the Commission is encouraged by Telstra's development of its wholesale bitstream access service, which may satisfy the needs of some service providers and be used by others as an interim measure until they acquire the unconditioned local loop service.

6.2. Will declaration achieve any-to-any connectivity?

6.2.1. Principles

In addition to the impact of declaration on competition the Commission must consider whether declaration is likely to result in the achievement of the objective of any-to-any connectivity in relation to carriage services that involve communications between end-users.

Any-to-any connectivity enables end-users to communicate with each other, irrespective of the network to which they are connected. As the explanatory memorandum to the Trade Practices Amendment (Telecommunications) Bill 1996 noted, the concept of any-to-any connectivity is not always relevant in the declaration context.

6.2.2. Impact of declaration

Submissions received by the Commission did not address this particular objective with respect to the unconditioned local loop service.

While some matters raised during the inquiry may have a bearing on any-to-any connectivity, it appears that declaration of the unconditioned local loop service will have no impact on the achievement of any-to-any connectivity independently of the matters considered by the Commission in relation to economic efficiency (section 6.3). For instance, the impact of declaration on the operation and performance of telecommunications networks (see below) may have implications for both any-to-any connectivity and economic efficiency. Rather than duplicate consideration of these matters, any issues that may have a bearing on any-to-any connectivity are addressed in the context of efficiency considerations.

6.3. Will declaration encourage economic efficiency?

6.3.1. Principles

In considering whether declaration will promote the long-term interests of end-users, paragraph 152AB(2)(e) the Act requires the Commission to have regard to the extent to which declaration is likely to encourage the economically efficient use of, and the economically efficient investment in, infrastructure.

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

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

It may not be always possible to promote one component of efficiency without reducing another. For instance, regulatory intervention to promote allocative efficiency may have negative implications for productive and dynamic efficiency.

Competition and efficiency

Reflecting a strong relationship between competition and efficiency, the Commission's analysis of the likely impact of declaration on competition will influence its analysis of impact on efficiency.

For instance, if the Commission is of the view that supply of the eligible service is not subject to effective competition, then it could conclude that declaration would be likely to result in:

- the eligible service being supplied to service providers at a price which is closer to underlying costs, resulting in a more efficient allocation of resources; and
- prevention of inefficient duplication of infrastructure used to supply the eligible service.

Declaration is, however, likely to have other impacts on efficiency, both positive and negative. For instance, while declaration may promote efficient investment in downstream markets, it may also result in costs as potential access providers comply with the standard access obligations, or discourage efficient investment in infrastructure used to supply the eligible service.

Accordingly, the Commission views the efficiency objective as requiring a specific focus on the likely impact of declaration on efficiency, with a view to examining how this is likely to affect the long-term interests of end-users.

To do this the Commission will separately analyse the impact of declaration on:

- the economically efficient use of infrastructure used to supply carriage services and services provided by means of carriage services; and
- the economically efficient investment in infrastructure used to supply carriage services and services provided by means of carriage services.

Economically efficient use of infrastructure

Where declaration is likely to promote competition in markets for carriage services or services provided by means of carriage services, then the Commission's competition analysis will generally enable it to form a view about the impact of declaration on allocative efficiency. For instance, if declaration is likely to lead to lower prices for the eligible service, then it will be expected to improve allocative efficiency in the market in which the eligible service is supplied. In the language of paragraph 152AB(2)(e) of the Act, declaration will be expected to result in the more efficient use of infrastructure used to supply the eligible service.

There are likely to be costs associated with the supply of an eligible service (e.g. configuring the network, or installing systems to provide billing information to access seekers) and these costs need to be considered in deciding whether to declare the eligible service.

The Act requires the Commission to consider whether it is 'technically feasible' to supply and charge for the services. In particular, the Commission must have regard to the following matters:

- whether supplying, and charging for, the services is feasible in an engineering sense (i.e. having regard to the technology that is in use or available);
- the costs involved in supplying, and charging for the services, and whether these costs are reasonable; and
- the effects or likely effects that supplying, and charging for, the services would have on the operation or performance of telecommunications networks.

In the declaration context the Commission interprets this requirement as applying to the eligible services under consideration.

Where the Commission determines that it is ‘technically feasible’ to supply and charge for the eligible service, and it is of the view that declaration will promote competition, it will generally consider that declaration is likely to encourage the efficient use of the infrastructure used to supply the service unless this would discourage efficient investment.

Economically efficient investment in infrastructure

Efficient infrastructure investment makes an important contribution to the promotion of the long-term interests of end-users. It can lead to more efficient methods of production, fostering increased competition and lower prices, as well as enhancing the level of diversity in the goods and services available to end-users.

In considering likely impacts of declaration on investment, and their extent, the Commission is mindful they may differ depending on the type of investment in question. Accordingly, the Commission will examine the likely impact of declaration on economically efficient investment in:

- infrastructure by which the eligible service is supplied; and
- infrastructure by which other carriage services, and services supplied by means of carriage services, are supplied.

6.3.2. Economically efficient use of infrastructure

The Commission expects declaration of the unconditioned local loop service to achieve outcomes in the customer access market that would be unlikely to occur in the absence of declaration, i.e. the supply of the unconditioned local loop service by Telstra to its competitors. As a result, access seekers will be able to use existing customer access infrastructure and engage in more competitive behaviour in the downstream high bandwidth carriage services market and local telephony services market. In the Commission’s view this is likely to improve the efficient allocation of resources within those markets, enabling the more efficient use of infrastructure used to supply the unconditioned local loop service as well as downstream services, and thereby promoting the long-term interests of end-users.

To supply the unconditioned local loop service to its competitors Telstra will, however, need to undertake changes to its internal systems and processes. These changes will involve costs and thus have implications for technical feasibility.

Technical feasibility — technology in use or available

To assist in examining whether it would be feasible for access providers to supply and charge for unconditioned local loop service the Commission engaged Cytec. Cytec, in consultation with the Commission, prepared and released the feasibility study for public comment on 10 September 1998. The Commission gave full consideration to submissions received in response to the study.

In considering technical feasibility issues, the approach taken by the Commission was to focus on infrastructure operated by the access provider most likely to be subject to access requests: the Telstra fixed public switched telephone network.

Cytec concluded that it would be feasible for Telstra to supply the unconditioned local loop service. In its study, Cytec identified a number of points in the Telstra public switched telephone network where an access seeker could interconnect. These include points:

- inside a pillar or cabinet;
- inside the housing for a RIM or IRIM;
- inside the exchange building at which an RSS, RSU or LAS is located.

Cytec noted that there may be capacity constraints in particular instances which limit the number of access seekers that can interconnect at a particular point of the Telstra public switched telephone network.

Where there are capacity constraints, the access provider can extend or enhance the capability of its infrastructure, thereby enabling interconnection. This might be done by way of agreement with particular access seekers or pursuant to an arbitration determination of the Commission.¹¹¹ Where the capability of the infrastructure cannot be extended or enhanced, then the standard access obligations set out how the rights of access are to be allocated.

Essentially, an access provider is not required to supply a declared service where to do so would:

- prevent the access provider obtaining a sufficient amount of the service to meet its reasonably anticipated requirements, measured at the time when the access request is made; or
- prevent an existing access seeker obtaining a sufficient amount of the service to meet its reasonably anticipated requirements, measured at the time when the access request is made.

Telstra advises, in the short term at least, interconnection would be a manual process. Moreover, in some instances, interconnection would involve breaking dedicated paths that have been established in order to speed up service activation time. In addition,

111 Paragraph 152CP(2)(e) of the Act provides that the Commission can make an arbitration determination which requires a party to extend or enhance the capability of the facility by means of which the declared service is provided. The access seeker is to bear the costs of such a requirement – paragraph 152CQ(f).

interconnection is likely to introduce additional complexity in detecting faults as this will involve more than one carrier. These issues are considered below.

Technical feasibility — supply costs

Once a service is declared, those supplying the service (i.e. access providers) are subject to standard access obligations. These obligations impose ‘compliance’ costs on access providers. Accordingly, the Commission is required to consider costs involved in supplying and charging for the services.

In identifying costs involved in supplying and charging for a particular eligible service, the Commission is cognisant that the Part XIC framework enacted by Parliament provides for a staged approach to access regulation. The process commences with declaration. Following declaration, terms and conditions of supply are established, either through commercial negotiation, or through Part XIC processes such as the submission of an access undertaking or the arbitration of an access dispute. In the declaration context the Commission takes account of the direct costs necessary to comply with the standard access obligations.

In both the discussion paper and the technical feasibility report the Commission sought details of the costs involved in supplying and charging for the services. In response Telstra raised concerns about substantial costs involved in undertaking the preparatory work necessary to supply the unconditioned local loop service to access seekers.¹¹²

Telstra elaborated on these concerns in subsequent submissions, claiming that the supply of this service would impose costs:

- in interconnecting access seekers’ networks; and
- in making modifications to Telstra systems.

The costs associated with interconnecting networks arise from the need to coordinate the work forces and work practices of access seekers and access providers. In addition, there are likely to be costs associated with the establishment of co-location arrangements, although Telstra advises that existing processes can be used to establish co-location at buildings where RAUs are located.

In terms of systems modifications, the modifications broadly affect the following types of systems.

- Recording system — Changes are required so that information about copper pairs can be recorded and easily accessed. This may include information about characteristics of the copper pairs and about the allocation of pairs to particular service providers. In managing interference between carriage services provided over particular cables, the records would identify cable types and the carriage services in place.
- Service activation systems — These systems are linked, with data entry to one system automatically activating other systems to perform the appropriate action.

112 Telstra – Response to Discussion Paper (submission 1), p. 39.

Introduction of a new service may involve changes to establish an activation process for that service in order to implement activation orders.

- Billing system — Changes are required to include the new service for charging purposes.

In addition, Telstra advises that new line testing processes would need to be introduced for evaluating the suitability of copper pairs for xDSL services.

Telstra provided the Commission with estimates for most of these costs. These estimates were confidential in nature and, therefore, the Commission could not test them through wider industry comment. Moreover, the scope of the work proposed by Telstra may change following discussions with potential access seekers about their requirements.

Once the Commission has identified and, as far as possible, assessed the likely magnitude of the costs involved in supplying and charging for the eligible service, it is necessary to consider whether they are ‘reasonable’. In the Commission’s view, ‘reasonableness’ should be evaluated from a commercial perspective.

The term ‘reasonableness’ is a relative concept and, accordingly, whether expected costs are ‘reasonable’ will depend on all the circumstances of each particular case. Based on its experience to date, the Commission suggests that costs are likely to be regarded as reasonable where they are not so high as to be unreasonable. They are likely to be unreasonable if there is no prospect of the costs being recovered (for example, from access seekers as part of the terms and conditions of access). In considering whether there is any prospect of costs being recovered, it may be appropriate to consider the likely demand for the service.¹¹³

These costs are largely fixed in nature and consequently it may be appropriate to recover them over time, including a return on capital. This would promote efficiency and be consistent with normal commercial practice. Further, to the extent that the costs are common to a range of services (possibly including the new unmanaged copper service that Telstra intends to offer service providers) then only a proportion of the costs may need to be recovered from the declared services.

Potential access seekers have indicated demand for the unconditioned local loop service in order to serve end-users in central business districts, inner city and suburban areas,

113 A recent study by Ovum Pty Ltd suggests that, in a typical country, the costs from supplying a service similar to the unconditioned local loop service are likely to outweigh the benefits. This study was based on a number of important assumptions, with the results being highly sensitive to particular assumptions. Key assumptions affecting the flow of the benefits related to the availability of copper wires. By adjusting the assumptions, including the assumption about the availability of copper wires, to suit Australian conditions, the study suggests that the benefits outweigh the costs. Additionally, the net benefits are likely to have been underestimated since the study did not fully assess the benefits from innovation. With respect to the costs, Ovum included both costs to the access provider and the access seeker based on developments in the United States. See Ovum, *Unbundling the Local Loop: A Regulatory and Market Assessment*, 1998. It should be noted, however, that the cost-benefit test applied by Ovum is not to be equated with the long-term interests of end-users test that must be applied by the Commission. Moreover, in applying the long-term interests of end-users test, the Commission must reach its own views on technical feasibility issues.

and in regional (country town) locations. In the Commission's view this would provide a broad base over which costs of the order estimated by Telstra could be recovered. Accordingly, the Commission is of the view that the costs involved in supplying and charging for the unconditioned local loop service are likely to be reasonable.

