



## *Connecting Australia with CDMA*

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### A submission of the CDMA Development Group to the Connecting Australia policy review

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## Connecting Australia with CDMA

Submission from the CDMA Development Group to the Department of Communications, Information Technology and the Arts, January 2006.

### Executive Summary

The CDG recommends Connect Australia be structured to offer incentives for telecommunication carriers to utilise existing infrastructure to provide mobile and wireless data services that can be proven as the most superior services available.

This submission argues the objectives of Connect Australia can be best achieved by ensuring projects funded under the package:

- 1) utilise the best available proven technology;
- 2) deliver services in a proven cost-effective manner;
- 3) build on previous Commonwealth outlays in telecommunications infrastructure development;
- 4) avoid service disruption or the need for phone users to replace existing handsets with new devices;
- 5) promote competition.

Connect Australia constitutes a significant promise to maintain and enhance telecommunications services in rural and regional Australia. Connect Australia can be designed to encourage operators to utilise existing networks to strengthen services, instead of building new networks that replicate services that are already in place.

It has been estimated that the Commonwealth has invested up to \$400 million in the CDMA network, a figure significantly disputed by Telstra. To simply phase out the CDMA network, even if previous Commonwealth investment were proven to be a mere quarter of the suggested \$400 million, would waste the capacity of a significant asset for Telstra, the Commonwealth, and consumers in regional, rural, and remote Australia.

This submission identifies a number of critical services provided exclusively by the existing CDMA 1x and EV-DO network to some of Australia's most vulnerable, remote and Indigenous communities. Doubts remain on the ability of Telstra to meet its existing obligations to these communities during and after its proposed network change-over. These unanswered questions threaten to weaken the effectiveness and adequacy of the entire Connect Australia package.

An assurance from Telstra that it will meet these obligations without a technical explanation of how it intends to achieve that is a risk too great for many towns, communities and decision-makers to take. Mobile and some data services to be provided by Telstra's proposed new network, based on WCDMA at 850 MHz, are yet to be proven effective in a commercial setting, anywhere in the world.



Ideally, Telstra would continue to operate and evolve its CDMA 1x and EV-DO network. If Telstra does not wish to operate its CDMA network any longer, Commonwealth money should not be made available to allow the replication of CDMA in circumstances where the proposed replacement technology is yet to be proven as superior to the CDMA technology which is either already in place or is capable of being efficiently installed through simple upgrades.

The CDG is interested to see Connect Australia designed to provide incentives for the continued use and development of the national CDMA network infrastructure. More broadly, this submission outlines the CDG's call for an inquiry into the Telstra proposal to replace the existing CDMA network with the so-called WCDMA based 'Next Generation Network'. The technological and regulatory issues in such an inquiry will have a significant impact on the ability of Connect Australia to deliver modern telecommunications services in rural and regional Australia in parity with metropolitan areas.



## **Part One: Our understanding of the Connect Australia Vision**

Through \$1.1bn in targeted assistance and the further \$2.2bn Communications Fund we recognise Connect Australia provides the promise of ongoing protection for the telecommunications interests of rural and regional Australia. The components of this package provide avenues for upgrade requests and incentives for private broadband providers to operate in areas they may otherwise ignore. The income stream from a fund of this size should provide an ongoing capacity to facilitate future upgrades and maintain telecommunications infrastructure where required. From our perspective, Connect Australia is a significant and sound commitment to rural and regional Australia, which should be designed to guarantee future Commonwealth expenditure extracts continued value from previous Commonwealth outlays.

## **Part Two: The Unique Ability of CDMA to fulfill the Connect Australia Vision**

The existing CDMA 1x and EV-DO network offers 3G telecommunications to 98 percent of Australia's population. The International Telecommunication Union has confirmed that CDMA2000 1x is a 3G technology, which means Telstra's suggestions of moving 'from a CDMA to a 3G network' are flawed.

More importantly, the existing CDMA 1x and EV-DO network provides essential services to many of Australia's most vulnerable, including remote and Indigenous communities. With a cost-effective upgrade path which is reportedly 18 months ahead of its nearest competitors, and existing coverage to 98 percent of the population, CDMA possesses a unique ability as a platform to fulfill the Connect Australia vision. It is disappointing that Telstra has decided to abandon the technology - and the network - that over 1.4 million Australians rely on, and replace it with a network that will not provide a service greater than that already provided by the existing CDMA network infrastructure.

