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Australia – Comments on Draft PC Report

1. EXECUTIVE SUMMARY

The recent report from the Productivity Commission (PC) incorrectly claims that robust competition now exists in Australia. It has been proposed in their report that, since the current regime is not working, many of its important elements should be discarded, without at the same time replacing them with safeguards to stimulate a competitive market.

It has long been our contention that the regime is not working – our comments in that regard recently provoked a heated response from the Minister for Communications – and I had hoped that the PC would deliver a new and workable perspective on the issue, rather than giving up and calling it quits.

The draft report yields to Telstra's argument that the decisions made by the ACCC on access and interconnect will make access to its network too cheap and thus would not stimulate the development of new infrastructure.

I strongly disagree with this assessment. It is totally unrealistic to believe that new infrastructure will be deployed at any significant level in regional, rural, metropolitan residential and SME markets. It doesn't make economic sense to duplicate the Telstra network. In order to guarantee competition in the Australian market it is essential that we create a regulatory regime that ensures a first-class infrastructure for all Australians, and at the same time stimulates maximum competition on the network by those service providers who are competent to build and develop their own products and services.

I consider that it would be counter-productive to abolish the anti-competitive elements of the current regime, without replacing them with a framework that ensures open networks, prices and conditions that serve to stimulate competition.

2. ANALYSIS OF THE PRODUCTIVITY COMMISSION'S REPORT

2.1 PREAMBLE

In June 2000, the PC was requested by the government to review competition regulation in the telecommunications sector; this would have to be completed by June 2001. In particular they should review that part which deals with anti-competitive conduct in the industry. This includes the all important interconnection and access regimes – and relevant provisions such as pre-selection of carriage service providers and number portability.

The PC review would assist the government in identifying whether the regulatory regime is working as effectively as possible and that the benefits of competition regulation are being met.

The terms of reference specifies that the inquiry did not encompass the structural separation of Telstra, in line with Government policy on this issue.

It was also very gratifying to hear Professor Allan Fels, chairman of the ACCC publicly stating in July 2000 that the current regulatory regime must be changed in order for the regulator to improve its effectiveness. There are insufficient incentives for the industry (read Telstra) to negotiate an equitable outcome. By early 2001 the ACCC had over 30 conflicts to address on issues such as access, interconnect, provisioning, etc.

2.2 TELSTRA AND OPTUS: 86% MARKET SHARE OF INDUSTRY REVENUES

Now that the Productivity Commission (PC) has produced its draft report it is probably appropriate to take an overall look at the state of competition in early 2001.

The PC asserts only that the outdated telecom industry laws need updating. It also concludes, without any substantiation and quite incorrectly, that competition in the telecommunications sector is becoming so robust that the present laws (drafted when Telstra and Optus were the only carriers in Australia) are inadequate in today's market of more than 50 competitors.

But I dare to question: "Where are these competitors?" Telstra and Optus together have over 86% of the total market revenues. It is great to list 50 competitors but what is their impact in the market?

The report is a very disappointed document. It fails to deliver a vision of the IT&T future in Australia and it ends up with only tinkering at the edges. I realise that the PC was not asked to produce a vision, but, as they did previously with the Broadcasting Report, they could easily have used this opportunity to show some leadership.

Perhaps it would be more accurate to say that the report reflects the lack of vision that this government has shown over all their years in office. But then, the government completely ignored the Productivity Commission's report on broadcasting, and, with an election just around the corner, it is highly unlikely that it will risk implementing this report. The Opposition will probably be equally reluctant to become involved. Nevertheless, it is an important document for any government to have at their disposal when forming future policies. For that reason alone it would have been far better if the Commission had provided a vision and some broad strategies, rather than the highly technical subject matter it did address, which is hard to understand and therefore fails to stimulate a broad public discussion.

2.3 CONCLUSION: THE CURRENT REGIME DOESN'T WORK

The PC's report basically admits that the current regulatory regime doesn't work and thus concludes that significant parts should be discarded, rather than adjusted so as to make it workable. There are some sound proposals in the report aimed at enhancing the efficiency of the regime but it fails to provide a solution to the inadequacies of the

current system in relation to anti-competitive conduct. And abolishing the current regime would mean that we must start all over again – we'd be back in 1996.