Technical feasibility — effect on telecommunications networks

In addition to the costs involved in supplying and charging for the eligible service, there may be spillover costs in terms of network integrity. The Commission is required to consider the effects (or likely effects) of supplying and charging for the service on the operation or performance of telecommunications networks.

In relation to the unconditioned local loop service, Telstra is concerned about:

- the propensity for interconnection to introduce faults; and
- interference problems arising from the manner in which access seekers might use the service.

Interconnection and faults

In its report on feasibility Cytec noted that there is a propensity to introduce faults with any pillar, cabinet and cable joint access. Telstra echoed these concerns and there appeared to be some consensus within the industry that interconnection at pillars, cabinets and joints would be generally undesirable or at the very least impractical at this stage.

Information received by the Commission in response to the technical advice paper prepared by Cytec and further information received by the ACIF from its members indicates that interconnection will be sought at points inside the housing for a RIM or IRIM or inside the exchange at which an RSS, RSU or LAS is located. Accordingly, the Commission is of the view that the scope for introduction of faults of this kind will be minimised.

While interconnection at these points will minimise the scope for the introduction of faults, Telstra submitted that it will nevertheless increase the prospect of faults occurring. Telstra provided estimates to the Commission in support of its concerns.

In the main, the propensity for increased faults arises due to increased level of human interaction (or 'hands in the plant') that is likely to occur with supply of the unconditioned local loop service to access seekers. In addition, higher fault rates may occur with the use of new technology on customer lines. This is, however, less clear.

The Commission accepts that supply of the unconditioned local loop service to access seekers may create the propensity for higher fault rates. While the magnitude of such an increase is difficult to quantify, there could be a small percentage increase in fault rates. The Commission would expect this to be minimised through the development of interconnection procedures and the use of appropriately trained personnel.

Interference issues

The use of copper pairs for high bandwidth carriage services creates the potential for the carriage of communications on one copper pair to interfere with the carriage of communications on another copper pair in the same bundle (i.e. cable binder). During

the inquiry two types of interference were identified: near-end cross-talk and far-end cross-talk. Examples of these forms of cross-talk include the following.

- Near-end cross-talk — This is interference where xDSL technology is used on more than one pair of copper wires in the bundle. For example, as HDSL technology is used on more than one copper pair in the same bundle, interference between each pair limits the distance over which the technology can be used. Interference also arises when ADSL technology is used on one pair and HDSL on another pair. See, for example, Diagram 6.1. In this situation the Commission understands that the ADSL service is limited to approximately 2.7km.

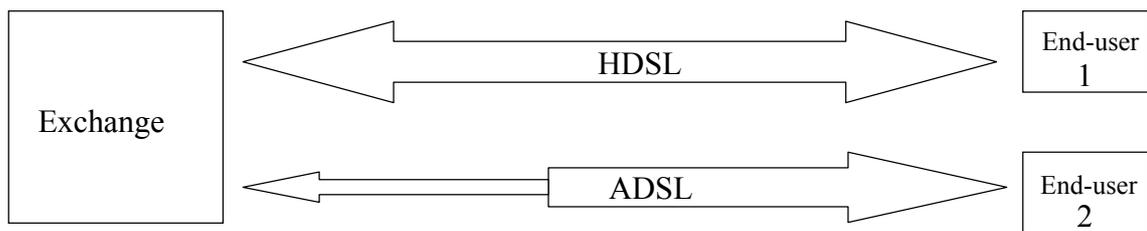


Diagram 6.1. Near-end cross-talk

- Near-end cross-talk due to use of ADSL in opposing directions — This is a more severe form of interference. With ADSL, one channel is a high bandwidth channel and the other channel is a lower bandwidth channel. Interference occurs where, as shown in Diagram 6.2., the direction of the high bandwidth channel on one copper pair is in the opposite direction to the high bandwidth channel on another copper pair in the same bundle. The solution to this form of interference is to prevent the use of ADSL in opposing directions.

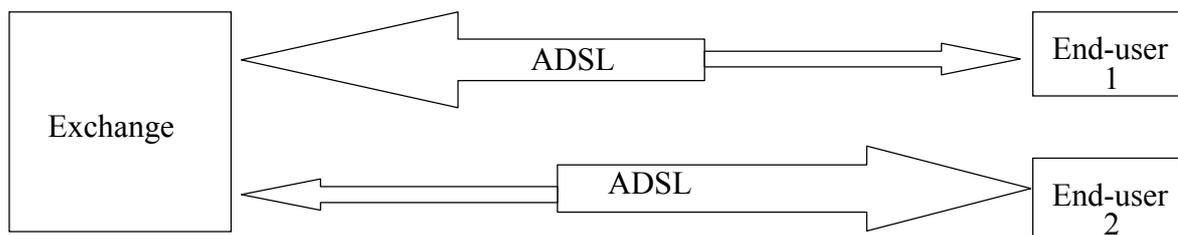


Diagram 6.2. Near-end cross-talk due to use of ADSL in opposing directions

- Far-end cross-talk — This form of interference arises where xDSL services are used on copper pairs originating from an exchange building (such as one housing an RAU), and also on copper pairs originating from a RIM. Where both pairs are

- included in the same bundle the service interconnecting at the RIM will provide stronger signals that will interfere with each of those from the exchange. This is shown in Diagram 6.3.

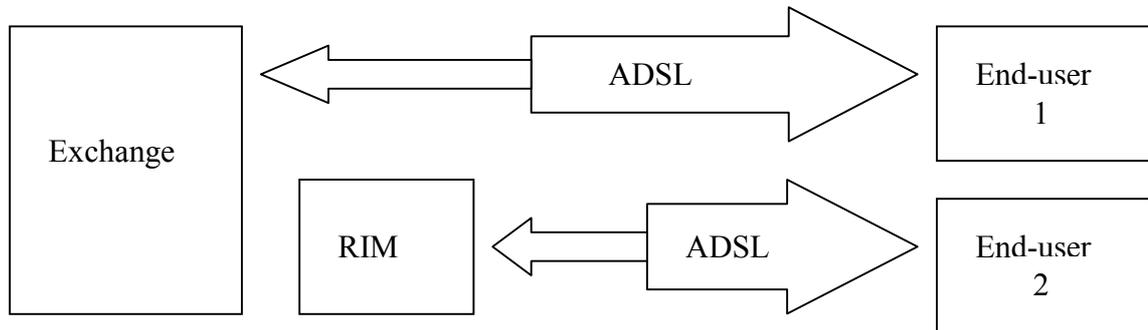


Diagram 6.3. Far-end cross-talk

To prevent these problems from occurring Telstra advocates active management of its network. This would involve Telstra supplying service providers with managed (xDSL) network services rather than with the unconditioned local loop service. In this regard Telstra suggested that it supply service providers with a ‘bitstream service’. This service would be a service for the carriage of communications between an end-user and a point of interconnection at a specified bit rate (e.g. 2Mbits per second).¹¹⁴

During the inquiry other service providers advocated an alternative approach whereby interference problems would be addressed through the development of rules and procedures to be followed when using the unconditioned local loop service. These rules would be developed by means of industry self-regulation through the ACIF. The ACIF is the industry self-regulatory body established to develop industry codes, standards and other procedures to assist with the provision of services in a multi-carrier/provider environment, where a multi-lateral approach to regulation is often seen as appropriate.

Inquiries by the Commission revealed a strong preference for the development of rules and procedures relating to the use of the unconditioned local loop service through a self-regulatory process. Work has commenced with ACIF to develop these rules and procedures. The scope of this work is described in section 10. The Commission strongly supports the ACIF process and considers it is the most appropriate forum in which to address these issues.

¹¹⁴ This service is also discussed in sections 3.4.2 and 6.1.5 of this report.

6.3.3. Economically efficient investment in infrastructure used to supply the unconditioned local loop service

To examine the likely impact of declaration on the economically efficient investment in infrastructure by which the eligible service is supplied, the Commission will consider the impact of declaration on the:

- legitimate commercial interests of the access provider;
- incentives for investment in the existing infrastructure used to supply the eligible service under consideration; and
- incentives for investment in new infrastructure which could be used to supply the eligible services under consideration.

The legitimate commercial interests of the access provider

The Act requires the Commission to consider the legitimate interests of potential access providers. The Commission will be concerned to examine whether access to the eligible service under consideration can be provided while maintaining the legitimate commercial interests of the access provider. Where this is not possible, declaration is likely to have an adverse impact on incentives for economically efficient investment in infrastructure.

The legitimate commercial interests of access providers include their ability to exploit economies of scale and scope.¹¹⁵ Economies of scale arise from a production process in which the average (or per unit) cost of production decreases as the firm's output increases. Economies of scope arise from a production process in which it is less costly in total for one firm to produce two (or more) products than it is for two (or more) firms to each produce separate products.

Declaration of the unconditioned local loop service would not, it appears, impact adversely on the ability of access providers to exploit economies of scale and scope. Telstra did not raise concerns with the Commission in this regard.

Nor would declaration adversely affect the ability of access providers to meet contractual commitments. Consistent with subs. 152AR(4) of the Act, which sets out limitations in relation to the standard access obligations, the access provider would have priority for its proposed uses of the network.

During the inquiry the Commission considered whether access providers and access seekers could negotiate access prices that would reflect costs, including a normal commercial return on prudent investment commensurate with risk. Particular consideration was given to the existence of certain regulatory constraints on the retail pricing of local telephony services. To assist in this, it released a discussion paper on pricing issues and outlined possible pricing approaches in the draft report for this inquiry.

Telstra claims that the constraints on retail pricing of local telephony services prevent it from recovering the costs of the line from line rental charges. Thus there is a shortfall

¹¹⁵ Paragraph 152AB(6)(b) of the Act.

between line costs and line rental revenue, which Telstra refers to as the 'access deficit'.

Since the release of the draft report the Government has announced new retail price control arrangements that apply from 1 July 1999. These include a cap of CPI-0 per cent on a basket of local calls and line rentals for residential and business customers. While the Commission is still considering the full implications of the decision, the changes should assist Telstra in recovering its legitimate costs through allowing line rentals to be raised so they cover a greater proportion of line costs.

In response to the draft report Telstra claims that the charges for the unconditioned local loop service should include a contribution to the access deficit. In its view a pricing approach that did not include such a contribution would be inconsistent with retail price controls.

Within the context of this inquiry the Commission did not believe it necessary to form a view on the precise nature or materiality of the access deficit. Nor was it necessary to form a view on the most efficient way of recovering non-call related costs. That said, the Commission is of the view that the legitimate commercial interests of the access provider would not require charges for the unconditioned local loop service to include a contribution to the access deficit.

In the Commission's view, access providers and access seekers could negotiate a price for supply of the unconditioned local loop service which reflected the costs of supplying that service. Such a price would enable access to be provided while maintaining the legitimate commercial interests of the access provider. The Commission will consider publishing a paper on pricing issues following the conclusion of this inquiry if this is likely to assist the resolution of those issues.

Given the ability to charge at cost, no access deficit should exist for those lines that are used to provide the unconditioned local loop service. Moreover, the Commission considers that an approach that includes an access deficit contribution would be undesirable as it would create the potential for inefficient entry.