Telstra's proposed Next Generation Network for mobile and wireless services is based on a technology known as WCDMA (or UMTS), and Telstra plan to operate it at the 850 MHz band of spectrum. This is largely unprecedented, and unproven in a comparable commercial setting.

Published in January 2006, a recent trial in the United States compared CDMA 1x EV-DO (currently available in Australia's capital cities and some regional towns) and HSDPA (the WCDMA equivalent to EV-DO - which Telstra's Next Generation Network will need to establish). The trial found that CDMA 1x EV-DO (which Telstra already has) outperformed its WCDMA competitor on coverage and cost.<sup>1</sup> CDMA-based EV-DO has an advantage in coverage because its roll-out is months and even years ahead of WCDMA-based HSDPA.

In handset cost, the CDMA-based EV-DO technology also offers superior advantages to consumers. And we stress, this is the network that Australia already has in most metropolitan areas and in a number of regional towns. The following table compares the wholesale cost of handsets across a range of network platforms. We are particularly interested in the lines marked EV-DO (Telstra's

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<sup>1</sup> Signals Ahead: Redefining Research, 'EV-DO, HSDPA and EDGE Revisited', Volume 3, No. 1, January 9 2006, p.7-8.

current CDMA network) and WCDMA 850 MHz (Telstra's proposed Next Generation Network). This chart demonstrates that aside from the cost of building a brand new network to replace a fully-functioning technology that is more advanced, handsets are expected to be noticeably more expensive for retailers and consumers. 1.4 million consumers will be asked to absorb new costs for handsets and associated equipment such as car kits and earpieces.



## Wholesale Prices Of Handsets 2000 - 2007

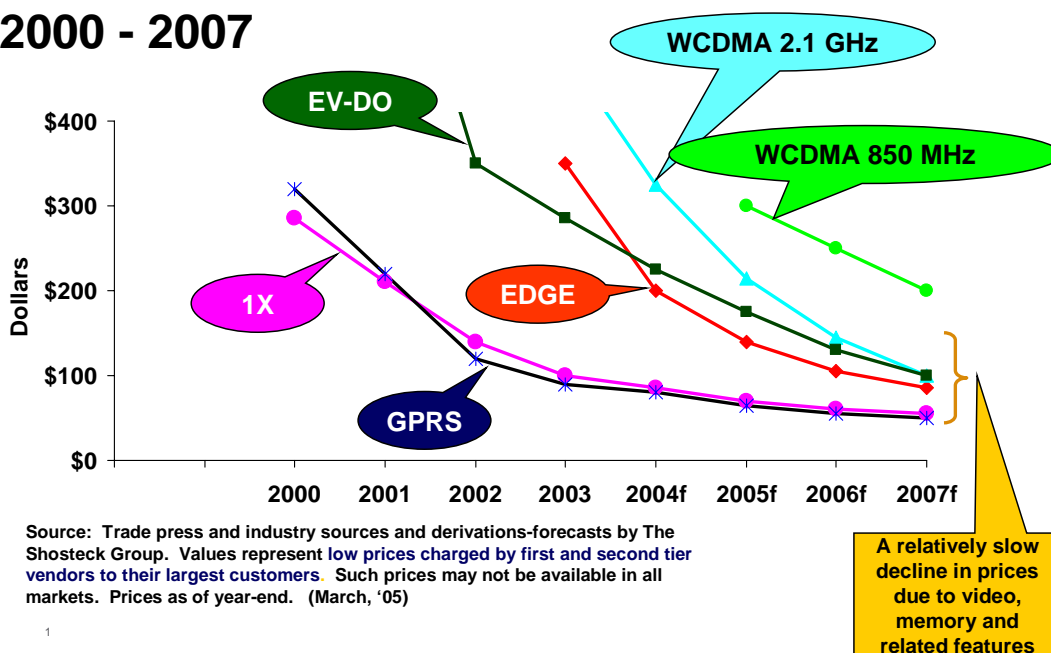


Figure One: Whole Prices of 3G Handsets 2000-2007 (The Shosteck Group, March 2005)

The existing CDMA network also provides a range of critical services. Examples include:

- Telstra uses the unique capability of the existing CDMA 1x network to meet its USO obligation to provide fixed wireless access or Wireless Local Loop (WLL) services to remote and indigenous communities. For many, this is the only form of fixed network (PSTN) access they have and the only untimed local call service in their vicinity. While Telstra has committed to fulfilling all of its USO obligations during and after a network transition, it has not been explained how they intend to do this with the new technology and how new services will be offered to consumers. Connect Australia need not support Telstra to do with a new technology that which it is already doing with CDMA technology.
- The CDG understands an estimated amount of \$62 million has been provided by the Commonwealth to the Australian Rail Track Corporation (ARTC) for CDMA-based



communications. The ARTC currently has responsibility for the management of 5861 route kilometres of standard gauge interstate track, in South Australia, Victoria, Western Australia and New South Wales. The ARTC also manages the Hunter Valley Coal Rail network in New South Wales (311 km) and other regional rail links in New South Wales (651 km). With the replacement of CDMA it is likely these types of investments will be rendered obsolete.