In the meantime, Telstra is as dominant as ever and effective competition has declined. Telstra is the only company making any real profit – and just look at that profit! This is hardly an indication that robust competition exists. The country is lagging behind in the roll-out of residential broadband because there is simply no-one competing with Telstra.

2.4 MORE EFFICIENCY LESS EFFECTIVENESS

While the PC's report provides good proposals to enhance the efficiency of the regime it fails to provide a solution to the inadequacies of the current system in deterring anti competitive conduct. Abolishing the current regime, means that we can start all over again, we are back in 1996, we have lost 5 years.

The report affects regulation-governing Telstra in two key areas:

- Amendments of the telecommunications access regime to remove the slow and resource intensive private, bilateral arbitration process that currently attempts to provide relief to parties seeking access to Telstra's declared network.
- The repeal of telecommunications-specific anti-competitive provisions – a move that will be welcomed by Telstra but frustrates its competitors and industry regulators.

2.5 THE ACCESS REGIME

In regard to the access regime, the proposed amendments include tighter criteria for the declaration of services, multi-party arbitrations, the ability to refer to material relied upon in other arbitrations, and making public the methodology employed by the ACCC in arbitrations. This in effect provides processes which are already available in the normal judicial process but which have so far been denied to aggrieved participants in the telecommunication sector. Telstra has so far successfully opposed open arbitrations on the grounds that they would jeopardise the confidentiality of the parties.

Open, that is public, arbitrations would also achieve the PC's objectives, but in addition, they would diminish the number of telecommunication arbitrations before the ACCC by providing a precedent regime on methodology and pricing.

It is apparent that the financial market currently believes that Telstra is the only viable telecommunications carrier in Australia. To change this view, and to encourage continued investment by other carriers, it is crucial that the ACCC provide a decision on local access, including an equitable framework for pricing. This and other major issues need to be resolved during this financial year – not the next or the one after that. We have been waiting since 1997 – far too long already.

2.6 TELSTRA GETS THE FREE REIGN

However, the removal of anti-competitive provisions without a concomitant provision of effective alternatives will give Telstra the opportunity to play the system to its own advantage and dilute any benefits achieved through the proposed access reforms.

The PC report effectively acknowledges the failure of the current Australian regulatory regime, which was put in place to foster competition. The fact that this part of the legislation hasn't worked, however, does not mean that the industry can afford to discard it without providing a replacement. The potential for anti-competitive behaviour is greater today than it was in 1997, when the fall-back regime was judged to be ineffective. If minimalist safety-net legislation does not work effectively, what grounds can possibly exist for having no safety net at all? In the absence of an alternative, the current problems would simply be exacerbated. The highly networked nature of the industry – and its dependence on Telstra and that company's consequent ability to control every sector of the industry, via means such as interconnect – eliminates the possibility of price cuts and the introduction of innovative services.

Persistent delays in competition have resulted in a decline in the number of players. The increased dominance of Telstra, means that telco-specific legislation is needed to protect the interests of the consumer and to allow other service providers to compete on a level playing field.

Other sound proposals in the report include;

- abolition of the TAF;
- abolition of the Industry Development Plan regime
- tightening of declaration criteria and sunsets on declaration;
- cautious support to intervene in the pay TV industry to stem foreclosure of pay TV content.

I will now address some of the underlying issues that are affecting the current state of competition in Australia.

3. COMPETITIONS ANALYSIS

3.1 DISPUTES AND DELAYING TACTICS

I think it's a bit rich for Telstra to blame the regulator for the delays in competition that have now been hampering the industry since the introduction of the new Telecommunications Act in 1997. As indicated above, very little progress has been made since that time and we are basically still working on the legislation that was put in place by the previous government in 1992.

After years of exhaustive investigations through submissions, draft reports and independent expert advice the ACCC has arrived at conclusions and decisions - most, if not all, of which have been delayed because of Telstra's constant demands for confidentiality, refusal to release information and, ultimately, by their appealing the key determination. The ACCC has to be extremely careful with its decisions, as Telstra's legal department will go through their documents with a fine tooth comb,

seeking ways to attack the decisions. None of the other players do this – only Telstra. If at that stage Telstra appeals the regulator's final decision, is it then fair to blame the ACCC for the further delay? The ACCC didn't want the disputes in the first place, and now, having finally reached conclusion it finds that Telstra intends to persist in its interminable delaying tactics by appealing the final terms and conditions. Is Telstra saying that if after all these proceedings Telstra doesn't like the outcome, the ACCC must change its rulings - otherwise the regulator will be at fault for any further delays.