The Commission considers that the legitimate interests of the access provider include its interests in complying with the law. Telstra raised concerns about the impact of declaration on its ability to meet customer service guarantee performance standards in relation to service activation and fault repair times.¹¹⁶ In particular, Telstra submits that use of copper pairs by access seekers will reduce the availability of pairs for its retail customers and slow the delivery of new services. Also, there may be increased service activation time when the customer line is churned between service providers. In addition, Telstra suggests that the supply of an unconditioned local loop service will increase fault rates.

To consider this matter further the Commission raised these issues with the ACA. The ACA is the regulatory body responsible for making customer service guarantee performance standards upon direction by the Minister for Communications, Information Technology and the Arts.

116 Telecommunications (Customer Service Guarantee) Standard 1997.

At this stage it is difficult to predict the extent (if any) to which supply of the unconditioned local loop service will affect Telstra's ability to comply with customer service guarantee performance standards. This is, however, unlikely to be a significant issue.

Telstra also raised concerns about its ability to comply with its statutory obligations as Australia's universal service provider. In this regard Telstra states:

... In order to fulfil the USO, Telstra needs to retain control over the first line into any premise. In the event that there is only one line into a premise (as is frequently the case), this would not be available to access seekers unless they became responsible for the USO in relation to that customer.¹¹⁷

The Commission doubts that these views represent the correct interpretation of the universal service obligation provisions in the Telecommunications Act. Nevertheless, even if they do, they are matters that can be dealt with as part of the terms and conditions of access.

Incentives for investment in existing infrastructure

The Act requires the Commission to consider the impact of declaration on the incentives for investment in 'the infrastructure by which the services are supplied'.¹¹⁸ While declaration will not have an impact on the initial investment in the infrastructure, it may distort the access provider's maintenance, improvement and expansion decisions leading to inefficient investment that harms the long-term interests of end-users.

In this regard it was submitted that declaration of the unconditioned local loop service may compromise Telstra's ability to modernise its network.

As part of its network modernisation plans, Telstra is reducing the amount of copper in the network. Particularly, it is installing RIMs and IRIMs at points between the former exchange building and customer premises, linking the RIM/IRIM to the exchange building by means of optical fibre.

Given that xDSL technology is designed for copper wires, where Telstra has introduced a RIM or IRIM service providers would no longer be able to interconnect at the former exchange building but would need to interconnect at the street based housing containing the RIM/IRIM. Telstra appears to be concerned that where a copper line currently runs to the former exchange building and a service provider interconnects at that point, then Telstra will be inhibited in its ability to implement modernisation plans which involve the deployment of a RIM or IRIM on that line.

In the Commission's view, declaration does not prevent Telstra from making changes to its network. That said, the terms and conditions under which Telstra is supplying services to access seekers could constrain its flexibility or the manner in which it makes changes to the network. In particular, these terms and conditions might provide for one or more of the following:

117 Telstra — Response to Draft Report, p. 15.

118 Paragraph 152AB(6)(c) of the Act.

- time based supply arrangements which take account of Telstra’s network modernisation plans or network upgrade policy;
- a process for the notification of network changes;
- a process for negotiating the establishment a point of interconnection at the RIM/IRIM as it is deployed or the provision of managed service in substitution of the access seeker’s ability to interconnect at the RIM/IRIM.

These arrangements could be negotiated on a case-by-case basis or form part of the TAF access code¹¹⁹ which sets out model terms and conditions of access, or an additional code. Section 10 describes work being undertaken within the TAF in this regard.

Incentives for investment in new infrastructure

In addition to considering the impact of declaration on incentives for investment in the infrastructure by which the eligible services are supplied, the Commission will also consider the impact of declaration on investment in new infrastructure that could be used to supply the eligible services.

In some instances economic efficiency may be best served by increasing the use of existing infrastructure to supply the eligible service, with duplication being inefficient and leading to higher costs for end-users. Under such circumstances inefficient duplication could be avoided if the eligible service were declared.

In other situations, however, declaration could deter efficient investment. Deterring efficient investment could stifle the development of a more diverse range of goods and services, delay the deployment of new technology and prolong inefficient production processes. In a dynamic environment such as telecommunications, this is likely to cause significant harm to end-users.

While it is difficult definitively to distinguish efficient investment from inefficient investment, it is possible to gain insight from the cost structure associated with service delivery and the innovation benefits likely to flow from additional investment. For instance, if the supply of the eligible service is characterised by increasing returns to scale then, in the absence of dynamic benefits, duplication may be inefficient (since it would cost less for the market to be served by a single supplier than by multiple suppliers). On the other hand, if scale economies are relatively small and the market demand can accommodate a number of suppliers of the eligible service, then investment by new entrants could be considered efficient.

Where additional investment is likely to be efficient, the Commission would be concerned if declaration were to deter that investment. It could be expected that even if an access seeker could use a competitor’s network it might nevertheless construct its own network. This might be done to enable it to differentiate its products from other competitors, to gain greater control over its costs and quality of the end service, or to remove the need for it to provide a competitor with commercially sensitive information.

119 It is usual for the TAF access code, which covers model terms and conditions of access, to be amended when new services are declared which raise new issues associated with providing access.

It was suggested the declaration would adversely impact on carriers' efficient decisions to provision for future capacity. Reference was made to economic theory suggesting that regulatory intervention to mandate access may lead to the infrastructure owners modifying investment plans to limit the amount of excess capacity. The Commission explored this further during one-to-one discussion but did not receive concrete examples or instances where this may occur.

The Commission would be concerned should declaration lead to carriers not provisioning for future growth but is of the view that such a policy would not be sustainable in a competitive environment, particularly where markets such as the high bandwidth carriage services market are growing.

Concerns were expressed about declaration of the unconditioned local loop service covering the networks of new entrants. While significant economies of scale are likely to exist in the provision of customer access networks, in certain parts of Australia the provision of multiple customer access networks is likely to be efficient, particularly where this leads to the deployment of high bandwidth carriage services. It would be unfortunate if declaration were to deter the roll out of such networks. In the Commission's view the exemption processes in ss. 152AS and 152AT provide a mechanism by which these matters can be addressed.

Relevantly, ss. 152AS and 152AT confer power on the Commission to make an order exempting a person, or a class of persons, from one or more of the standard access obligations where the Commission is satisfied that doing so will promote the long-term interests of end-users. The order can be unconditional or subject to conditions specified in the order (for example, an expiry date).

6.3.4. Economically efficient investment in infrastructure used to supply other services

Declaration may also facilitate efficient investment in infrastructure used to supply services other than the eligible services in question, and thus promote the long-term interests of end-users. Investment in this infrastructure may have been previously 'locked up' and, accordingly, the Commission will consider the impact of declaration on investment in infrastructure used to supply other carriage services, or services provided by means of carriage services.

With the unconditioned local loop service, service providers are obtaining access to the customer access network without the need to acquire other services traditionally bundled with the network. This allows them greater scope to develop new service offerings through investing in carriage technology and data networks.

Declaration of the unconditioned local loop service would be expected to encourage investment in xDSL technology and in data networks. In the context of an economy becoming increasingly reliant on the use of high bandwidth carriage services, the Commission expects declaration to create investment opportunities for a wider range of firms than would be the case were Telstra to be solely responsible for acquisition and supply of xDSL technology used on its network. Market inquiries by the Commission further supported these views.

This investment would be expected to provide greater scope for competition on the service-quality-price dimensions. Hence, end-users would benefit not only through the development of innovative services but also through greater competition on price and quality of service.

6.4. Conclusion

With the high bandwidth carriage services market expected to experience significant growth in the foreseeable future, the Commission expects there to be significant demand by both residential and business end-users for high bandwidth carriage services. By gaining access to the unconditioned local loop service, service providers can provide end-users with an alternative source of supply for these high bandwidth services. Thus, these end-users are no longer reliant solely on Telstra's choices in terms of service range and timing of deployment. With the unconditioned local loop service, service providers can also supply telephony services independently of, or bundled with, high bandwidth carriage services.

The unconditioned local loop service is unlikely to be supplied to access seekers in the absence of declaration (in a manner which would meet their demand). Declaration would ensure that those carriers and carriage service providers supplying the unconditioned local loop service to themselves are required to supply the service to other service providers upon request.

This will enable end-users in central business districts, inner city and suburban areas, and in regional (country town) locations to gain access to an increased range and choice of high bandwidth carriage services, thus removing obstacles to them gaining access to those services. These services can be used for Internet access, video on demand, remote LAN access and interactive multimedia. It would also provide them with an increased range and choice of telephony service providers, with an increased range and choice of service providers expected to lead to greater price competition for local telephony services.

In the Commission's view, declaration of the unconditioned local loop service is likely to promote competition in the market for high bandwidth carriage services and the market for local telephony services to a significant extent, with consequent benefits to end-users.

Declaration would also enable service providers to make efficient investment decisions and the Commission is of the view that access prices could be struck which enable the access provider to earn normal commercial returns. Declaration is also expected to encourage investment in xDSL technology and in data networks. The Commission considers that the costs involved in supplying and charging for this service are likely to be reasonable and that industry self-regulatory processes can address interference and related issues which may impact upon the operation of telecommunications networks. Consequently, declaration is also likely to encourage the economically efficient use of, and economically efficient investment in, telecommunications infrastructure and thereby promote the interests of end-users over the long-term.

As a result, the Commission is satisfied that declaration of the unconditioned local loop service will promote the long-term interests of end-users of carriage services and of services provided by means of carriage services.

There are likely to be some end-users for whom declaration may have no impact, particularly those served by multiple customer access networks. These end-users are likely to be located in central business districts. At this stage the Commission considers that the declaration obligations should apply to all geographic areas. At a future point in time, it may be appropriate to adjust the geographic scope of the declaration instrument. With this in mind the Commission suggests reconsideration of these matters in approximately five years.

7. Declare the local PSTN originating and terminating services?

In considering whether the declaration of the local PSTN originating and terminating services would promote competition the Commission considered both services simultaneously, rather than considering each service separately. Unless otherwise indicated the following discussion relates to both the local PSTN originating service and the local PSTN terminating service.

7.1. Will declaration promote competition?

7.1.1. Use of the local PSTN originating and terminating services

Information received by the Commission suggests that service providers can use these services to supply local and long distance (national and international) calls.

Currently, service providers can use the Domestic PSTN Originating and Terminating Access Services to supply long distance calls due to a pre-selection determination of the ACA. This determination enables end-users to select a particular service provider for the carriage of national long distance and international calls.¹²⁰ This determination would also enable service providers to supply long distance calls using the local PSTN originating and terminating services.

The pre-selection determination does not cover local calls, therefore the extent to which the local PSTN originating and terminating services could be used to supply local calls is less clear. The local PSTN terminating service could be used for local calls without such a determination. A pre-selection determination would, however, seem necessary to enable access seekers to fully exploit their use of this service for local calls.

Accordingly, the Commission examined the impact of declaration of the local PSTN originating and terminating services on competition in the long distance telephony services market.

7.1.2. Long distance telephony services market

While competition in the market for long distance telephony services has developed considerably since deregulation, as evidenced by price reductions for services in this market, the Commission is of the view that declaration of the local PSTN originating and terminating services would enhance the conditions for effective competition in the long distance telephony market.

As outlined in section 5.3.2, due to limited roll out of alternative customer access infrastructure, service providers supplying long distance services acquire originating and terminating services from their competitors. Telstra is the major supplier of these services through its provision of the Domestic PSTN Originating and Terminating

120 Telecommunications (Provision of Pre-selection) Determination 1997. This determination is issued pursuant to s. 349 of the Telecommunications Act.

Access Services. Payments for the services currently acquired from Telstra represent a significant component of service providers costs.¹²¹

In some instances the services currently acquired from Telstra involve interconnection at the local switch, and are thus no different from the local PSTN originating and terminating services. In other instances, however, the services currently acquired from Telstra involve interconnection at a higher level in the network. In these instances service providers purchase a bundle of components that consist of carriage between the end-user and the local switch, switching at the local switch, as well as inter-exchange transmission and switching.

