

## **Submission to the Senate Committee on the Full Privatisation of Telstra**

In July 1996 I made a submission to the Senate Committee on the Partial Sale of Telstra. As a result of that submission I was invited to appear at the Senate Committee hearings into the Partial Privatisation of Telstra. My submission, addressed the potential impact of the partial sale of Telstra on its Research and Development (R&D) activities.

In that submission, a range of concerns was raised regarding the potential impact of partial privatisation on Telstra's commitment to R&D, both as a part of its long term corporate strategy and in the national interest. Unfortunately, many of the warnings contained in my 1996 submission have come true. This submission is based upon extracts from that 1996 submission. With these extracts are italicised additions describing events, which have occurred since 1996, that make evident the reductions in Telstra's support for the Telstra Research Laboratories (TRL) and research in the national interest.

The events and management statements presented below clearly indicate that, without a commitment by the Federal Government and its continued majority ownership of Telstra, it can be expected Telstra will continue to reduce its overall R&D activities and re-direct what remains to short term "stock market driven" activities. This will reduce Telstra's ability to maintain a national network capable of making the digital information age available to all Australian citizens.

The demographics of Australia's population is very different to that of Northern America and Europe. The equipment which Telstra purchases is principally designed for those markets. Without local technical expertise to ensure such equipment is either compatible, or can be made compatible, to conditions in rural and remote areas of Australia, the most affordable technologies will not be suited for deployment outside the highly populated, and profitable, Eastern seaboard. The ongoing reductions in support for TRL (and Telstra's technology division) are continuing to reduce Telstra's ability to retain the local expertise required to ensure the equipment Telstra purchases can be economically deployed across the nation.

It is important that Senators understand that, since partial privatisation, the key business driver for Telstra management has been the share price. This is to be expected of a typical private company which is listed on the stock market. However, Telstra is not a typical private company. It is a very large company which is in a strong monopolistic position and which provides a range of services which are absolutely essential to the national economic and social development of Australia. Therefore, comparisons with typical stock market listed companies are inappropriate.

The Telstra (Transition to Full Private Ownership) Bill 2003 Telstra recognises the national importance of Telstra. This is apparent from the heavily regulated post-privatisation structure proposed by the Bill. Telstra's research activities not only provide an economic benefit to it as a corporation, it also provides the nation with a business, community and intellectual benefit. From overseas experience, the full privatisation will most likely result in an ongoing reduction of research in areas which do not produce short term profit.

With the current majority ownership of Telstra, the Minister of Communications has the power to direct Telstra in the public interest. This is expressly stated in Part 3 of the Telstra Corporation Act, and will be repealed with the proposed Bill. Therefore, any facility the

Government may have to influence the research directions of Telstra in the national interest will be lost with the enactment of this Bill.

It may be argued that the imposition of conditions for Telstra's licence and the heavily regulated framework proposed in the Bill mitigate this repeal of the Minister's power. If the regulation is to be that strong, then one must question the point of total privatisation in the first place. In addition, from discussions with overseas colleagues, it is apparent that in the US, which has a telecommunications market consisting of government regulated privately owned telco's, many of the service providers spend significant effort working around the regulations to gain a profit advantage over their competitors. It would be preferable that such efforts are directed toward network and service improvements rather than the avoidance of regulations.

The focus on stock market driven research will not result in the rural and regional network suddenly failing. Rather, as the business imperative of maximising profit continues to hold sway, the investment in the rural and regional network will slowly wane. As research is directed away from the issues which are of significance to rural and remote areas, Telstra will not have the technological know-how required to address problems which will arise. (From experience one can guarantee that, given Australia's hostile environment, they will arise.)

As Telstra withdraws from areas of research and loses its "research reservoir", it will ultimately face technological problems it will not be able to solve. (Examples are given in the attached document.) It is most likely such problems will occur in the rural and regional parts of the network. This is because the heavily populated Eastern seaboard is more typical of European and North American networks where there is an abundance of standardised equipment.

These highly technical problems will not be resolved by Telstra Country Wide (TCW). Telstra senior management are very pro-privatisation and TCW was created as a political imperative to smooth the pathway to the full privatisation of Telstra. With the continued staff cuts, TCW is also suffering a loss of technical expertise. Without an ongoing commitment to research in areas which do not have a direct link to maximising profit and the share price, the rural network will gradually degrade into a second class network.