At a certain stage Telstra indicated that the 25 cent call was being offered at a loss, in spite of the fact that the rest of the western world had already accepted lower call charges. Is Australia so different from elsewhere? Countries such as Canada and Sweden also have sparsely populated countries.

If Australia is indeed different from the rest of the world, then why doesn't Telstra open up its books and justify its position? The 'just trust us' approach is not good enough.

3.2 LOCAL LOOP AND ADSL

Last year, I publicly congratulated Telstra for its technical cooperation during the lead-up to the ADSL roll out, and I have applauded its cooperation with ACIF and the leadership role that Telstra took. But all this is worthless if the pricing remains unacceptable. Independent research from around the globe has validated this view and both Professor Fels and Minister Alston have indicated that Telstra's pricing is too high. Professor Fels is on record as saying that Telstra's prices are twice as high as the ACCC's calculations.

Telstra claims that I am wrong with my broadband analysis. But why then does New Zealand have more ADSL users than Australia and why are we running two years behind the rest of the world? It is not me that is saying this criticism has also come from Microsoft, Cisco, Siemens and many others.

Telstra is on record as saying it will have 625,000 ADSL users by 2005. If we wish to keep up with the rest of the world we should have at least 2.5 million users by that time. The Netherlands aims for 500,000 by the end of next year and Germany will have a whopping 35% penetration by 2004. That is what I call vision and leadership.

3.3 INVESTMENT BLACK HOLE

Telstra claims that the ACCC decisions on interconnect and access are going to create an investment black hole. No one will build infrastructure and all of them want what Telstra calls a 'free ride' on their network. However, all independent research (including NERA and OVUM) concludes that the interconnect pricing set by the ACCC is very conservative and there is general agreement that, if there is a bias, it is in Telstra's favour, ensuring that Telstra is reimbursed for its infrastructure investments. The only party to disagree is Telstra (with the exception, of course, of Telstra's own not-so-independent advisors).

I also dispute their assertion that the competition is not investing. However, it is not a case of resale or infrastructure, but both. Why would a building owner in CBD Melbourne want 15 telcos to run 15 cables through their buildings? Doesn't a shared network make more sense? Why are cities such as Sydney, Melbourne and Brisbane looking at dark fibre options? They want shared networks.

An investment black hole would certainly be created if we had to run a range of different networks in rural Australia to establish a competitive environment in those areas.

There are already at least 50 telcos investing in niche-market infrastructure, and companies such as NextGen are not small fry. In spite of the present unfavourable regulatory regime they are still prepared to invest.

However, it is totally unrealistic to believe that new infrastructure providers are going to deliver a significant amount of the national access requirements of residential users and SMEs. It will be Telstra that will always be by far the largest, and in most instances the only, provider. If we are to achieve competition in the market Telstra will have to make its network available under reasonable conditions and at commercially affordable prices, and this will never happen without regulatory support. This is applicable in the case of both the telecommunications networks and the cable TV networks. By neglecting to ensure that Telstra provides such services, there will be very limited competition in most parts of Australia. The government, through its PC report, is now steering dangerously in this direction.

Who is making the biggest profit in the country? The current environment is certainly not a black hole for Telstra. None of the others even come close to the level of Telstra's profitability. Who needs protection Telstra or their competitors?

Returning to Telstra's argument regarding Australia's unique position – I agree with the ACCC that we should look for a balanced regime that puts a stop to inefficient duplication of infrastructure, while at the same time stimulating new investments. I also agree that we haven't yet found this balance. Competition is the only way forward and it is the only direction we can take to create a better communications environment for our country. It has been this regime of competition that has pushed Telstra to changes that has led to the current level of profitability.

Sharing the network will be the only solution in many cases. That being the case, the government should ensure that the right regulatory regime is in place to stimulate the building of national infrastructure. The focus of competition will move to services, and for that purpose concentration should be centred upon stimulating the building of new, innovative and affordable e-services on top of the infrastructure.

If Telstra doesn't want to come to the party the government has two options:

- Through regulation, they could compel Telstra to open up their books, so that we can speed up the stalled process of developing a balanced infrastructure environment for Australia.
- Failing this, the government could in the future be forced to nationalise the telecommunications infrastructure, turn it into a utility, and let others, including Telstra, use this network on an equal basis.