Supply of the local PSTN originating and terminating services would allow service providers to interconnect at the local switch, thus unbundling inter-exchange switching and transmission from the other components of the Domestic PSTN Originating and Terminating Access Services. By interconnecting at the local switch level, service providers can reduce their reliance on Telstra. This would enable these service providers to use other sources of supply for these services including self-supply.

Hence, service providers would have the ability to reduce the quantum of inputs purchased from Telstra. This is likely to improve the cost structure of service providers by giving them greater control over input costs and consequently would improve conditions for effective competition in the market.

For instance, Cable & Wireless Optus claims that interconnecting at the local exchange level would enable it to supply its own inter-exchange transmission services by rolling out (or leasing) optical fibre links between the Cable & Wireless Optus network and Telstra local switches. AAPT has also indicated interest in interconnecting at the local switch level.¹²²

Telstra maintains that the declared Domestic PSTN Originating and Terminating Access Services already provide for interconnection at the local switch level and therefore declaration of local PSTN originating and terminating services is unnecessary. There is, however, a level of ambiguity regarding whether the descriptions of Domestic PSTN Originating and Terminating Access Services provide for interconnection at the local exchange level.¹²³

The Commission notes that service providers such as Cable & Wireless Optus have had significant difficulties in establishing interconnection arrangements at the local switch level. Cable & Wireless Optus has been trying to negotiate interconnection arrangements for two years. Telstra, however, claims that local PSTN originating and terminating access services are being supplied 'on satisfactory commercial terms'¹²⁴ and that it will not always be efficient to provide interconnection at the local exchange.¹²⁵

121 Refer to section 5.3.2. for details.

122 AAPT — Response to Discussion Paper (submission 1), p. 51.

123 In section 3.5.1, the Commission noted a degree of ambiguity as to the interpretation of the term 'gateway exchange'.

124 Telstra — Response to the Draft Report, p. 16.

125 Telstra — Response to the Discussion Paper (submission 1), p. 46.

The difficulty which arises with claims that interconnection at particular exchanges is inefficient is that access seekers are unable to avail themselves of a mechanism for testing such claims. Competitive conditions affecting the supply of local PSTN originating and terminating services enable access providers to refuse interconnection at the local switch where interconnection at that level may be economically efficient.

Declaration would provide such a mechanism. Where interconnection at the local switch imposes costs on Telstra, then the Commission would expect legitimately incurred costs to be reflected in the price at which the service is supplied to access seekers. Alternatively, if interconnection at particular switches is economically inefficient, then Telstra could seek exemptions from the standard access obligations pursuant to s. 152AT of the Act. In each situation, processes exist in Part XIC of the Act whereby Telstra's claims can be tested.

Through providing a mechanism for the resolution of these issues, declaration facilitates interconnection at the local switch where to do so would enable service providers to lower their input costs. The extent of the cost savings will depend on the particular circumstances of each case.

The degree of competition among suppliers of long distance calls to end-users suggests that cost savings to service providers would flow to end-users in the form of lower prices. Long distance services are currently widely available, with a number of competitors in the market. As such, declaration is not expected to enable end-users to gain access to an increased range or choice of services (subs. 152AB(4) of the Act). Rather, the benefits from declaration are likely to be in the form of lower prices to end-users.

7.2. Will declaration achieve any-to-any connectivity?

The local PSTN terminating service considered during this inquiry is the service most likely to have an impact on the achievement of any-to-any connectivity. The Commission understands that this service would be used to enable end-users connected to a service provider's network to call end-users connected to other service providers' networks.

The Commission notes that there is already a declared service which can be used to achieve any-to-any connectivity on fixed networks (i.e. the Domestic PSTN Terminating Access Service). Consequently, the Commission does not expect declaration of the local PSTN terminating service to have a material impact on the achievement of any-to-any connectivity.

7.3. Will declaration encourage economic efficiency?

7.3.1. Economically efficient use of infrastructure

Declaration of the local PSTN originating and terminating services is likely to improve the contestability of infrastructure for the carriage of calls between switches and may reduce the level of switching required when calls are handed over to an access seeker.

By interconnecting at the local switch level, access seekers would no longer be required to use inter-exchange transmission and switching of the originating/terminating service provider where they can use other infrastructure to perform those functions at a lower cost. Improving the contestability of infrastructure for carriage of calls between switches increases the competitive pressure on suppliers of these carriage services to supply them in the most efficient manner. This is likely to encourage the economically efficient use of this infrastructure and thereby promote the long-term interests of end-users.

That said, concerns about the costs associated with interconnection at the local switch were raised with the Commission during the inquiry. This has implications for the technical feasibility of interconnection at this level.

Technical feasibility — technology in use or available

Cytec assisted the Commission to examine whether it would be feasible for access providers to supply and charge for local PSTN originating and terminating services. These matters were covered in the technical feasibility study prepared by Cytec, in consultation with the Commission, and released for public comment on 10 September 1998. The Commission gave full consideration to submissions received in response to the study.

The approach taken by the Commission was to focus on infrastructure operated by access providers most likely to be subject to access requests in respect of the local PSTN originating and terminating services: Telstra and Cable & Wireless Optus.

Cytec concluded that both Telstra and Cable & Wireless Optus are capable of providing these services. Cytec concluded that:

- interconnection software is available at all Telstra LAS exchanges, as a result of switch operating systems standardisation; along with
- the functions to manage inter-carrier switching and the ability to supply billing information.¹²⁶

Cable & Wireless Optus agreed with Cytec's conclusions in relation to technical feasibility, adding that the interface to the Cable & Wireless Optus network was designed to enable access seekers who have built a customer access network to interface with the access provider's switching fabric.

Technical feasibility — supply costs

While submitting that the local PSTN originating and terminating services do not differ from the Domestic PSTN Originating and Terminating Access Services already declared, Telstra also submits that declaration could be costly. According to Cytec, interconnection software and functions to manage inter-carrier switching already exist at Telstra LAS exchanges. Telstra did not dispute this and, therefore it does not appear that additional costs arise from the deployment of these features. Rather, the issues of concern to Telstra appear to relate to the ongoing costs of providing interconnection at

126 Cytec, Technical Advice in relation to Local Telecommunications Services, 10 September 1998, p. 22.

the local switch level and the implications for efficient network design from Telstra's perspective.

In the Commission's view these costs are more appropriately dealt with in establishing terms and conditions of supply. The fact that Telstra permits interconnection at particular local switches suggests that the costs involved in supplying and charging for the local PSTN originating and terminating services are reasonable. In particular instances the costs may be higher than in others. Where this is the case, legitimately incurred costs could be reflected in the terms and conditions of supply.

Cable & Wireless Optus did not raise any concerns about the costs involved in supplying and charging for local PSTN originating and terminating services using its network, noting that its network was designed for interconnection at this level. Accordingly, the Commission is of the view that the costs involved in supplying and charging for local PSTN originating and terminating services using the Cable & Wireless Optus network are likely to be reasonable.

Technical feasibility — effect on telecommunications networks

Telstra raised concerns that interconnection at some local switches may have an impact on the operation or performance of its network. In the Commission's view s. 152AT provides a mechanism which can be used to avoid situations where interconnection at particular local switches is likely to affect end-users through significantly compromising network operation or performance.

7.3.2. Economically efficient investment in infrastructure used to supply the local PSTN originating and terminating services

Legitimate commercial interests of the access provider

Declaration of the local PSTN originating and terminating services would not, it appears, impact adversely on the ability of access providers to exploit economies of scale and scope. Neither Telstra, nor Cable & Wireless Optus, raised concerns with the Commission in this regard; although Telstra did raise issues about the efficiency of interconnection at the local switch level. These are dealt with above.

Nor would declaration adversely affect the ability of access providers to meet contractual commitments. Consistent with subs. 152AR(4) of the Act, which sets out limitations in relation to the standard access obligations, the access provider would have priority for its proposed uses of the network.

During the inquiry the Commission considered whether access providers and access seekers could negotiate access prices that would reflect costs, including a normal commercial return on prudent investment commensurate with risk. Particular consideration was given to the existence of certain regulatory constraints on the retail pricing of local telephony services. To assist in this the Commission released a discussion paper on pricing issues and outlined possible pricing approaches in the draft report for this inquiry.

In the Commission's view Telstra's legitimate commercial interests could be maintained by structuring access prices in accordance with retail price regulation.

Thus, the price of local PSTN originating and terminating services may depend on the purpose for which the services are used.

If the services are used to supply local calls, a per call price may be appropriate. In this case, geographic averaging of access charges may be desirable. This is because the local call pricing parity requirement under the current retail price controls may create the potential for inefficient entry if de-averaged (cost-based) prices were used. The implications of cost-based prices under the local call pricing parity requirement are discussed in section 8.1.3.

Again, the issue of the access deficit was raised.¹²⁷ The Commission considers that an access deficit contribution need not be included in the price for the local PSTN originating and terminating access where they are used for local calls. Telstra's increased ability to rebalance line rental and local call prices under the new price control arrangements enables Telstra to eliminate any access deficit contribution currently incorporated in its local call prices.

If the local PSTN originating and terminating services were used for long distance calls, the Commission considers a pricing approach consistent with the approach for Domestic PSTN Originating and Terminating Access Services would maintain the legitimate commercial interests of the access provider. The Commission's views regarding the appropriate pricing approach for those services is set out in its report *Assessment of Telstra's Undertaking for PSTN Originating and Terminating Access — Final Decision*.

The Commission is currently considering whether an access deficit contribution should be included in the pricing for these services when used for long distance calls given the new retail price control arrangements. If so, the price could be cost-based (without geographic averaging) and may be structured as a fixed flagfall per call plus a per minute usage charge. The access price would not include costs associated with trunk (gateway) switching and inter-exchange transmission which would not be part of the local PSTN services.

Incentives for investment in existing infrastructure

No issues were specifically raised with the Commission relating to the likely impact of declaration on decisions to maintain or expand the capacity of existing infrastructure used to supply local PSTN originating and terminating services. While the issue raised by Telstra in relation to the efficient operation of its network is also likely to have implications for maintenance and expansion decisions, this issue has been addressed above.

Incentives for investment in new infrastructure

In the Commission's view, declaration of each of the services is likely to encourage efficient investment in infrastructure by which the local PSTN originating and terminating services are supplied. By acquiring these services it will facilitate market

¹²⁷ See discussion in section 6.3.3.

entry and enable service providers to obtain information about demand characteristics and the likely responses of competitors, thus reducing the risks associated with infrastructure deployment. This will enable service providers to make efficient decisions about when to deploy customer access infrastructure.

Pricing issues are matters for negotiation between access providers and access seekers in the first instance. In the Commission's view they can negotiate prices which will prevent inefficient duplication while maintaining incentives for roll out of alternative infrastructure where this is efficient.¹²⁸

The Commission does not believe that declaration is likely to be a significant deterrent to efficient investment in new infrastructure which can be used to supply the local PSTN originating and terminating services. Where service providers are concerned that they will be subject to standard access obligations and this is likely to have a material impact on their investment decisions, then an exemption pursuant to ss. 152AS and 152AT of the Act may be appropriate.

7.3.3. Economically efficient investment in infrastructure used to supply other services

Cable & Wireless Optus submitted that by enabling service providers to acquire the local PSTN originating and terminating services through declaration, service providers can focus on deploying inter-exchange network infrastructure before deploying customer access infrastructure. Cable & Wireless Optus would deploy or lease optical fibre from its switches to exchanges at which Telstra's LASs are located. Other service providers have also indicated interest in interconnection at the local switch level. Once this is in place the final step of rolling out alternative customer access infrastructure can occur where this is efficient.