Since partial privatisation, the current vendor management culture is moving Telstra toward becoming a technology follower in areas which do not provide short term profit. Such a company has little in-house R&D or technological expertise and is very highly reliant on their vendors for solutions to technical problems. Further, such companies tend to purchase commodity technologies. They then may focus their research efforts on developing new services to be provided over these technologies. (For example, messaging software to operate over a mobile phone system or a new service which operates over the Telstra's Hybrid Fibre Cable network.) That is, they wait until a new technology is very mature (i.e. has become a commodity) before they deploy it and then may try to add some new functionalities.

Some companies can operate quite profitably under this model particularly if their network is small and primarily located in highly populated areas where commodity technologies are readily available from overseas vendors along with technical support. However, such a model is not appropriate to Telstra due to its national network coverage and social importance of equality of access to telecommunications technologies. Commodity technologies typically become available in the most lucrative market segments, unlike the rural and regional network

areas in Australia. Without local research to adapt these technologies to Australian conditions, rural and regional Australia may have to wait some time for these technologies and services.

Since partial privatisation in 1996, TRL management has reflected Telstra's move toward vendor management and commodity technologies by re-focussing TRL's research effort away from hardware toward software. If Telstra is fully privatised, with its focus on short term profit and share price, research will be further focused on "value adding" to commodity technologies because this is where the quickest and easiest profit resides. Further, full privatisation will open the way to an "end-game" where Telstra can focus almost all its research effort on "value adding" software discarding almost all its hardware research skill base. Such research will not require TRL in its current form resulting in the possibility of TRL devolving into a software research facility. This would end TRL's current form and almost totally extinguish an essential part of Telstra's technological skill base.

Apart from the issue of equality of access to modern telecommunications, the continued reduction in Telstra's R&D effort is also having a negative impact on Australia's telecommunications research community. TRL once was Australia's premier telecommunications research facility. Today, TRL has lost a significant amount of its national and international research profile. This has also been to the detriment of Australia's overall reputation as a nation at the leading edge of telecommunications research. The full privatisation of Telstra will result in even greater reductions in Telstra's commitment to research including research in the national interest.

The full privatisation of Telstra will result in a further reduction in Telstra's, and Australia's, "technological literacy" and a greater reliance on overseas based vendors. Such a decline in Telstra's technological and research skill base will be to the detriment of consumers and the nation's intellectual and technological advancement.

Further details of these issues, and more information, is contained in the following annotated extracts from my 1996 submission.

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**Submission to Senate Committee on Telstra Partial Sale.**  
**16 July 1996**

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**Summary:** Studies of several overseas telecoms reveal that the impact of privatisation on the research and development conducted by those telecoms always includes:

- A shift from longer term basic research toward short term commercially focused research. *(This occurred with the attempted splitting out from the Telstra Research Laboratories the Telstra “New Wave” Laboratories. Although the creation of the “New Wave” laboratories failed to produce the planned spin-off companies, there has been a continued drive to focus research in Telstra toward projects that are perceived as commercial winners at the expense of research in the national interest.)*

- A shift from hardware oriented research toward research focusing on computer software and systems.

*(This has occurred with the cessation of research into solid state electronics, Electromagnetic interference, polymer and corrosion chemistry, MOCVD technology, VLSI technology, MBE technology, surface characterisation, antennas research and glass fibre research to name a few.)*

- A move from exploratory research toward research on “sure-fire bets”.

*(This occurred with creation of the New Wave Innovation research group, which was intended to produce dot-com type commercial spin-off companies. Since the dot-com crash, this strategy has been reviewed and the New Wave group has been re-absorbed into TRL. Despite this, the focus on projects perceived to be “sure-fire bets” has continued at the expense of more exploratory research.)*

Evidence indicates that, since the late 1980s, Telstra has been reducing its in-house technical competence and increasing its dependence on equipment suppliers for technical support. This approach has also been adopted by the privatised British Telecom. If, as Telstra’s trends to date indicate, Telstra follows the British Telecom example, Telstra will most likely significantly reduce its broader research and development effort and refocus on a narrow range of commercially oriented software research. Similarly to British Telecom, Telstra will also likely become almost totally dependent upon its equipment suppliers for network technologies. Although this approach may work for a company the size of British Telecom, Telstra’s purchasing power is less than 1% of the international telecommunications market. Hence, it is unlikely Telstra will be able to pressure its suppliers to provide equipment that suits Australia’s special needs.