Similarly, it has been estimated that up to \$400 million in government funds may have been invested in the CDMA network - although the precise figures have not been made available, and this figure is disputed by Telstra. It is unfortunate that such significant public investments will be wasted if the fully-functioning network is not maintained by Telstra. Connect Australia should thus be established to favour projects that seek to build on existing infrastructure and previous government outlays. This principle should be not only applicable to CDMA infrastructure, but other telecommunications investments that have been made by the Commonwealth.

### **Part Three: The 5-Point Test for Connect Australia Funding**

It is acknowledged that the Commonwealth Government has contributed to the development of Australia's CDMA 1x and EV-DO network. Through its broad response to the Estens inquiry and programs such as the Higher Bandwidth Incentive Scheme, the Government has long-supported the development of telecommunications in rural and regional Australia in a number of ways. As such, the CDG recommends the following approach to leverage these investments in the implementation of Connect Australia:

1. Connect Australia funding decisions should favour projects that offer the best available technology to ensure rural and regional Australians gain access to the same services provided in metropolitan areas.
2. Connect Australia funding decisions should favour projects that deliver cost-effective telecommunications solutions that build on existing infrastructure and networks, rather than duplicating services.
3. Connect Australia funding decisions should favour projects that build on broader investments the Commonwealth has already made in the country's telecommunications framework.
4. Connect Australia funding decisions should favour projects that will result in the avoidance of service disruption or the need for phone users to replace existing handsets with new devices.
5. Connect Australia funding decisions should favour decisions that result in increased competition.

Essentially, this five-point test seeks to ensure maximum value is extracted from the Connect Australia package by leveraging existing networks and investments, and results in increased competition and less disruption for consumers. Specifically, should Telstra seek to replicate the coverage of existing networks with support of Connect Australia, the Commonwealth is not advised to contribute to subsidise these endeavours through this package.

#### Part Four: Potential for CDMA to Continue in Australia

The existing CDMA 1x and EV-DO network is a critical piece of Australian infrastructure. It is privately owned but has been developed with significant public assistance. As such, opportunities to keep the network in operation should be fully explored by the government and industry. The components of Connect Australia, through Mobile Connect and the Communications Fund in particular, provide an opportunity to consider the viability of such an option.

There is inherent value in the CDMA 1x and EV-DO network. It is a significant national asset, and no other network offers equivalent coverage. Recognizing that more accurate comparisons can now be made, the following two maps seek to compare the reach of the CDMA network to that of GSM networks as they existed in 2003. At the time of making this submission the author did not have access to current coverage maps, but urges further investigation of the coverage reach of CDMA before the structure of Connect Australia is decided so that an informed decision can be made on future use of this national asset that reaches 98 percent of Australians.