Interconnection at the local access level would enable access seekers to carry a greater proportion of calls on their own networks and provide an incentive for the roll out of additional network infrastructure where this would allow them to carry communications more efficiently. It provides greater scope for the progressive roll out of infrastructure where this is efficient. The Commission is of the view that declaration of the local PSTN originating and terminating services would be likely to encourage the efficient investment in inter-exchange infrastructure by new entrants and existing players.

7.4. Conclusion

Supply of the local PSTN originating and terminating services would allow service providers to interconnect at the local switch, thus unbundling inter-exchange switching and transmission from the other components of the Domestic PSTN Originating and Terminating Access Services. By interconnecting at the local switch level, service providers can reduce their reliance on Telstra. This would enable service providers to reduce the quantum of inputs purchased from Telstra. This is likely to improve the cost structure of service providers by giving them greater control over input costs and,

¹²⁸ Suggested pricing approaches are set out above in relation to the impact of declaration on the legitimate commercial interests of access providers.

consequently, would improve conditions for effective competition in the long distance telephony services market.

There is a level of ambiguity regarding whether the descriptions of Domestic PSTN Originating and Terminating Access Services provide for interconnection at the local exchange level. Declaration provides a mechanism that can facilitate interconnection at the local switch where to do so would enable service providers to lower their input costs. The extent of the cost savings will depend on the particular circumstances of each case.

Long distance services are currently widely available, with a number of competitors in the market. As such, declaration is not expected to enable end-users to gain access to an increased range or choice of services. Rather, the benefits from declaration are likely to be in the form of lower prices to end-users.

Declaration of the local PSTN originating and terminating services is likely to improve the contestability of infrastructure for the carriage of calls between switches and may reduce the level of switching required when calls are handed over to an access seeker. Improving the contestability of infrastructure for carriage of calls between switches increases the competitive pressure on suppliers of these carriage services to supply them in the most efficient manner. It is likely to encourage the economically efficient use of, and investment in, this infrastructure and thereby promote the interests of end-users over the long-term.

In some instances interconnection already occurs at the local switch level; to supply and charge for the local PSTN originating and terminating services is likely to be technically feasible. Any negative effects in terms of the operation or performance of telecommunications networks in particular instances can be dealt with, on a case-by-case basis, through the provisions of s. 152AT of the Act.

Consequently, the Commission is satisfied that declaration of the local PSTN originating and terminating services will promote the long-term interests of end-users of carriage services.

8. Declare the local carriage service?

8.1. Will declaration promote competition?

8.1.1. Use of the local carriage service

This service would be used to supply retail local call services to end-users. In doing this the service provider undertakes the retail activities (e.g. marketing, customer care and billing), whereas the access provider performs the network related functions. It encourages competition in respect of the retail dimensions and provides an entry strategy which can be used as a 'stepping stone' to reduce the risks associated with roll out of alternative infrastructure.

In addition, the supply of local carriage services to service providers would enable service providers to supply customers with 'one bill' for local and long distance telephony services.

8.1.2. Local and long distance telephony markets

Telstra is the main supplier of local telephony services, with a market share of around 94 per cent. Service providers re-supplying Telstra services are the major source of competition. Although there is some competition from facilities-based operators such as Cable & Wireless Optus, this is limited.

Declaration of the unconditioned local loop service is expected to promote competition in the local telephony services market, with service providers supplying end-users with telephony services either as part of a package with high bandwidth carriage services or independently. Such competition may, however, take time to emerge.

As an alternative to using the unconditioned local loop service to supply local calls, access seekers may be able to use the local PSTN originating and terminating services. The extent to which they will be able to do so is currently unclear in the absence of a pre-selection determination of the Australian Communications Authority covering local calls.

Hence, until the unconditioned local loop service is available to service providers and/or the local PSTN originating and terminating services can be used to supply local calls, service providers re-supplying local telephony services to end-users are likely to provide the main form of local telephony competition.

The ability of service providers to compete effectively in the local telephony market through re-supplying local telephony services is largely influenced by the terms and conditions on which local carriage services are supplied to them. The charges paid by service providers to Telstra represent approximately 90—100 per cent of the revenue received by service providers from their customers for those services. The supply of these services to service providers does not, however, appear to be subject to effective competition.

Declaration of the local carriage service would constrain the ability of suppliers of these services to influence competition in the local telephony services market. This is likely

to promote competition in that market and in the long distance telephony services market where local telephony services are bundled with long distance calls for customers who prefer to acquire those services from a single provider.

In determining the extent to which declaration is likely to promote competition, the Commission must have regard to the extent to which it will remove obstacles to end-users gaining access to carriage services or services provided by means of carriage services (subs. 152AB(4)).

In this regard fixed telephony services already have a high level of penetration in Australia (i.e. around 50 per cent of the population); declaration is not expected to increase the penetration of telephony services. It can, however, provide end-users with additional choices in terms of service provider, increased competition on the retail service dimensions, and, depending on the service provider's costs, lead to lower priced local calls for end-users. These benefits are likely to be enjoyed primarily by end-users who are unlikely to be served by alternative customer access infrastructure in the foreseeable future (i.e. the majority of residential end-users and business end-users except for large corporate and government users).

With respect to the extent to which re-supply of local telephony services promotes competition, Telstra states that:

... intra-brand competition can only enhance consumer choice in a narrow range of dimensions — in essence, those related to the marketing of the product at issue...¹²⁹

Nevertheless, these benefits to end-users should not be ignored. They are relevant to both the supply of local telephony services as well as long distance telephony services where a significant segment of end-users have indicated a preference for purchasing local and long distance telephony services from a single supplier.

The extent to which declaration will promote competition is likely to depend on the prices paid by access seekers for the local carriage service. The Commission gave consideration to the pricing approach it would be likely to adopt in the event that it was called upon to assess an access undertaking dealing with the local carriage service, or arbitrate an access dispute about the local carriage service. In considering the pricing approach the Commission examined the criteria in s. 152AH of the Act.

8.1.3. Competition and pricing of the local carriage service

Section 152AH sets out a range of matters that must be considered by the Commission. Given that the inquiry was not specifically about pricing, the Commission has not had the benefit of submissions on all relevant matters. It did, however, consider issues relevant to particular matters in s. 152AH. This included the legitimate business interests of the access provider (in the context of retail price regulation that limits its pricing flexibility), the interests of access seekers, the interests of end-users (in the context of promoting competition and encouraging an environment that creates incentives for efficient investment).

129 Telstra — Response to Discussion Paper (submission 1), p. 24.

Reflecting these matters the Commission considers that it would be likely to adopt an ‘avoidable cost’ approach to the determination of an access price in the event of an access dispute about the local carriage service. An avoidable cost approach is, however, to be distinguished from an ‘avoided cost’ approach. With an avoidable cost approach the costs deducted from the retail price are the costs that Telstra would be able to avoid rather than the costs actually avoided.¹³⁰

With an avoidable cost approach it is necessary to determine the appropriate retail price from which to deduct avoidable costs. The Commission considers that where there is a range of retail prices, for example as a result of volume discounts and different line rental/local call price combinations, such a range should also be reflected in the access prices. That is, the price for supplying the local carriage service to a particular customer would be the relevant retail local call price for that customer less avoidable costs.

The avoidable cost approach would enable service providers to compete on the basis of ‘one bill’ and allow efficient retailers to enter the market. Importantly, significant incentives would be maintained for the roll out of alternative infrastructure. Initially this may be focused on the inter-exchange network where economies of scale can be achieved more quickly. Over time this could involve a greater degree of facilities-based competition and ultimately full facilities-based competition with consequent benefits to end-users in terms of the price-service-quality dimensions of telephony services.

Drs. Kaserman and Mayo noted, in advice provided as part of the Cable & Wireless Optus submission:

... At wholesale discounts above zero, facilities-based entry is likely to rise as the discount is increased (i.e., as the wholesale price is reduced). The entry function then reaches a maximum ... and declines thereafter ... [which is] attributable to the entry-retarding effect that excessively large discounts have on the make-or-buy decision of entrants...¹³¹

The approach will also ensure consistency with current retail price regulation. This is in contrast to a total service long run incremental cost approach that could lead to significant inefficiencies in the context of such regulation. For example, suppose that a service provider could acquire the local carriage service at cost based prices in relatively low cost metropolitan areas. In response to the competition Telstra would be forced either to maintain its prices and lose customers (even if the service provider were more inefficient), or lower its prices to meet the competition. Telstra would face a strong incentive not to lower prices as the operation of the pricing parity requirement would require it to pass on the lower prices on average to customers in relatively high cost rural areas creating significant losses. The universal service obligation scheme

130 The US Federal Communications Commission includes as avoidable costs, costs associated with product management, sales, product advertising and customer services. In addition, a proportion of general support expenses, corporate operations expenses and telecommunications uncollectibles are presumed avoidable. See Federal Communications Commission, In the Matter of Implementation of the Local Competition Provisions in the Telecommunications Act of 1996 (First Report and Order), CCDocket No, 96-98, 1 August 1996.

131 Cable & Wireless Optus — Response to Discussion Paper, Attachment F p. 12.

under the Telecommunications Act would not neutralise this effect as, given its revenue share, Telstra would be required to fund the bulk of these losses itself.

Telstra submitted that because it currently supplies a service similar to the local carriage service on an ‘avoided cost’ basis, declaration is unnecessary. Potential access seekers submitted:

...the suggestion that pricing of the local carriage service be based on avoidable cost (rather than the cost involved in carrying the call) may mean that unless there is a significant difference between the proposed avoidable cost and the current avoided cost, then the margin available to [carriage service providers] to engage in price competition is likely to be very limited...¹³²

... Telstra’s current “avoided cost” pricing provides no scope for price competition at the retail level. An access seeker is required to itself supply the same vertical elements that are not being supplied by the access provider, and is unlikely to be able to draw on the scope and scale economies enjoyed by the access provider. As a consequence, there would need to be a significant difference to be established between the “avoidable cost” and “avoided cost” approaches for there to be any prospect of retail price competition.¹³³

While the avoidable costs may be higher than the costs currently avoided by Telstra, the Commission would not expect to set prices that would support less efficient service providers. Declaration will, however, enhance the ability of efficient service providers to supply local telephony services by reducing their vulnerability to the supplier of the major cost component in relation to both the price and the non-price terms and conditions of supply.

8.1.4. For how long will declaration be necessary?

Once the unconditioned local loop service is available to service providers and/or the local PSTN originating and terminating services can be used to supply local calls, the competitive significance of the local carriage service is likely to diminish. Service providers will then have other inputs that they can use to supply local telephony services to end-users. At that time it may be appropriate to revoke or modify the scope of the declaration of the local carriage service.

8.2. Will declaration achieve any-to-any connectivity?

As noted in section 6.2.1, the concept of any-to-any connectivity is not always relevant in the declaration context. With respect to the local carriage service, it appears that declaration of this service will have no impact on the objective of achieving any-to-any connectivity.

132 Macquarie Corporate Telecommunications – Response to Draft Report, p. 3.

133 AAPT – Response to Draft Report, p. 12.

8.3 Will declaration encourage economic efficiency?

8.3.1. Economically efficient use of infrastructure

While declaration of the unconditioned local loop service is likely to promote competition, this is likely to be less than the extent to which declaration of the unconditioned local loop service, and the local PSTN originating and terminating services, will be likely to promote competition. Accordingly, the benefits in terms of economic efficiency are also likely to be less extensive.

Nevertheless, declaration is expected to reduce the vulnerability of service providers to suppliers of the local carriage service. To the extent that this is likely to encourage entry of efficient providers of retail services, and improve the ability of service providers to use re-supply as a stepping stone to the roll out of their own infrastructure, declaration will be likely to encourage economic efficiency over the long-term and thereby promote the interests of end-users. That said, it is important to examine whether, and to what extent (if any), declaration is likely to result in efficiency losses.