*(Telstra has reduced the staff count at TRL from over 500 in the early 1990’s to approximately 250 in 2003. (See accompanying graph of TRL staff numbers.) This reduction was primarily targeted at research into hardware aspects of telecommunications. With this reduction, the majority of work undertaken at TRL today is now technology surveys and the application of known technology for Telstra’s commercial advantage. Although such work is important, it has become almost the sole function of TRL at the expense of TRL’s participation in the development of the Australian telecommunications research community and TRL’s research effort in the national interest.*

*Telstra’s approach to technology has moved toward a philosophy of ‘vendor management’. Under this approach, Telstra has replaced its in-house technical expertise with a reliance on carefully drafted contracts with its equipment suppliers. Under the vendor management approach, a failure in network equipment requires the vendor to provide a fix.*

*Unfortunately, there have been many cases where the vendor does not have adequate local expertise to resolve the failure. This is because many vendors retain minimal local expertise in Australia. Examples of this are the recent reductions in the local technical presence of Nortel, JDS Uniphase, Corning and Ericsson.*

*In some cases, the network failure has been due to Australia's unique environment resulting in the vendor being totally unable to provide a solution. In the past, most of these cases were resolved by TRL. However, with the continued decline in TRL, this may not be so in the near future.)*

Given Australia's exceptional climate, flora, fauna, population distribution and size, Telstra has many unique problems it must solve in order to deploy and maintain a national telecommunications network. This requires a high level of research work currently undertaken at the Telstra Research Laboratories (TRL). Over the years TRL has provided solutions to many of these uniquely Australian problems. TRL also contributes to Australia's national research effort, intellectual infrastructure and national development in telecommunications. If Telstra follows the overseas post-privatisation trends all this will be put at risk. Overseas trends indicate the most likely outcomes of the privatisation of Telstra will be:

- A significant reduction in Telstra's ability to provide an economical communications network designed and suited to Australian conditions.

*(TRL's role in providing research to ensure vendor equipment is suited to Australian conditions has been reduced with the move to 'vendor management' where by almost all the requirements for product suitability are written into the contract as the vendor's responsibilities. Unfortunately, there have been examples where the vendor does not have the technical expertise to fulfil those responsibilities.)*

- An increase in the cost to the consumer (and the nation as a whole) due to the use of technologies inappropriate for Australian conditions.

*(Indications are now that, in addition to any increase in cost, the rural and regional population will be given a second-class service. This will mean that technologies and communications speeds available to businesses and consumers in the city and metropolitan areas will always be significantly more advanced than those available to the rural population. Telstra's network is already evolving toward such a two-tier network. Of course it cannot be guaranteed that research will ensure all Australians will have access to the "latest and greatest" communications technologies. However, TRL's work on systems such as the Digital Radio Concentrator System, DRCS, demonstrates that local research can reduce inequalities between city and rural access to telecommunications.*

*An example of research exclusively oriented toward rural areas, which has been shut down, is the issue of electric fence interference with modem operation in rural areas.)*

- A significant reduction in TRL's role as a national asset to assist in Australia's technological development.

*(Staff at TRL have been informed many times that the days of TRL having a role in the "national interest" are over and TRL's sole responsibility now is to maximise Telstra's share price.)*

- A significant reduction in the Australia's overall research effort in telecommunications.

*(TRL's staff numbers have been reduced from over 500 in the early 1990's to approximately 250 by July 2003. Along with this staff reduction has been a cessation of many areas of research. Original investigative research has been significantly reduced, as evidenced by the significant reduction in the number of published research papers originating from TRL since the early 1990's. The number of research papers published in refereed journals and conferences has reduced from 167 in 1993 to less than 40 in*

*2003. Since 1993, the number of staff at TRL has approximately halved. The number of publications has reduced to approximately one quarter of the 1993 figure. Hence, after accounting for the significant staff reduction, the amount of publishable research per staff member has halved.)*

- A loss of telecommunications expertise within Australia.

*(With the reduction in staff has also come a loss of expertise in Australia. As staff are removed from TRL, they usually leave the Australian telecommunications research industry.)*

- An ever greater reliance on overseas interests in the development and evolution of Australia's telecommunications infrastructure.

*(This is one outcome of Telstra's move toward 'vendor management'. Telstra is replacing its in-house research expertise with a reliance on carefully drafted contracts. In many cases this has been found to be to the detriment of Telstra's network.)*

- (Unless there is an amendment to the Bill) a significant reduction in Telstra's contribution to the "national interest".

