

**IN THE MATTER OF UNDERTAKINGS  
DATED 23 DECEMBER 2005 LODGED BY  
TELSTRA CORPORATION LIMITED WITH  
THE AUSTRALIAN COMPETITION AND  
CONSUMER COMMISSION IN RESPECT  
OF UNCONDITIONED LOCAL LOOP  
SERVICE  
("the Access Undertakings")**

**STATEMENT OF [c-i-c]**

On 21 July 2006, I, [c-i-c] of 171 Roma Street, Brisbane in the State of Queensland, Manager, state as follows:

1 [removed]

2 In this statement the following abbreviations have the following meanings:

CAN - Customer Access Network;

IRIM - Remote Integrated Multiplexer;

PSTN - Public Switched Telephone Network;

RSS - Remote Switching Stage;

3 I am the [c-i-c] in Access Infrastructure, Network Engineering Group at Telstra Corporation Limited ("Telstra"). I have held this position since [c-i-c]. In my current role, I am responsible for the deployment standards used for installing Telstra's CAN and also for the technology management of cable infrastructure deployed in the CAN.

**A. MY BACKGROUND**

4 I commenced work with Telstra in 1985, as an engineer. During my time at Telstra, I have always been involved in aspects of the Customer Access Networks ("CAN"), from network design and planning, to network architecture and strategy, to my current role in the management of access network cable technologies.

## **B. SHARING OF NEW TRENCHES BUILT**

5 I understand that it is contended by other carriers and the ACCC in these proceedings that the actual level of trench and duct sharing by Telstra in relation to its PSTN reflects inefficient practices, and that an efficient operator who was building the PSTN afresh would share its trenches and conduits at levels different from those of Telstra. I comment on these allegations below.

6 There is potential for Telstra to share new PSTN trenches it builds with power, gas, water and sewer utilities or telecommunications companies provided that:

- (a) there is common alignment in the need for the trench at a particular location between the utility or the telecommunications company and Telstra;
- (b) the separation requirements are met;
- (c) the utility or the telecommunications company and Telstra are planning and building the trench at the same time; and
- (d) the operational issues do not prevent such sharing.

### **Alignment**

7 For trench sharing to be a consideration, the relevant utility or telecommunications company must plan for its distribution infrastructure to follow a similar route as Telstra's including the same side of roadway (or other thoroughfare), distance from roadway and distance from property line as well as property entry alignment, to ensure that a single trench can be used.

### *Utilities*

8 Sharing of substantial lengths of trenches does not often occur in the CAN in established areas. The main reason is because substantial lengths of trenching can only be shared where a utility's and Telstra's existing infrastructure are aligned. This means that Telstra's exchange buildings, RSSs, pillars and IRIMs need to be located in close proximity to equivalent existing equipment of the utility. If there is no such alignment of 'end points', it is more cost effective for Telstra to build trenches which directly connect the CAN network elements rather than share trenches with other utilities which do not directly connect Telstra's CAN network

elements (ie take the shortest route). However, Telstra can and does share short parts of its CAN trenches with other utilities where alignment exists.

- 9 In the case of new estates, the utilities and telecommunications infrastructure are planned and built simultaneously. This enables telecommunications companies and utilities to plan trenches to create alignment by installing equipment in similar locations to the extent possible. However, even in new estates, there are instances where alignment between Telstra and the utilities is not cost effective and thus trenches are not shared on the whole length of the route.
- 10 Regardless of whether a customer is in a new or established estate, once a trench is near a customer, a utility often wishes to enter the customer's premises in a different place from Telstra. This is because it is often more cost effective to maintain the separation requirements and minimise disruption to other utilities when repairing services where the services enter a customer's premises at different locations. These differences are such that it is often cheaper for Telstra to build its own trench to the customer's premises than share with a utility from the street to the customer's premises.
- 11 Telstra's current customer terms requires the customer to "arrange and pay for any trenching" needed on their property/premises to allow the installation of cables for a service to be connected.