Technical feasibility — technology in use or available

Cytec assisted the Commission to examine whether it would be feasible for access providers to supply and charge for the local carriage service. This was covered in the technical feasibility study prepared by Cytec, in consultation with the Commission, and released for public comment on 10 September 1998. The Commission gave full consideration to submissions received in response to the study.

In considering technical feasibility issues the approach taken by the Commission was to focus on infrastructure operated by access providers most likely to be subject to access requests in respect of the local carriage service: Telstra.

Cytec concluded that it is feasible for Telstra to supply and charge for a local carriage service, noting that a similar service is currently available.

Technical feasibility — supply costs

Telstra submits that a service similar to the local carriage service is currently supplied to service providers and that the supply of such services is an integral part of its business strategy.¹³⁴ Further, Telstra submits that it has undertaken substantial investment in improving its supply of this service to service providers, including the development of a new wholesale billing platform.¹³⁵

Given that Telstra is already supplying and charging for a similar service, declaration is likely to impose minimal additional costs in order to comply with the standard access obligations. Accordingly, the Commission considers that the costs involved in supplying and charging for the local carriage service are likely to be reasonable.

134 Telstra — Response to Discussion Paper (submission 1), p. 24.

135 *ibid.*

Technical feasibility — effect on telecommunications networks

No issues were specifically raised with the Commission about this. It appears that supply of the local carriage service is not likely to impact adversely on the operation or performance of telecommunications networks.

8.3.2. Economically efficient investment in infrastructure used to supply the local carriage service

Legitimate commercial interests of the access provider

Declaration of the local carriage service would not, it appears, impact adversely on the ability of access providers to exploit economies of scale and scope. Telstra did not raise concerns with the Commission about this.

Nor would declaration adversely affect the ability of access providers to meet contractual commitments. Consistent with subs. 152AR(4) of the Act, which sets out limitations in relation to the standard access obligations, the access provider would have priority for its proposed uses of the network.

During the inquiry the Commission considered whether access providers and access seekers could negotiate access prices that would reflect costs, including a normal commercial return on prudent investment commensurate with risk. Particular consideration was given to the existence of certain regulatory constraints on the retail pricing of local telephony services. To assist in this, it released a discussion paper on pricing issues and outlined possible pricing approaches in the draft declaration report.

Telstra's legitimate commercial interests could be maintained by structuring access prices in accordance with retail price regulation. Thus, the price of local carriage service could be set on the basis of retail local call prices minus 'avoidable costs'. These are the costs that are avoidable if the service is supplied at wholesale rather than at retail. The Commission has not yet carried out work on the magnitude of these avoidable costs but notes that, in the United States, the Federal Communications Commission regarded 17–25 per cent as a reasonable starting point.

Incentives for investment in existing infrastructure

Issues relating to the impact of declaration on the maintenance, improvement and expansion decisions in respect of infrastructure used to supply the local carriage service were not specifically raised during the inquiry. The Commission did, however, receive submissions regarding the impact of the declaration instrument covering the existing infrastructure of 'new' entrants. This is covered below.

Incentives for investment in new infrastructure

The supply of local call services using the local carriage service can enable service providers to become familiar with the market and make more informed investment decisions. In addition it allows service providers to establish a customer base and steady cash flow before embarking on infrastructure investment. These factors reduce the investment risks which, in the context of an industry where investment is characterised by sunk costs and economies of scale, serves to reduce the barriers to market entry.

For instance, on behalf of Cable & Wireless Optus, Drs. Kaserman and Mayo state:

... resale entry is likely to provide the most expeditious path to facilities-based entry as well. Development of a customer base and brand recognition through successful resale entry can provide the antidote to the entry suppressing effects of the large sunk costs associated with facilities construction...

In the US, the successful transformation of several interexchange resellers into major facilities-based carriers provides a stellar example to substantiate this symbiotic relationship. MCI, Sprint, LDDS-WorldCom, and all other non-AT&T facilities-based competitors initially entered the interexchange market as pure or partial resellers. Once in the market, they then developed their own network facilities incrementally over time...¹³⁶

Telstra provided a different viewpoint, submitting that declaration of the local carriage service would reduce competition by diminishing the incentives for the deployment and activation of alternative infrastructure.¹³⁷ In this regard, it appears that Telstra is concerned that too low a price as a result of declaration would deter investment. On the other hand, it is important to note that too high a price will lead to inefficient duplication.

In the Commission's view, declaration of the local carriage service is likely to encourage efficient investment in infrastructure used to supply local telephony (and possibly other) services. It will facilitate market entry and enable service providers to obtain information about demand characteristics and the likely responses of competitors, thus reducing the risks associated with infrastructure deployment. This will enable service providers to make efficient decisions about when to deploy customer access infrastructure.

Pricing issues are matters for negotiation between access providers and access seekers in the first instance. In the Commission's view they can negotiate prices which will prevent inefficient duplication while maintaining incentives for roll out of alternative infrastructure where this is efficient.¹³⁸

Cable & Wireless Optus submitted that extending the standard access obligations to service providers other than the incumbent operator, Telstra, would adversely impact on economically efficient investment in infrastructure, and that the pricing approach proposed by the Commission would create a disincentive for efficient investment in infrastructure.¹³⁹ It was also suggested that requiring a new entrant to supply services, including the local carriage service, to other service providers would impact on the viability of investment in alternative customer access infrastructure.

The Commission does not believe that declaration is likely to be a significant deterrent to efficient investment. Where service providers are concerned that they will be subject to standard access obligations and that this is likely to have a material impact on their investment decisions, then an exemption pursuant to s. 152AS or s. 152AT of the Act may be appropriate.

136 Cable & Wireless Optus — Response to Discussion Paper, Attachment F pp. 6–7.

137 *ibid.*, p. 25.

138 Suggested pricing approaches are set out above in relation the impact of declaration on the legitimate commercial interests of access providers.

139 Cable & Wireless Optus — Response to Draft Report (submission 1), pp. 27–30.

8.3.3. Economically efficient investment in infrastructure used to supply other services

Submissions to the Commission did not specifically raise issues in this regard. Any relevant matters have been considered above.

8.4. Conclusion

The ability of service providers to compete effectively in the local telephony market through re-supplying local telephony services is largely influenced by the terms and conditions on which local call services are supplied to them. Declaration of the local carriage service would constrain the ability of suppliers to influence competition in the local telephony services market. This is likely to promote competition in that market and in the long distance telephony services market where local telephony services are bundled with long distance calls for customers who prefer to acquire those services from a single provider and thereby promote the interests of end-users.

The extent to which declaration will promote competition is likely to depend on the prices paid by access seekers for the local carriage service. The Commission gave consideration to the pricing approach it would be likely to adopt in the event that it was called upon to assess an access undertaking dealing with the local carriage service, or arbitrate an access dispute about the local carriage service. The Commission considers that it would be likely to adopt an avoidable cost approach to determination of the access price in the event of an access dispute about the local carriage service.

To the extent that this encourages entry of efficient providers of retail services and improves the ability of service providers to use re-supply as a stepping stone to the roll out of their own infrastructure, then declaration will also encourage economic efficiency. In this regard declaration would facilitate market entry and enable service providers to obtain information about demand characteristics and the likely responses of competitors, thus reducing the risks associated with infrastructure deployment. This should enable service providers to make efficient decisions about when to deploy customer access infrastructure. It appears to be technically feasible to supply and charge for the local carriage service. Accordingly, declaration is likely to encourage the economically efficient use of, and investment in, infrastructure used to supply local telephony (and possibly other) services and thereby promote the interests of end-users over the long-term.

The Commission is satisfied that declaration of the local carriage service will promote the long-term interests of end-user of carriage services. Once the unconditioned local loop service is available to service providers and/or the local PSTN originating and terminating services can be used to supply local calls, the competitive significance of the local carriage service is likely to diminish. Around that time it may be appropriate to revoke or modify the scope of the declaration of the local carriage service.

9. Line related services

During the course of the inquiry the Commission was requested to declare certain line related services. Like local calls, these services are currently purchased by service providers to re-supply telephony services to end-users. They tend to be purchased as a bundle from Telstra. This bundle consists of line rental, supplementary services (such as call waiting) and local calls. Where the end-user wants another line, this ‘bundle’ also includes service activation (i.e. line ‘connection’).

The local carriage service which the Commission proposes to declare enables service providers to supply one component of this bundle — local call services. During the Inquiry, it was submitted that the Commission should also declare other components of this bundle; i.e. line related services. (These services are described in section 3.7 of this report.)

Cable & Wireless Optus submitted that end-users demand line related services as an integral part of a bundle of local telephony services and therefore, service providers need these components declared in order to competitively supply these services to end-users. It is concerned that the competitive benefits from declaring one part of the bundle — local carriage services (which enable access seekers to supply local calls) — may be stymied if services acquired by access seekers to supply the other part of the bundle — line related services — are not also declared.

Particularly, Cable & Wireless Optus is concerned that access seekers would be vulnerable to the access provider modifying the terms and conditions of supply of the line related services where the access seeker is acquiring, or proposes to acquire, the local carriage service. It states:

Cable & Wireless Optus submits that this approach would leave Telstra with absolute discretion in determining the aggregate wholesale price charged for local carriage services – any competitive threat posed to Telstra by the obligation to resupply local calls at avoidable cost would be nullified by the incumbent through the non-supply and or re-supply of other ‘non-regulated’ essential LCR [local call resale] inputs at extortionate [sic] prices. For example, Telstra could charge access seekers \$450 per year for the rebilling of line rental and or refuse to supply the LCR product to access seekers with essential vertical features such as call waiting or call forwarding.¹⁴⁰

In addition, Cable & Wireless Optus raised concerns about particular non-price terms and conditions of supply, particularly the processes for raising orders for services supplied as part of this bundle. It states:

... Telstra’s discriminatory conduct in relation to access services is currently a major impediment to competition. Telstra is able to ensure that the product offered by access seekers is inferior to that offered by Telstra by its discriminatory conduct in providing access seekers with inferior provisioning, faults and maintenance services.¹⁴¹

140 Cable & Wireless Optus — Response to Draft Report (submission 1), p. 7.

141 *ibid*, p. 9.

During the inquiry the Commission queried whether line rental services should be declared under Part XIC. Except for the submissions from Cable & Wireless Optus, this matter was not one that was addressed in detail.

The Commission accepts that there is merit in the arguments raised by Cable & Wireless Optus. The Commission was, however, concerned that declaration of line related services (particularly, a line rental service) may inhibit the initiatives currently being progressed by Telstra to reform the current line lessee model under which service providers acquire local telephony services. The Commission therefore did not wish to declare a line rental service at this stage.

In this regard, under the current model of line lesseeship, service providers re-supplying Telstra's local telephony services become the lessee of the end-user's line. This has resulted in a number of undesirable consequences that are currently being addressed. As part of its wholesale billing platform, Telstra proposes to replace this model with an alternative model that is more appropriate for a multi-service provider environment.¹⁴² The Commission understands that the wholesale billing platform is also intended to improve processes for the ordering of services by service providers.

Moreover, the Commission was not convinced that declaration of line related services is the only way to address these issues. Parts IV and XIB of the Act would, to an extent, constrain the ability of access providers with substantial market power to engage in the practices outlined by Cable & Wireless Optus.

The Commission recognises that re-balancing of line rental charges (against call charges) under the new price control arrangements may make detection of anti-competitive pricing more difficult. However, pricing of the local carriage service on an 'avoidable cost' basis could be undertaken by reference to the charge for the line related services (particularly line rental). For instance, retail charges for local calls currently include an 'access deficit' contribution (i.e. a contribution to line costs). If line rental charges are increased, then a lower access deficit contribution from call charges would seem appropriate.