This option should not be summarily dismissed as too far-fetched. There already exist precedents in Europe, where certain governments are being asked to bail out telcos that can no longer afford to finance some aspects of the national telecommunications networks. Furthermore, independent DSL infrastructure providers in the UK and USA are exiting the market in droves, leaving the governments with new broadband monopolies that are not delivering the necessary communications infrastructure for our emerging e-society, especially to regional and rural communities.

If needed further background information is provided in the following web reports:

Australia - Broadband Infrastructure

Australia Telecommunications - Market Forecasts 2005-2010

Australia - Access Regime

Australia - Interconnect

Australia - Industry - Revenue Overview (tables)

Australia - High-speed access networks - xDSL

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Australia - Broadband - Market Analysis by Paul Budde

1. THE BROADBAND CRUSADE

During 2000 it became abundantly clear that broadband was not growing as fast in Australia as it was in other parts of the world. So I decided that in 2001 I would embark on a broadband crusade.

I see broadband as a critical element in the development of our country, from both a community and an economic perspective.

Broadband provides convenient and affordable access to information, entertainment and communication. It empowers individuals to choose the services they want, rather than being restricted to what the media barons are prepared to dole out to them. And it allows companies such as ours to enter new overseas markets – 30% of our business is now Internet-driven.

So versatile is this technology that it can be applied in many ways, in accordance with user demand. For example, in Korea, the country with the highest broadband penetration in the world, the market is driven by tele-education. In the USA teleworking is operating as a key driver, while always-on high-speed Internet access is the favourite application in Europe.

The impetus for broadband can occur in three ways:

- A national vision translated into government policies (as in Scandinavia and Singapore)
- Bold telcos and cable operators breaking new ground (Spain, Germany)
- Competition (USA, Netherlands)

Australia does not have any of the above drivers – hence my crusade, in which I have endeavoured to open up the subject by using the media to generate public awareness and debate.

For the developments of the various broadband developments around the globe please see: individual country reports (*A-Z Countries*).

2. MARKET ISSUES

2.1 THE LONG WAIT FOR BROADBAND

In spite of current problems in the development of broadband we remain optimistic about this market.

The main reason for this is the fact that in every area that affordable broadband has been rolled out large numbers of residential users and SMEs are desperately waiting to be connected. No advertising or marketing is needed – the simple fact that such a service has become available in a city of suburb is often enough to create a waiting list.

Very few carriers, however, are able to roll out their services quickly enough to satisfy the demand, and, as Stephen McClelland, in April 2001 wrote in *Telecommunication International*:

Consumers blame the operators, Competitive carriers blame the incumbents. Incumbents blame the regulators. Investors blame the markets. Media commentators blame the government and regulators bemoan the state of the industry.

As we said only recently, it is quite amazing that the telco market is growing at such a phenomenal rate, and it is certainly no thanks to the industry. There is no recession in the telco market from a demand perspective – it is the supply side that is unable to get its act together. A very sad story indeed.

2.2 OVER-PROMISED AND UNDER-DELIVERED FORECASTS

At no stage have we been prepared to subscribe to the ridiculous figures that were put about in the USA – that within a few years the majority of people would be using broadband. The issue is far too complex. Similar broad-brush predictions are being made regarding mobile Internet (WAP and GPRS), m-commerce and 3G.

If only it were that simple. But unfortunately it is not sufficient just to invent a new technology and wait for the stampede.

Our forecasts regarding broadband are based on Internet users. After two years of usage these customers are very much aware of what the Internet can do for them. There is no single killer app. Some people use it for banking; others for research; games is another popular application; but many more people use it for very personal purposes, based on their hobbies, work or lifestyle. After 2-3 years these users are becoming frustrated with the fact that they constantly have to dial up to check their e-mails or to have quick access to information. What should be a 5-minute search can easily turn into a 15-minute source of frustration. As a result, they limit their access as much as possible to once a day, at the office, or during the weekend.

These users are more than ready for broadband.

2.3 THE PRICE HAS TO BE RIGHT

However, the price has to be right. There is no way that households will spend hundreds of dollars on communications. They already run up large bills – for example, an average telephone bill is at least \$60 per month. Their mobile bill also comes close to this amount; ISP charges are around \$25; and some users have pay TV and so add another \$50 a month to their bill.