*(As discussed above, this has occurred.)*

- A significant reduction of influence in the development of telecommunications standards and a resulting financial burden on Australia.

*(Telstra has significantly reduced its participation in international standards setting. In 1993, TRL made 25 submissions to international standards organisations and had 14 representatives at the International Telecommunications Union standards organisation, then called the CCITT. Today, TRL has almost completely discarded its standards activities. In the longer term, this may significantly increase the cost of Telstra's network due to the unique environment in which Telstra must operate. If Telstra does not influence standards deliberations, it will find that the equipment it purchases is designed to a standard that is unsuited to Australian conditions, particularly rural and remote Australia. This will either increase costs to telecommunications users or exclude them from the latest technological advances in services.)*

For these reasons, this submission strongly urges the inquiry to recommend against any privatisation (partial or total) of Telstra.

### **3. Global Trends and the Privatisation of Telstra**

In all the cases studied overseas, there are several trends that appear to be universal. These are:

- A shift from longer term basic research toward short term commercially focused research.
- A shift from hardware oriented research toward research focusing on computer software and systems.
- A move from exploratory research toward research on "sure-fire bets".

We could expect these trends to also apply to TRL after privatisation.

*(Since this submission, Telstra has followed all three of these trends.)*

Beyond these trends, consideration must be made of the telecom's history and circumstances of the privatisation. To apply these findings to Telstra requires some background on the Telstra Research Laboratories and its position within Telstra over recent years.

Until the late 1980's, TRL operated like most telecom research laboratories with corporate funding and a fairly free hand in deciding the areas of research it undertook. Further, TRL

was viewed as a national asset that contributed to Australia's technological, intellectual, infrastructure and economic development in telecommunications. TRL contributed technical expertise, research and technological leadership to Telstra (then Telecom) and Australia. It had a range of close ties with tertiary educational institutions in Australia and overseas and was seen as a part of the Australian research community.

More recently, in line with international trends, Telstra has moved funding to a mixture of corporate funding (for advanced research) and project funding for explicit business oriented research projects. This led to a shift of emphasis from longer term work to short term projects. It has also led to a reduced profile in the Australian research community. As Telstra's commercial needs became more paramount in its research management, more results of research have been declared "commercial in confidence", and therefore not been published in the general scientific media.

*(Examples of this include a significant reduction in the number of published research papers from TRL, a significant reduction in the participation of TRL staff in national and international conferences. As an example of this point, in the early to mid 1990's, Telstra strongly supported the Australian Conference on Optical Fibre Technology (ACOFT). This support was in the provision of staff to assist with organising ACOFT, sponsorship contributions, research paper submissions and staff attendees. In 1993, TRL staff submitted a total of 19 papers to ACOFT. In 2001 ACOFT was incorporated in the OECC/IOOC international optical communications conference and TRL's participation reduced to two submitted papers and three attendees. In 2002, no papers were submitted to ACOFT. In 2003, ACOFT was combined with the international Conference on the Optical Internet, COIN. Three research papers were submitted from TRL. In 1995, TRL submitted 17 research papers to the Australian Telecommunications and Network Applications Conference, ATNAC. For ATNAC 2003, TRL has submitted 4 papers.)*

This evolution has also reduced TRL's role in contributing to the "national good", because the range of fields researched at TRL has been reduced to those of shorter term commercial value, rather than of longer term national value.

*(At a meeting with TRL staff on May 9<sup>th</sup> 2001, Telstra CEO (Ziggy Switkowski), made it clear that Telstra's sole priority is its share price. This has been the attitude of Telstra management since the partial sell-off. The "national good" is no longer a consideration. Senior Telstra management now have a philosophy that the most important job of senior management is to maximise shareholder value. Telstra's "shareholder value" is expected to increase on a year by year basis. To do this, Telstra has four key guidelines that all activities in Telstra must follow.*

- 1. Improve Telstra's profitability: this includes reducing operational costs.*
- 2. Improve cash management.*
- 3. Optimise the use of Telstra's assets, releasing spare capacity: this includes reduction of unproductive assets and exiting from unprofitable products and markets).*
- 4. Invest in profitable growth.)*