Also, when service providers re-supply the full bundle of local telephony services, the Commission would not expect Telstra to charge service providers for activities that are avoidable in respect of those services. To ensure that this does not occur, the Commission considers that the prices paid for all components of the bundle should be examined in determining an appropriate price for the local carriage service. Hence, if service providers re-supplying the full bundle of local telephony services pay retail prices for certain components (e.g. line rental), then the price paid for other components (e.g. local carriage service) should be lower than in the case where all components are charged at retail price minus avoidable costs.

The Commission notes that it was not able to fully explore these matters during the inquiry, and should difficulties emerge, further consideration may be warranted in the future.

142 See, for instance, ACIF/ SPAN/ Telstra Report — Fixed Network Churn and Billing, June 1998 at pp. 17–20.

10. Conclusions and implementation work

The Commission is satisfied that declaration of each of the following services will promote the long-term interests of end-users of carriage services and of services provided by means of carriage services:

- the unconditioned local loop service;
- the local PSTN originating service;
- the local PSTN terminating service; and
- the local carriage service.

Following publication of this report the Commission will execute relevant declaration instruments and publish these instruments in the Commonwealth Gazette. Once these instruments are gazetted, carriers and carriage service providers supplying these services to themselves or others are subject to standard access obligations. These carriers and carriage service providers are known as access providers.

These obligations require access providers to supply the declared service to other service providers upon request in order that the service provider can provide carriage and/or content services. They also establish minimum service levels in relation to the technical and operational quality of services supplied by access providers as well as fault detection, handling and rectification. In addition, the standard access obligations require the access provider to permit interconnection and supply particular billing information.

10.1. When must access be provided?

While these obligations apply from the time at which the relevant declaration instruments are gazetted, the Commission envisages that a period of time will be necessary for access providers and access seekers to negotiate the terms and conditions upon which access providers will comply with the standard access obligations. The period will depend on the service in question. For instance, with the local carriage service the Commission envisages that it would be relatively short. With the unconditioned local loop service, on the other hand, more complex issues are involved and these are likely to take a longer period to be addressed in order to enable supply of the service.

Where an access provider and services provider are negotiating, or proposing to negotiate, about the terms and conditions upon which the access provider is to comply with the standard access obligations, one of them can request the Commission to give a 'procedural direction' for the purpose of facilitating negotiations. This may include, for example, a direction requiring a party to give relevant information to the other party or to carry out research to obtain relevant information (paragraphs 152BBA(3)(a) and (b) of the Act).

Where an access provider and service provider requesting supply of the service cannot agree about the terms and conditions on which the access provider will comply with the standard access obligations, one of them can notify the Commission of a dispute. The

Commission can then arbitrate and make a binding determination about access in accordance with the provisions of Part XIC of the Act.

10.2. Exemptions from standard access obligations

In this report the Commission has noted in a number of places that exemptions from the standard access obligations may be an appropriate means for handling particular concerns raised during the inquiry. These exemptions can be granted under ss. 152AS and 152AT of the Act and only in situations where to grant the exemption will promote the long-term interests of end-users of carriage services or of services supplied by means of carriage services.

Following completion of the inquiry, organisations who believe they have appropriate grounds for seeking an exemption should approach the Commission with details about their claims. The Commission will then consider the manner in which it will progress these claims; i.e. whether to examine them as a possible class exemption under s. 152AS or whether to invite individual organisations to make application for exemption under s. 152AT. It will also seek to determine the order in which it will progress these matters.

10.3. Industry work in relation to the unconditioned local loop service

In order for the unconditioned local loop service to be used by service providers to supply high bandwidth carriage services using xDSL technology, there are a range of technical issues which need to be resolved. In addition, to optimise the benefits from declaration of the unconditioned local loop service, a number of operational issues need to be resolved.

Set out below are observations by the Commission on mechanisms which are likely to prove useful in resolving these issues. The Commission's views on these aspects are not an intrinsic part of its decision to declare the unconditioned local loop service. Nonetheless, it is important that once declaration has occurred there is a concerted effort by industry to ensure suitable arrangements are developed as quickly as possible to facilitate the efficient, timely and effective supply of the service.

The Commission notes that some access seekers may wish to use the unconditioned local loop service to supply plain old telephone services, or services using ISDN technology. Where possible the Commission would encourage the resolution of relevant issues in a manner which allows these services to be deployed ahead of xDSL services where resolution of relevant issues is likely to take longer.

10.3.1. Key areas of work

The key areas of work that are required to be progressed in relation to supply of unconditioned local loop service for use with xDSL technology are the:

- development of technical and network rules dealing with spectral compatibility and the deployment of services using xDSL technology on the local loop;

- development of operational procedures relating to the pre-ordering, ordering and provisioning of the unconditioned local loop service as well as the handling and rectification of faults;
- revisions to technical standards and codes for customer equipment and cabling to ensure they are compatible with xDSL equipment; and
- development of principles or rules dealing with service migration as a result of changes to the customer access network architecture.

Work at the industry level has already commenced in relation to these matters. The ACIF, through particular reference panels, is undertaking work on all but the last. Service migration issues are being progressed through the TAF.

10.3.2. Technical and network rules

The ACIF established a working committee in November 1998 to deal particularly with various technical matters related to interference that would arise with the deployment of xDSL technologies by Telstra and others on the local loop. Its task is to develop standards and inter-working arrangements which will enable the provision of xDSL services on copper pair customer lines throughout Australia.

Its tasks include:

- defining a customer access network architecture;
- identifying the standards and other requirements that should be implemented to enable the introduction of xDSL technology — these standards would contribute to the specification of network deployment rules for xDSL services; and
- developing a network design/deployment code with a view to minimising interference from the deployment of xDSL services through the modelling of specific spectral compatibility cases which take account of current and proposed network configurations and likely demand for levels of access (access points) by third parties.

10.3.3. Operations codes

This work deals with the day-to-day operational management and provision of unconditioned local loop services. Processes need to be established for the pre-ordering, ordering and provisioning (including transfer) of copper pairs.

The nature of this work is still being developed within the ACIF. It is envisaged that there be:

- an operational code dealing with pre-ordering, ordering and provisioning; and
- an expansion of the existing ACIF Customer & Network Faults Management Code to deal with processes for reporting and restoration of faults for unbundled local services.

This operational work is essentially concerned with the inter-operator processes and operations support systems necessary to supply the unconditioned local loop service. This work will be critical to ensuring timely supply of services to access seekers in a way which maximises the competitive benefits of declaration. While some aspects

have been previously considered in respect of other services, the provision of unconditioned loops represents new challenges that need to be addressed by industry to ensure the successful implementation of access to unconditioned local loop services.

A key part of this work is likely to be the development of electronic inter-operator interfaces and processes. The Commission would encourage the industry to make provision for such issues in terms of its on-going work on the development and implementation of operational arrangements.

10.3.4. Customer equipment and cabling standards

This work involves the development of technical standards and codes for customer equipment and cabling for use of xDSL services in a manner that protects network integrity, and health and safety. This may relate to the development of new standards and codes with modifications to existing standards as appropriate.

10.3.5. Service migration code

Network modernisation initiatives planned by access providers have the potential to interrupt supply of the declared services to access seekers, with consequent detriment to their end-users. This is particularly the case with the unconditioned local loop service where the existence of an uninterrupted path between the end-user's premises and the access seeker's equipment is necessary for the deployment of xDSL services.

In this regard there is the potential for intractable conflict between the access provider and access seeker. The access provider is concerned with being able to make timely and efficient improvements to its network while the access seeker is concerned with being provided with relevant services in a predictable and effective manner.

In April 1999 the Commission asked the TAF to examine this matter with a view to examining whether self-regulatory processes might be used to manage it. The Commission understands that the TAF is examining the development of a service migration code dealing with these matters. In particular, the code is intended to:

- establish broad principles which recognise the rights and obligations of both the access provider and the access seeker;
- develop processes for notification and consultation between the parties where network changes are proposed; and
- establish a process by which relevant services can continue to be supplied where the network is being upgraded or augmented.

This work, like that being undertaken by the ACIF, is expected to have important consequences for access to the unconditioned local service. Establishing principles and processes for service migration is likely to provide a more secure environment within which access seekers can use the unconditioned local loop service to supply downstream services to end-users, fostering investment in xDSL technology and the deployment of services to end-users. The Commission supports this work and proposes to monitor its progress.

10.3.6. Conclusion

The technical work being undertaken within the ACIF will take account of emerging technical standards developed by the International Telecommunications Union (ITU) and other bodies in relation to xDSL services. It is noted that on 5 July 1999 the ITU approved global standards for ADSL technologies operating on ordinary telephone lines, in terms of an agreement on a single standard transmission method for ADSL systems. The standards are intended to assist equipment vendors, service providers and network operators in introducing ADSL-based systems and services.¹⁴³ While these technical standards will assist the ACIF with its work, there is still a need to continue to examine how different xDSL and other existing technologies can be used with each other.

Progression of the work outlined above is vital to the successful deployment of xDSL services and the Commission is looking to the completion of this work as soon as possible. To ensure that the benefits from this work can be realised as soon as possible, the ACIF is taking a staged approach to its examination of interference issues. The initial focus is on the deployment of xDSL services in central business districts, then in metropolitan and urban areas, and finally in rural areas.

The Commission strongly supports this work and proposes to maintain an ongoing role in these processes. It has previously written to the TAF about its service migration work and will be writing shortly to the ACIF in this regard.

In the Commission's view the ability of the industry to complete this work in a timely and satisfactory manner will be an important test of the effectiveness of self-regulation. It is likely to be challenging for those involved, particularly where opinions diverge on important issues. The Commission does, however, have confidence in the ability of those involved to work through these issues in a mature and pragmatic manner.

A significant amount of work will be required to progress the relevant issues and the timing of its completion will have a major bearing on the amount of time that end-users will need to wait in order to enjoy the benefits of this technology. The Commission would encourage access seekers and equipment manufacturers to devote resources to this work to ensure that the workload is not unduly borne by a small number of organisations only and that these services can be deployed in a timely manner.

143 See ITU press release, Affordable Multi-Megabit/s Network Access to Internet via Telephone Lines to be Fostered by Single Transmission Standard, for further details (www.itu.int/newsroom/).

Appendix 1. Unconditioned local loop service

The unconditioned local loop service is the use of unconditioned communications wire between the boundary of a telecommunications network at an end-user's premises and a point on a telecommunications network that is a potential point of interconnection located at or associated with a customer access module and located on the end-user side of the customer access module.

Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

In this Appendix:

boundary of a telecommunications network is the point ascertained in accordance with section 22 of the *Telecommunications Act 1997*;

communications wire is a copper based wire forming part of a public switched telephone network;

customer access module is a device that provides ring tone, ring current and battery feed to customers' equipment. Examples are Remote Subscriber Stages, Remote Subscriber Units, Integrated Remote Integrated Multiplexers, Non-integrated Remote Integrated Multiplexers and the customer line module of a Local Access Switch;

public switched telephone network is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies.

Note:

If a carrier or a carriage service provider supplies "declared services" (whether to itself or to other persons), the carrier or carriage service provider is taken to be an "access provider" and the declared services are taken to be "active declared services" (section 152AR(2) of the Act). The "standard access obligations" of access providers in relation to active declared services are set out in sections 152AR(3), 152AR(5), 152AR(6), 152AR(7) and 152AR(8) of the Act.

An access provider must, if requested to do so by a service provider, take all reasonable steps to ensure that:

- a) the technical and operational quality of the active declared service supplied to the service provider is equivalent to that which the service provider provides to itself (section 152AR(3)(b) of the Act); and
- b) the service provider receives, in relation to the active declared service supplied to the service provider, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself (section 152AR(3)(c) of the Act).