#### *Telecommunications companies*

- 12 Telecommunications companies are much more likely to wish to run cables in the same places as Telstra than other utilities. However, there are no telecommunications companies who wish to overbuild the entirety of Telstra's wireline network. In reality, even if other telecommunication companies shared all trenches with Telstra on all current routes where cables are installed by them, it would still only represent a small percentage of the total trench distance used by Telstra's PSTN.

#### **Separation**

- 13 Telstra's distribution infrastructure must comply with the appropriate separation standards for external distribution infrastructure on public land. That is, the distance

by which the relevant items must be physically apart from each other. The separation or clearance distances for buried infrastructure are generally as follows:

- (a) gas pipes:
  - (i) large main gas pipe (over 100 mm in diameter) - 300 mm from any other item;
  - (ii) small main gas pipe (75 mm in diameter) - 150 mm from any other item;
- (b) power lines:
  - (i) power line and service lines (high voltage) - 300 mm from any other item;
  - (ii) power line and service lines (low voltage) - 100 mm from any other item;
- (c) water mains:
  - (i) high capacity main water main - 300 mm from any other item;
  - (ii) low reticulation water main - 150 mm from any other item;
- (d) sewer mains:
  - (i) sewer mains - 300 mm from any other item;
  - (ii) sewer connections to mains - 150 mm from any other item; and
- (e) other carriers' communication cables - 100 mm from any other item.

Attached and marked "A" is a copy of the Australian Communications Industry Forum's *Industry Code External Communication Cable Networks*.

- 14 The *Electrical Safety (Network Assets) Regulations 1999* (Vic) require power and communications cables to be buried as follows:

- (a) low voltage power cables (above 50 V AC and below 1000 V AC) are required to be buried 750mm below ground surface if directly buried, 600mm below ground surface if directly buried and covered with a

mechanical cover, and 450 mm below ground surface if enclosed in a conduit or pipe;

- (b) high voltage power cables (1000 V AC up to 22kV AC) are required to be buried 750mm below ground surface if directly buried, 600mm below ground surface if directly buried and covered with a mechanical cover, and 600 mm below ground surface if enclosed in a conduit or pipe;
- (c) high voltage power cables (22kV AC up to 66kV AC) are required to be buried 1000mm below ground surface if directly buried, 750mm below ground surface if directly buried and covered with a mechanical cover, and 750 mm below ground surface if enclosed in a conduit or pipe; and
- (d) high voltage power cables (66kV AC up to 220kV AC) are required to be buried 1000mm below ground surface if directly buried, 1000mm below ground surface if directly buried and covered with a mechanical cover, and 1000mm below ground surface if enclosed in a conduit or pipe.

- 15 As a consequence of these requirements, if Telstra wishes to share its trenches with any utilities, the trenches may, depending on the utilities with which it wishes to share, have to be dug wider and/or deeper to accommodate the above regulations. Furthermore, in some circumstances instead of digging an open trench a less disruptive boring method is used (meaning that rather than digging a pit in the ground, a horizontal “tunnel” is drilled by special machinery, big enough to accommodate the necessary equipment. If more than one utility needs to share the “tunnel”, either larger “tunnels” must be bored or more than one tunnel must be bored. This of course increases the cost. An example where boring rather than open trenching would be used, is the CBD (where excavation of the streets would be very costly) or when crossing a main arterial road or freeway.

#### **Building at different times**

- 16 Another impediment to trench sharing is the fact that trench sharing will only be cost effective if the utility or telecommunications company and Telstra build their trench infrastructure at the same time. This is because once a trench is built by the utility or other telecommunications company and covered up, it no longer exists and thus Telstra has to incur all of the costs associated with building a new trench even

if it follows the same alignment. In established areas, utilities have already established their trenches. Thus any PSTN operator rolling out its network in established areas, would have no opportunity of saving costs by sharing its trenches with the existing utilities' infrastructure. However, in new estates, the trenches are often dug by the developer to enable all utilities, including telecommunications companies, to bury their infrastructure at the same time. Accordingly, sharing with other utilities in accordance with the separation requirements is possible and can be cost effective in new estates.