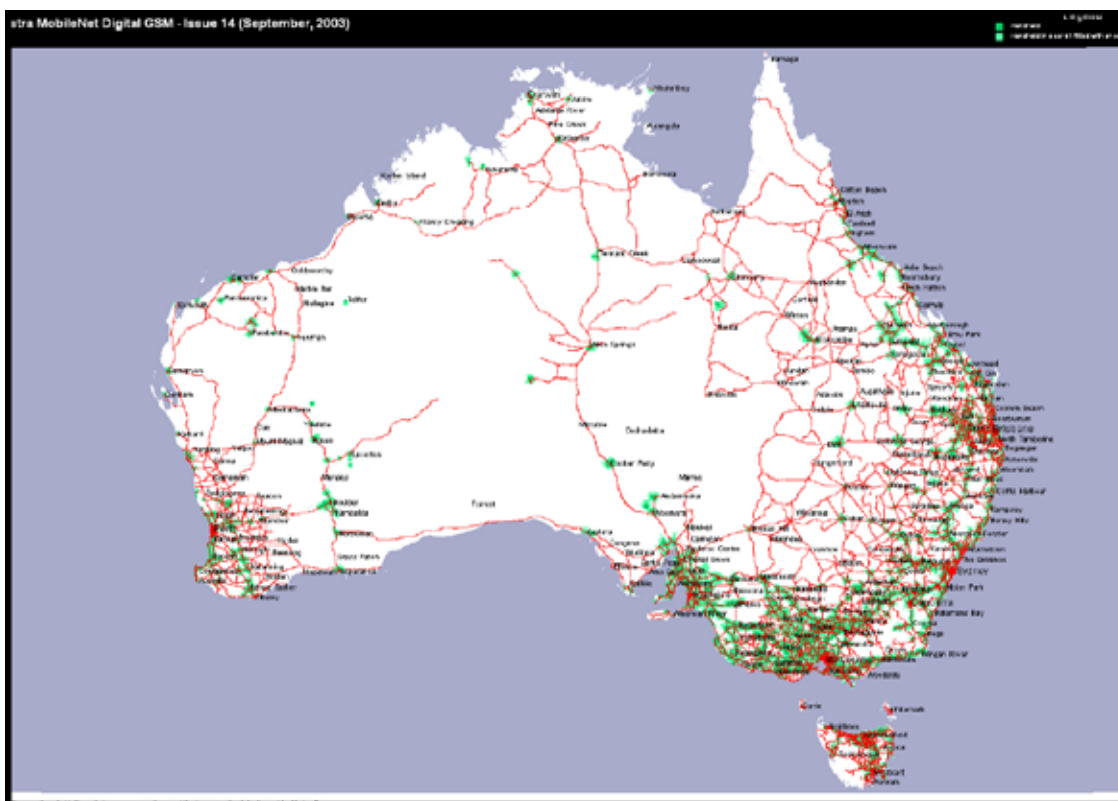


Figure two: Telstra Mobile Net GSM Coverage, August 2003

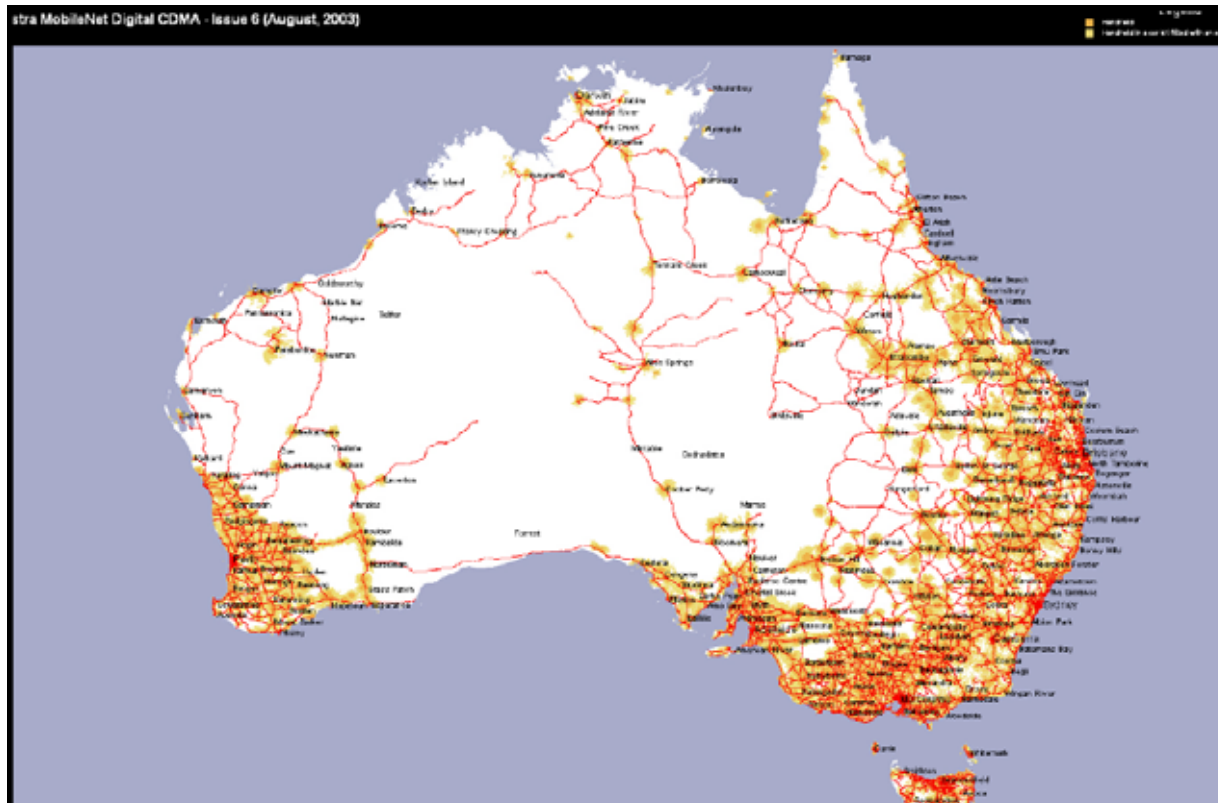


Figure three: Telstra Mobile Net CDMA Coverage, August 2003

Building new networks in a country as vast as Australia is a difficult task, and when one so effective has been established the telecommunications consumer should be wary of plans to replace it with an unproven technology. At the time of writing for example, there are few mobile handsets in operation anywhere in the world that could operate on the WCDMA Next Generation Network being proposed by Telstra. With lagging handset supplies not unheard of in the Australian market, this is a genuine concern for decision-makers and mobile customers.

An alternative option to safeguard services and value for rural and regional communities is to facilitate through incentives under Connect Australia the continued operation of the CDMA 1x and EV-DO network (and its continued evolution). To do so will generate continued service stability and a pathway for continued improvement in the rural and regional telecommunications market. Abandoning the network in order to build another is effectively a 'scorched earth' approach to development, whereas building and improving the network that already exists will see a more cost efficient path for the improvement of services to the bush.



## **Part Five: Call for an Inquiry into the Future of Australia's Telecommunications Networks**

The CDG seeks to establish an open inquiry into the future of Australia's telecommunications networks. Telstra's decision to replace CDMA 1x and EV-DO with the so-called WCDMA Next Generation Network raises a series of technical and regulatory questions over its ability to maintain and continually improve services to rural and regional Australia. While commercial decisions are a matter for corporations such as Telstra, the public policy implications of this decision are immense. As such, an inquiry is justified to determine how current safeguards - and the objectives of Connect Australia - can be achieved during and after a network transition.

Appendix A to this submission outlines the proposed terms of reference for an inquiry into the future of Australia's telecommunications networks.



## Conclusion

The Connect Australia package constitutes a significant commitment to the future of telecommunications services in rural and regional Australia. However, the opportunity to leverage the capabilities of the existing CDMA 1x and EV-DO network to contribute to that vision have not been fully explored. Simply abandoning a network with coverage to 98 percent of the population represents a wasted opportunity and potentially undermines the ability of Connect Australia to fulfill its objectives.