If an access provider either owns or controls one or more facilities, or is a nominated carrier in relation to one or more facilities, it must, if requested to do so by a service provider:

- a) permit interconnection of those facilities with the facilities of the service provider (section 152AR(5)(c) of the Act); and
- b) take all reasonable steps to ensure that the technical and operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself (section 152AR(5)(d) of the Act); and
- c) take all reasonable steps to ensure that the service provider receives, in relation to the interconnection, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the service provider provides to itself (section 152AR(5)(e) of the Act).

If a service provider uses active declared services supplied by an access provider in order for it to provide carriage services and/or content services, the access provider must, if requested to do so by the service provider, give the service provider billing information in connection with the services (section 152AR(6) of the Act). The billing information provided must comply with the Trade Practices Regulations (section 152AR(7) of the Act).

Access providers also have other standard access obligations under section 152AR of the Act.

The terms and conditions of access to a declared service are as agreed between an access seeker and an access provider. Failing agreement, the terms and conditions of access are as set out in an undertaking that has been accepted by the Commission, or, as determined by the Commission following an arbitration. In addition, model terms and conditions relating to compliance with the standard access obligations are contained in the approved TAF Access Code and may also be relevant.

Appendix 2. Local PSTN originating service

The Local PSTN Originating Service is a service for the carriage of telephone calls from customer equipment at an end-user's premises to a point of interconnection, or potential point of interconnection, located at or associated with a local switch and located on the outgoing trunk side of the switch.

Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

In this Appendix:

CCS#7 signalling is signalling in accordance with the NIIF/ ACIF ISDN layer 4 protocol specification for interworking between Australian carriers;

local switch is the switch closest to the end-user making the telephone call;

public switched telephone network is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies;

telephone calls are calls for the carriage of communications at 3.1kHz bandwidth by means of a public switched telephone network using CCS#7 signalling and include calls made with any of the following:

- a) access seeker specific codes;
- b) pre-selection in accordance with any instrument made by the Australian Communications Authority from time to time under Part 17 of the *Telecommunications Act 1997*;
- c) over-ride dial tones in accordance with any instrument made by the Australian Communications Authority from time to time under Part 17 of the *Telecommunications Act 1997*.

Note:

If a carrier or a carriage service provider supplies "declared services" (whether to itself or to other persons), the carrier or carriage service provider is taken to be an "access provider" and the declared services are taken to be "active declared services" (section 152AR(2) of the Act). The "standard access obligations" of access providers in relation to active declared services are set out in sections 152AR(3), 152AR(5), 152AR(6), 152AR(7) and 152AR(8) of the Act.

An access provider must, if requested to do so by a service provider, take all reasonable steps to ensure that:

- a) the technical and operational quality of the active declared service supplied to the service provider is equivalent to that which the service provider provides to itself (section 152AR(3)(b) of the Act); and

- b) the service provider receives, in relation to the active declared service supplied to the service provider, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself (section 152AR(3)(c) of the Act).

If an access provider either owns or controls one or more facilities, or is a nominated carrier in relation to one or more facilities, it must, if requested to do so by a service provider:

- a) permit interconnection of those facilities with the facilities of the service provider (section 152AR(5)(c) of the Act); and
- b) take all reasonable steps to ensure that the technical and operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself (section 152AR(5)(d) of the Act); and
- c) take all reasonable steps to ensure that the service provider receives, in relation to the interconnection, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the service provider provides to itself (section 152AR(5)(e) of the Act).

If a service provider uses active declared services supplied by an access provider in order for it to provide carriage services and/or content services, the access provider must, if requested to do so by the service provider, give the service provider billing information in connection with the services (section 152AR(6) of the Act). The billing information provided must comply with the Trade Practices Regulations (section 152AR(7) of the Act).

Access providers also have other standard access obligations under section 152AR of the Act.

The terms and conditions of access to a declared service are as agreed between an access seeker and an access provider. Failing agreement, the terms and conditions of access are as set out in an undertaking that has been accepted by the Commission, or, as determined by the Commission following an arbitration. In addition, model terms and conditions relating to compliance with the standard access obligations are contained in the approved TAF Access Code and may also be relevant.

Appendix 3. Local PSTN terminating service

The Local PSTN Terminating Service is a service for the carriage of telephone calls from a point of interconnection, or a potential point of interconnection, located at or associated with a local switch and located on the incoming trunk side of the switch to customer equipment at an end-user's premises.

Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

In this Appendix:

CCS#7 signalling is signalling in accordance with the NIIF/ ACIF ISDN layer 4 protocol specification for interworking between Australian carriers;

local switch is the switch closest to the end-user to whom the telephone call is made;

public switched telephone network is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies;

telephone calls are calls for the carriage of communications at 3.1kHz bandwidth by means of a public switched telephone network using CCS#7 signalling.

Note:

If a carrier or a carriage service provider supplies "declared services" (whether to itself or to other persons), the carrier or carriage service provider is taken to be an "access provider" and the declared services are taken to be "active declared services" (section 152AR(2) of the Act). The "standard access obligations" of access providers in relation to active declared services are set out in sections 152AR(3), 152AR(5), 152AR(6), 152AR(7) and 152AR(8) of the Act.

An access provider must, if requested to do so by a service provider, take all reasonable steps to ensure that:

- a) the technical and operational quality of the active declared service supplied to the service provider is equivalent to that which the service provider provides to itself (section 152AR(3)(b) of the Act); and
- b) the service provider receives, in relation to the active declared service supplied to the service provider, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself (section 152AR(3)(c) of the Act).

If an access provider either owns or controls one or more facilities, or is a nominated carrier in relation to one or more facilities, it must, if requested to do so by a service provider:

- a) permit interconnection of those facilities with the facilities of the service provider (section 152AR(5)(c) of the Act); and

- b) take all reasonable steps to ensure that the technical and operational quality and timing of the interconnection is equivalent to that which the access provider provides to itself (section 152AR(5)(d) of the Act); and
- c) take all reasonable steps to ensure that the service provider receives, in relation to the interconnection, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the service provider provides to itself (section 152AR(5)(e) of the Act).

If a service provider uses active declared services supplied by an access provider in order for it to provide carriage services and/or content services, the access provider must, if requested to do so by the service provider, give the service provider billing information in connection with the services (section 152AR(6) of the Act). The billing information provided must comply with the Trade Practices Regulations (section 152AR(7) of the Act).

Access providers also have other standard access obligations under section 152AR of the Act.

The terms and conditions of access to a declared service are as agreed between an access seeker and an access provider. Failing agreement, the terms and conditions of access are as set out in an undertaking that has been accepted by the Commission, or, as determined by the Commission following an arbitration. In addition, model terms and conditions relating to compliance with the standard access obligations are contained in the approved TAF Access Code and may also be relevant.

Appendix 4. Local carriage service

The local carriage service is a service for the carriage of telephone calls from customer equipment at an end-user's premises to separately located customer equipment of an end user in the same standard zone.

Definitions

Where words or phrases used in this declaration are defined in the *Trade Practices Act 1974* or the *Telecommunications Act 1997*, they have the meaning given in the relevant Act.

In this Appendix:

public switched telephone network is a telephone network accessible by the public providing switching and transmission facilities utilising analogue and digital technologies;

standard zone has the same meaning as in Part 8 of the *Telecommunications Act 1997*;

telephone calls are calls for the carriage of communications at 3.1kHz bandwidth solely by means of a public switched telephone network.

Note:

If a carrier or a carriage service provider supplies "declared services" (whether to itself or to other persons), the carrier or carriage service provider is taken to be an "access provider" and the declared services are taken to be "active declared services" (section 152AR(2) of the Act). The "standard access obligations" of access providers in relation to active declared services are set out in sections 152AR(3), 152AR(5), 152AR(6), 152AR(7) and 152AR(8) of the Act.

An access provider must, if requested to do so by a service provider, take all reasonable steps to ensure that:

- a) the technical and operational quality of the active declared service supplied to the service provider is equivalent to that which the service provider provides to itself (section 152AR(3)(b) of the Act); and
- b) the service provider receives, in relation to the active declared service supplied to the service provider, fault detection, handling and rectification of a technical and operational quality and timing that is equivalent to that which the access provider provides to itself (section 152AR(3)(c) of the Act).

If a service provider uses active declared services supplied by an access provider in order for it to provide carriage services and/or content services, the access provider must, if requested to do so by the service provider, give the service provider billing information in connection with the services (section 152AR(6) of the Act). The billing information provided must comply with the Trade Practices Regulations (section 152AR(7) of the Act).

Access providers also have other standard access obligations under section 152AR of the Act.

The terms and conditions of access to a declared service are as agreed between an access seeker and an access provider. Failing agreement, the terms and conditions of access are as set out in an undertaking that has been accepted by the Commission, or, as determined by the Commission following an arbitration. In addition, model terms and conditions relating to compliance with the standard access obligations are contained in the approved TAF Access Code and may also be relevant.

Appendix 5. List of submissions

Response to Discussion Paper

Submitter	Date received
AAPT Ltd	
Submission 1	9 June 1998
Submission 2	22 July 1998
Submission 3	14 August 1998
AdvaTel	May 1998
American Express International Inc	26 May 1998
Australian Telecommunications Users Group Ltd	
Submission 1	25 May 1998
Submission 2	27 May 1998
Submission 3	12 June 1998
Submission 4	17 June 1998
Bass Coast Shire Council	26 May 1998
Cable & Wireless Optus Ltd ¹⁴⁴	6 June 1998
Mr Allan Fowler	25 May 1998
Global One Communications Pty Ltd	9 June 1998
Hutchison Telecommunications (Australia) Ltd	9 June 1998
Macquarie Corporate Telecommunications Pty Ltd	
Submission 1	5 June 1998
Submission 2	3 July 1998
Nortel Australia Pty Ltd	27 May 1998
Primus Telecommunications (Australasia) Pty Ltd	1 June 1998
Spectrum Network Systems Ltd	6 July 1998

144 This includes submissions made by Optus Communications Pty Ltd.

Switch Telecommunications	25 May 1998
Telstra Corporation Ltd	
Submission 1	26 May 1998
Submission 2	17 August 1998
Vodafone Network Pty Ltd	13 May 1998
WORLDxCHANGE Pty Ltd	22 May 1998

Response to Technical Advice Paper

Submitter	Date received
AAPT Ltd	16 October 1998
AdvaTel	18 September 1998
Australian Telecommunications Users Group	2 October 1998
Cable & Wireless Optus Ltd	16 October 1998
Global One Communications Pty Ltd	2 October 1998
Macquarie Corporate Telecommunications Pty Ltd	25 September 1998
Primus Telecommunications (Australasia) Pty Ltd	28 September 1998
Telstra Corporation Ltd	30 September 1998

Response to Pricing Paper

Submitter	Date received
AAPT Ltd	30 October 1998
Cable & Wireless Optus Ltd	16 November 1998
Communications, Electrical and Plumbing Union	23 November 1998
Consumers' Telecommunications Network	22 October 1998
Department of Communications, Information Technology and the Arts	6 November 1998
Mr A T Lang	26 October 1998
NorthPower	30 October 1998
Productivity Commission	11 November 1998
Telstra Corporation Ltd	20 November 1998
WORLDxCHANGE Pty Ltd	23 October 1998

Response to Draft Report

Submitter	Date received
AAPT Ltd	5 March 1999
Agile Pty Ltd	16 February 1999
Applied Data Control Pty Ltd	11 February 1999
Australian Communications Authority	5 February 1999
Australian Telecommunications Users Group	24 February 1999
Cable and Wireless Optus Ltd	
Submission 1	25 February 1999
Submission 2	19 April 1999
Level 3 Communications Inc.	14 February 1999
Macquarie Corporate Telecommunications Pty Ltd	12 February 1999
NorthPower	17 February 1999
Ridge Technologies Pty Ltd	20 January 1999
Small Enterprise Telecommunications Centre	26 February 1999
Telstra Corporation Ltd	16 March 1999
Vodafone Network Pty Ltd	16 February 1999