*These guidelines show that unless research can provide short-term profit, irrespective of the national interest, it will not be pursued. As with research, the same guideline is applied to the rural and remote network. Therefore it can be expected Telstra will have an ongoing interest in exiting that part of its activities. As stated above, the creation of TCW is a political manoeuvre to combat the current hostility of Australia's rural population toward total privatisation.*

*On May 9<sup>th</sup>, 2001, Ziggy Switkowski went on to state that if Telstra could not annually increase its share holder value by increasing its revenue, then it would do so be reducing*

***costs. 70% of TRL's costs are staff salaries. Therefore as has occurred in 2003, any significant reduction of costs at TRL means staff cuts. )***

In recent times, TRL has been in a state of constant turmoil as Telstra senior management has tried to decide what role TRL is to have in Telstra. There appear to be two trains of thought on this. Some senior managers in Telstra have taken the view that Telstra's technology strategy should merely be to purchase and install equipment that has been designed and built overseas. This "turn-key" approach is based upon the belief that if a system fails to operate to expectation, Telstra can simply take it back to the supplier and get another one. A bit like what happens with a faulty CD player that is still under warranty. With this view, there is little need for TRL, as Telstra would be purchasing tried and tested technology.

***(The 'vendor management' model has been used to justify the cessation of a range of research activities. Examples include: antennas, chemistry, surface characterisation, optical fibre reliability and electromagnetic compatibility. These issues are now considered the responsibility of the vendor, despite the fact that problems related to these issues still arise. Examples of this include electromagnetic interference and optical fibre reliability problems which have occurred in Telstra's network over recent times.)***

The other school of thought is that Australia needs a home grown research facility to ensure Telstra is an intelligent purchaser of equipment and to provide technological leadership to Telstra and the nation. (Some even see TRL as a national asset, providing a pivotal and strategic role in Australia's intellectual infrastructure.) This group cite many examples where Telstra's suppliers have failed to provide the backup service needed to fix faults in their equipment. In some cases, suppliers have even attempted to deny a problem existed, until TRL proved the supplier was at fault. This group of managers (who tend to be more in the middle level of management in Telstra) also give examples where Australia's unique flora and fauna have posed problems that require a uniquely Australian solution. (Several examples of this are given below.)

More recently, Telstra is reducing its commitment to TRL by:

- Reductions in staff levels.

***(From the graph at the end of this document, it can be seen that staff reductions at TRL have continued.)***

- Closure of a range of research projects (particularly hardware oriented research projects).

***(Closure of research projects has continued. Examples have been given elsewhere in this document.)***

- Closure of a range of support functions (administrative and equipment maintenance).

***(Reduction in support functions has continued.)***

- Reductions in the administrative support for training and skills development.

***(Reduction in training and development has continued.)***

- Evacuation of a building (Building M6) on the Blackburn Road site in Clayton, Victoria.

***(TRL has also been evacuated from Building M5 on the Blackburn Road site.***

***Consideration is now also being given to evacuating TRL from Buildings M1 and M3.***

***This will reduce TRL to occupying 2 buildings, down from 6 in the early 1990's. This reduction in space has come about from a 50% staff reduction plus the closure of many laboratory areas at Clayton.)***

Outside TRL, Telstra has undertaken a course of reducing its competencies in hardware and manufacture. Telstra has shut down a range of in-house manufacturing activities. Several years ago, Telstra (then Telecom Australia) proposed closing down Telecom Industries,

which produces customer premises equipment. The unions intervened and a compromise down-size and restructure was agreed. However, recently, Telstra has again proposed the closure of Telstra Industries and outsourcing much of the remaining tasks in that area.

Telstra is also moving much of its equipment reliability issues onto the vendors of that equipment. This process involves Telstra reducing its technical competencies in relation to the equipment being installed and relying upon the vendor to provide technical support for the equipment they supply to Telstra. This approach is being adopted for the technical support for Telstra's Synchronous Digital Hierarchy (SDH) equipment being supplied by Siemens. Telstra has adopted the term "vendor management" to describe this reduction in expertise and greater reliance upon vendors.

Telstra's recent history in reducing its in-house technical expertise strongly indicates it will most likely follow the British Telecom post privatisation path. This, plus the fact that the Telstra partial privatisation Bill does not contain any clauses requiring Telstra to maintain a level of research for the national interest, makes it highly likely privatisation of Telstra will result in a dramatic reduction in Telstra's commitment to R&D and a significant loss of expertise in telecommunications technology.