This adds up to well over \$150 per month, and there is little likelihood that they will be willing to pay a large sum on top of that for broadband access. As soon as the total of these costs hits the \$100-plus the 'ouch' factor cuts in. People are becoming acutely aware of costs and \$125 is the ceiling for most households.

2.4 USER DEMAND OR INDUSTRY PRESCRIPTION

So, people are going to make choices, and in Internet households pay TV is usually the first casualty. The mobile bill is the next item to be scrutinised and users begin to shop around for combinations of fixed telephone charges, Internet and broadband. While the industry would love to pile all these charges on top of each other, customers are not about to accept this.

As long ago as 1998 we predicted that the 'magic number' for broadband in Australia would be A\$50 per month (in the USA : US\$25). Once this subscription level becomes available widespread deployment will follow. At this stage pent-up demand, based on that amount, sits at around 20%-25% of all Internet users. As Internet usage further matures a 75% penetration could be reached amongst Internet households, over a 5 year period.

Access providers who are aware of this pattern could tap into this market and make value-added offers to customers who are seeking a total package. By 2001 the trend of multi-access services slowly started to emerge. New wholesale DSL users are able to sell their access services in such a way that more content services can be made available over the one DSL line. These services don't necessarily have to come from the one provider. Based on an open network approach and customer choice a range of services from high-speed Internet access, voice over DSL (VoDSL), interactive TV and videostreaming could all be made available. These services can also be made available to multiple devices, depending on the nature of the service and its usage. Companies such as Request DSL and xzyed (subsidiary of C&W Optus) are actively looking into these opportunities.

2.5 AND THE LEADERS ARE....

Very few telcos, however, possess the internal marketing and sales capabilities to develop the necessary business models. So the easy way out is simply to say that there is no business model for broadband.

We argue that new models, such as permission-based marketing, will provide a better framework in the near future – once data centres and customer relation management has become an integral part of the business world. However, such models will have to be based on open networks, and most telcos are not yet ready to embark on this, and so they limit broadband access.

Table 1 - Broadband access amongst Internet households 2001

Country	Internet HH penetration
Korea	57%
USA	11%
Hong Kong	8%
Singapore	7%
Taiwan, France, Denmark	6%
Germany	5%
Spain, UK	3%
Australia, New Zealand	1.5%
China	0.4%

(Source: Paul Budde Communication, based on NetValue and industry data)

A substitution effect is also increasingly creating more bandwidth penetration in countries that have a high ISDN penetration. Germany, in particular, is experiencing a rapid conversion from ISDN to ADSL. This country leads the world in ISDN. It has a penetration of 38% of online households, and is followed by Denmark (20%), Hong Kong (5%) and China (4%). In Taiwan, the USA, Singapore, Australia and New Zealand less than 1% of e-households use ISDN.

See also:

Global Broadband - Market Statistics

Global Broadband - Market Trends and Developments

Global Broadband - xDSL Technologies

Global Broadband - Cable Telephony and Cable Modems

Global Mobile - Wireless Broadband

Global Broadband - Access Technologies

Global Broadband - Industry, Infrastructure & Network Trends - An analysis

Converging Industries - An analysis

3. ANALYSIS OF THE AUSTRALIAN BROADBAND MARKET

3.1 THE TELSTRA REVISION

One of my major criticisms regarding the broadband developments in Australia has been that Telstra was predicting a meagre 625,000 ADSL users by 2005, and so I was very encouraged to learn that the company has now revised its forecast for broadband. I am informed that, based on the revised plans, the expected penetration for broadband in Australia now comes much closer to the 2.5 million users figure that I have been working with, reflecting the global growth predictions in countries similar to ours.

The launch of a much more affordable broadband satellite package in early April 2001 was the beginning; and I was told by Telstra that interactive satellite access would soon be launched as well. Also foreshadowed by Telstra was a fresh look at the ISDN pricing models.

I agree that the delivery mechanism of broadband is irrelevant – what Australian users want at this stage is affordable, always-on high-speed Internet access. At this stage, ISDN is still well suited in many situations, but is currently not affordable. ADSL, cable modems and wireless services such as satellite are other potential delivery mechanisms.