### **Operational Issues**

- 17 In addition to the considerations set out above, Telstra must on occasion install an access point such as a pit or a manhole to access exiting conduits. There are a number of occupational and health and safety implications of excavating around the facilities of other utilities in a shared trench. These implications increase the costs of operating and maintaining the network by Telstra. Such costs would include additional training of Telstra's technicians, any accidental damage caused to the other utilities facilities and any consequent damage to Telstra's network. For these reasons Telstra does not ordinarily share trenches with facilities which carry high pressure gas, high pressure water or high voltage electricity.

### **C. CONDUIT OR DUCT SHARING**

- 18 A conduit or duct is a plastic pipe which is laid in the trench and through which cable is hauled. A photograph of what looks to me to be a pipe or conduit exiting a pit in ground which used to be an exposed trench (when the conduit was laid) but has now been covered over:



PLASTIC PIT AT CNR AJAX DR & BELINDA CR,  
WHEELERS HILL (27-SEP-2001)  
CLOSE UP VIEW OF CONDUIT EXITS AT RIGHT WITH MULTIPLE CABLES

### Sharing of conduits with Utilities

- 19 In practice, although Telstra could share its trenches with either water, sewer or gas utilities, it does not share its conduits with those utilities because it would not be cost-effective to do so, and such sharing could become very dangerous in case of a water and/or gas leak. This is especially so if there were a build up of any of the other utilities' materials in Telstra pits, where maintenance is conducted by Telstra technicians.
- 20 Telstra tries to keep water away from its cables as much as possible for two reasons:
- (a) water causes corrosive damage to cables; and
  - (b) water conducts electricity and thus, depending on the voltage of the cable, can increase the chance of electrocution of the Telstra technicians.
- 21 A gas leak in a conduit or pit would allow gas leaking into all other connected pits or conduits, subsequently affecting a wide area and creating a dangerous situation at locations where cables are being repaired or manipulated by Telstra technicians.
- 22 Also, working in close proximity to power cables creates an increased health and safety danger to Telstra technicians working in pits and repairing conduits or cables. It also increases the risk to the public, if copper telecommunications cables are accidentally brought into contact with power cables.

23 In any case, the necessary adherence to the separation requirements set out above demands the establishment of a very large conduit to include power, water or gas utility's infrastructure.

#### **Sharing with telecommunications companies**

24 Where physically possible, Telstra can potentially share conduits with telecommunications companies distributing optical fibre and copper cables by hauling a subduct in its conduit. The telecommunications company can then haul its own cable through the subduct.

25 Telstra has typically installed its conduits in the CAN (customer access network) as follows:

(a) [c-i-c];

(b) [c-i-c].

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26 A 100mm conduit could accommodate two Telstra 100 pair cables, together with one subduct for another telecommunications company. However, it is very difficult to subduct a 50mm conduit. Therefore, the conduit size would need to be increased in areas where 50mm conduit is ordinarily used if Telstra were to share its conduits with another telecommunications company. In general, the more Telstra wishes to share new conduits or ducts with telecommunications companies, the more it would have to plan for that by providing bigger new conduits or ducts than those necessary for its own use in the PSTN. Obviously there is a cost involved in both planning, purchase of materials and laying down bigger conduits or ducts.

27 Operational issues also arise when sharing with a telecommunications company, [c-i-c] uses a different distribution technology. Telstra technicians must be aware of the differences and must know what action they can take in case of faults in both Telstra's or [c-i-c] networks. This increases operational and maintenance costs.

#### **D. NEW ESTATES**

28 Each year Telstra extends the access network to provide service in new service locations. For example in 2003/04 Telstra did this in [c-i-c] new locations, in 2004/05 in [c-i-c] new locations and in 2005/06 in [c-i-c] new locations.



29 Telstra endeavours to share a developer provided trench in new estates at no cost to Telstra. However, Telstra bears some of the costs of trenches in some new estates. This occurs where the alignment which the developer provides does not match the manner in which Telstra wishes to enter the customers' premises. In addition, in recent times developers increasingly invite other carriers or service providers to share the trench, excluding Telstra from the trench, and in some cases, the estate. This means that Telstra must pay for the trenches in the new estates if it wishes to provide services to customers in those estates.

Dated: 21 July 2006

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[c-i-c]