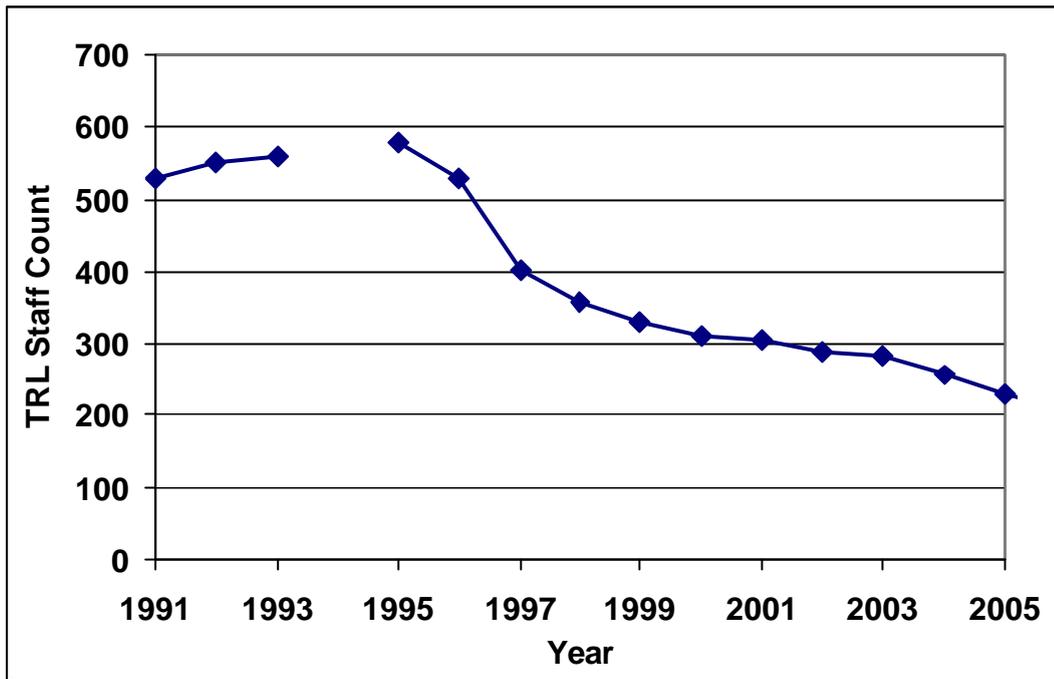
Telstra's actions to date indicate it may significantly outsource its R&D (locally or possibly overseas as proposed with the 1993 Bellcore proposal) and become ever more reliant on the technical expertise of its vendors, rather than maintaining in-house expertise.

*(The reduction in Telstra's technology skills has continued. Telstra unsuccessfully attempted to sell off its Network Design and Construct, NDC, unit. NDC is being re-incorporated into Telstra because no buyer could be found.*

*Telstra has also continued to reduce the staff numbers in its network technology unit, Telstra Technologies. In 2003/04, Telstra Technologies will reduce its staff by a further 10%. This reduction in in-house expertise has resulted in Telstra's continued increase in reliance on vendor expertise. This policy of increased reliance on vendors has been driven by Telstra senior management. However, such equipment is often not well suited to Australian conditions, particularly away from city and metropolitan areas. This often presents problems to the field staff who must service this equipment.)*

*The plot below shows the TRL staff count since the early 1990's. In 2003, the TRL staff count was reduced by a 10%. As stated above, staff have been informed that if Telstra's revenue does not grow, further reductions can be expected in the coming years. Current expectation is a further reduction of 10% in 2004 and 2005 unless the telecommunications market revives.*

*The ongoing gradual reduction in TRL staff numbers is indicative of a proportional reduction in Telstra's wider technological skill pool. This pool grew over many years and provided Telstra with its current technological base. The continued reduction of this skill base will most likely be reflected as an ongoing increase in scattered network failures and shortcomings rather than in a catastrophic failure of Telstra's network. In this case, it is more likely Telstra will focus on ensuring the most profitable areas of the network are fully functional. Hence, the more outlying parts of the network will receive less frequent attention.*



*Plot of the staff numbers at the Telstra Research Laboratories since 1991. Data for the year 1994 could not be found. The staff numbers for 2004 and 2005 are based upon an expected annual reduction of 10%. This is the expected reduction, indicated by TRL management, if the telecommunications market does not improve.*