**The CDG recommends Connect Australia be structured to offer incentives for telecommunication carriers to utilise existing infrastructure to provide mobile and wireless data services that can be proven as the most superior services available.**

Opportunities exist to facilitate the ongoing evolution of the CDMA 1x and EV-DO network. Doing so will enable continued service improvement in regional telecommunications and provide the most effective safeguard imaginable for the provision of critical services in country areas. Many of Australia's most vulnerable, remote and Indigenous communities rely on this network for the most basic telephone services. The network is also capable of providing advanced applications and 3G content when consumers begin to demand them.

The CDG is calling for an inquiry into the future of Australia's telecommunications networks. A public discussion is required to explore the technical and regulatory issues inherent in Telstra's decision to replace CDMA with a WCDMA network at 850 MHz. In addition, there should be a review to determine how to best leverage the national CDMA asset, should it be decommissioned. Telecommunications services in rural and regional Australia are reliant on Telstra's ability to maintain them during and after a network transition. As yet, Telstra has not explained how they intend to do that and in what time frame.

If these questions are not explored and answered before the CDMA network is abandoned, the ability of Connect Australia to fulfill its objectives will be greatly diminished. The CDG would welcome the opportunity to discuss these matters further with the Department.

The CDMA Development Group is a trade association formed to foster the worldwide development, implementation and use of CDMA technologies. The more than 100 member companies of the CDG include many of the world's largest wireless carriers and equipment manufactures. For further information on the CDG visit [www.cdg.org](http://www.cdg.org).

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## Appendix A: Terms of Reference for an Inquiry

The CDG seeks to establish an open inquiry into Telstra's proposal to close the national CDMA network and the impact of such a decision on the objectives of the Connect Australia package.

We argue the terms of reference for an inquiry should include:

### Financial Expenditure (Past and Future)

1. **Preservation of both Telstra's and the taxpayers' investment in the existing CDMA network**

Since 1999, Telstra has made a significant investment in rolling-out CDMA. Telstra has invested in excess of \$800 million on its CDMA network, making it a national asset. The 3000+ base stations built nationally currently reach 98 percent of Australia's population.