It was also encouraging to be told that Telstra has decided to upgrade its cable TV networks in Adelaide and Perth, which will enable them to deliver cable modem services in those two cities. I learned that it is possible to deliver both the old modem service and the DOCSIS standard service over the one network. This means that the current 40,000 cable modem users can coexist with the new DOCSIS-based customers.

On the subject of cable modems, I still find it hard to understand why Telstra, News and Packer can't get together and come up with a business plan that will better facilitate the use of this valuable infrastructure asset.

However, in general terms, Telstra's revised broadband strategy seems to imply a change in their previously recalcitrant attitude. Broadband is now seen and promoted as Telstra's main growth market and this view is receiving general support throughout the company, from the Board down.

3.2 THE ADSL ROLL-OUT

The roll-out of ADSL is in full swing and, as in other countries, Telstra's waiting list demonstrates the high level of user interest in this service. As predicted, this is all happening without the benefit of advertising – just by word of mouth. There are now over 10,000 ADSL users and, according to our estimates, this number could double in a few months' time – and double again before the end of the year.

According to the ADSL statistics shown to me by the Telstra team, its pricing is competitive on a global scale, but I must admit to reservations on this score. The \$73 monthly fee is on the high side and I would like to see this price drop to \$50. However, I accept the Telstra view that a balance is needed and I also understand that the deployment of ADSL is far more complex and expensive than the POTS (plain old telephone service). Also, Telstra appear to be giving consideration to the idea that permission-based marketing, which I have long been promoting as an appropriate business model for broadband, could provide an answer to the dilemma of costs versus revenues. Under this new model, at least part of the costs would be carried by businesses that are interested in establishing one-to-one communication with their customers. We estimate that this could constitute as much 65% of all residential broadband revenues by 2010.

3.3 HOW TO CREATE COMPETITION IN THE AUSTRALIAN MARKET

I am convinced that a competitive environment is necessary if broadband is to achieve real strength in the Australian market – it is needed to drive innovations, better prices and new developments.

However, this gives rise to a number of problems

In accordance with my analysis of the status of competition in 2001, I believe it is unrealistic to expect new telcos to duplicate the Telstra network, and therefore any competition model would need to be based on the premise that Australia will have only one main national network. We might eventually get some competition out of the Optus/Singtel network, but this will only operate as a niche network (in capital cities). The other DSL wholesale companies will, for the most part, stick to the more lucrative business market, since the wholesale price prevents them from penetrating further into the mainstream market. Wireless systems such as LMDS and satellite will also only be niche market operations. By the end of this decade 70%-plus of the Australian population will still be relying on Telstra for access. Any significant development of wireless broadband will take place in rural areas, since it could never truly compete with fixed networks in the cities. So we estimate that, by 2010, 70%-80% of Australians will still be serviced by fixed networks.

Unlike Europe and the USA, there is no competition in Australia between telcos and cable TV operators. Here the market is wholly in the hands of the telcos – and to have only one main gatekeeper to our e-society and e-economy is a most undesirable state of affairs. I therefore believe that competition will need to be based on an open network policy, with the competitors concentrating on services, content, packaging and distribution of information, entertainment, etc.

3.4 SHARING THE PIE

This doesn't mean that Telstra will have to relinquish its network. As I have been arguing for many years, the network is an extremely valuable asset – especially if we look at it as a national computer network, incorporating data centres, telehousing facilities and customer relation management centres. If we consider the position of service providers over the broadband network, I am convinced that very few of these service providers will want to operate the IT&T infrastructure themselves. They will more than likely outsource this to the operators and this could be a very lucrative and profitable market, in which Telstra could play a major role. Unless Optus/Singtel gets serious about the broadband market, Telstra will have no other competitors in the national infrastructure market. In the present depressed financial market for telcos I cannot foresee any major developments occurring, in which case Optus/Singtel and the other 50 or so players will not have gained more than 20%-30% of the retail market by 2010.

This being the case, the reality is that we, as a country, must find a way to share the infrastructure – for which a fair price will have to be paid to Telstra for the use of their network. To achieve this end a strong regulatory regime will be needed. I am not in favour of heavy-handed regulation, but unfortunately the various factions in the industry have so far been unable to solve their differences through self-regulation. (see: *Australia - Analysis on the state of competition in 2001 by Paul*)

See also:

Australia - Broadband Infrastructure

Australia - Broadband Market Forecasts

Australia - High-speed access networks – xDSL

Australia - Wireless Broadband

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