An estimated \$400 million of government funds has been invested in the CDMA network, an amount disputed by Telstra. More recently, some \$62 million in Commonwealth funds were applied to CDMA based communications for the ARTC, an amount that would seemingly be wasted should the CDMA closure proceed. An inquiry should determine the full amount of public funds applied to the CDMA network and related communications infrastructures, to consider if the network's closure is in the best interests of the Commonwealth and public interest and to determine the best use/disposition of the existing National CDMA asset.

2. **Application of future government funds to enhance rural telecommunication services**

Commonwealth funds totaling over \$3 billion have been earmarked for future telecommunications expenditure in rural, regional and remote Australia. Given the potential for the writing off of previous government funds invested in the current CDMA network, safeguards to ensure long term value is extracted from future telecommunications expenditure through Connect Australia should be examined in an inquiry.

### End-user impact

3. **Avoidance of service disruption and out-of-pocket costs to consumers**

Current CDMA handsets cost significantly less than other 3G handsets. In the event of a CDMA shut down, Telstra has warned its 1.4m subscribers would need to purchase new handsets, car kits and other peripherals as part of a migration to a new WCDMA network at 850 MHz. 850 MHz is a non-standard frequency band for WCDMA, meaning handsets will be limited and therefore more costly. An inquiry should examine how cost impacts on consumers can be minimised, and how to avoid a repeat of the problems associated with the switch off of the analogue mobile network. There should be a particular focus on those most reliant on Connect Australia initiatives, such as remote and indigenous communities. If necessary a side by side technical demonstration should be



conducted to prove that commercial WCDMA equipment's range and coverage can match that of the existing CDMA system under the same terrain and loading conditions.

#### 4. Guaranteeing parity of country-city CDMA service during the proposed three-year plus closure period of the CDMA network

With an announced intention to close the CDMA network, consumers can expect to see little to no improvement in their existing CDMA services over the next three years. By effectively freezing future CDMA investment, consumers in many country areas will not enjoy the benefits of network upgrades to EV-DO, already available in most city areas. An inquiry should ensure measures are in place to continue service parity between country and city areas.

#### 5. Universal Service Obligations (USO)

Telstra is using CDMA to meet its USO obligations by providing fixed wireless access or Wireless Local Loop (WLL) using CDMA. In some areas this is the only form of fixed network (PSTN) access. The Government and the people who rely on this access need to be guaranteed that they will not lose any of the services that they have today. Further they need to be assured that all the features enjoyed by metropolitan subscribers on the PSTN will be available via the WCDMA network.

#### Claims Regarding Technology/What is 3G?

##### 6. Certification of 3G standard

CDMA2000 1X is an International Telecommunication Union (ITU) 3G technology standard that offers up to 153 kbps data speeds for Internet browsing, email access, video and music downloads. The entire Telstra CDMA network already is CDMA2000 1X. The upgraded CDMA2000 1xEV-DO portions of the network already in place in city areas provides broadband wireless access at 2.4 Mbps today and 3.1 Mbps next year and is already growing rapidly in Australia. Despite these facts, potentially misleading claims have been made inferring CDMA is not a 3G technology. An inquiry should investigate applicable 3G standards, and investigate if misleading statements have been made on CDMA 3G attributes.

#### Competition

##### 7. Compliance of the CDMA closure with obligations imposed by the Carrier License Conditions

Clause 23 of the Carrier License Conditions (Telstra Corporations Limited) Declaration 1997 (Amendment No 3 of 2002) as empowered by the *Telecommunications Act 1997* require Telstra to provide "handheld mobile phone coverage to each of the Designated Towns using either CDMA or both CDMA and GSM hand technology." This obligation has effect for a period of five years from 2002, and an additional five years on top of that unless the Commonwealth agrees that external events should alter these obligations. An inquiry is proposed to assess if such external events exist.



## 8. Competitive Impact

Current CDMA wholesale partners, such as Hutchison (Orange), use Telstra's CDMA network. What impact will the closure have on Orange's business? Will Orange subscribers also be required to change out their existing CDMA handsets at significant cost? Will Orange survive or be put out of business by Telstra's decision?

In addition, the most competitive wireless communications markets in the world are those with multiple technologies. By eliminating the CDMA2000 network, Australia would have just one 3G technology deployed. An inquiry should examine what impact the proposed CDMA network shutdown will have on consumer choice, cost, and service.