



Sydney Cables Downunder

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31.01.2002

The Chairman
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RE: Undergrounding Electricity Cables In NSW.

Dear Sir,

As the public lobby group, which has been championing this issue for some considerable time, it gives us great pleasure in presenting our submission for the burial of the electricity distribution system in NSW.

To date the largest single impediment to the proper examination of this matter has been the perceived obstacle of cost.

In 1998 the Federal Government released the report "Putting Cables Underground." This report was initially concerned with communications cables, however as the communications cables were often supported by the same infrastructure that supports the electricity cables, these cables were also included in the report.

On page three of the report it states; " *Using present practices and designs, the working group estimates that the total cost of putting existing overhead electricity and telecommunications cables underground in urban and suburban Australia is about \$23.37 billion. This is an average of \$5,516 per household.*" It is somewhat unfortunate that many commentators have taken this cost out of context and applied it to the burial only of electricity cables. Unfortunately this has had the effect of stifling proper examination and debate of the subject and for those who have read and studied the report in full, it raises more questions than answers.

Sydney Cables Downunder would submit that:

- The cost of \$5,516 should have been split into its essential components of, electricity and telecommunications and,
- that as these responsibilities are covered by both publicly and privately owned organisations that the funding for each needs to be examined separately and,
- that funding not cost should be the final arbiter of the viability any such project.

Finally little thought if any has been given to the relevant size or geographical revenue base of the various organisations verses the area over which cables will be buried and the manner in which this is likely to impact on those organisations.

Other issues that have not been adequately examined is the time over which funds for such a project would be employed and hence need to be recovered. For example if the burial of cables in Sydney takes thirty years then the expense is spread over a corresponding period. Likewise the need to recoup those funds need not be over a lesser time frame than that over which the money is used. Further, that the progressive accumulation of cost savings should to be offset against the cost of cable burial.

We would argue that an average cost for all consumers be established. We argue this on the basis of simplicity and that no consumer be disadvantaged by geological conditions.

We look forward to contributing to the ongoing debate on this issue and being able to partake in the ongoing consultation process and public workshop.

Yours faithfully

A handwritten signature in black ink, appearing to read "Peter Downey", with a long horizontal flourish extending to the right.

Peter Downey
Chairman
Sydney Cables Downunder.

Enclosed attachments forming part of this submission.

- i. Formal submission,
- ii. Discussion Paper, "Putting Cables Underground" "A Practical Solution."



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Re; UNDERGROUND ELECTRICITY CABLES IN NSW.

Sydney Cables Downunder has been in existence since 1996. While its initial focus was on communications cables, it was soon realised that these were only adding to the pre-existing problem of overhead cables in suburban streets and that the core problem was the electricity cables and the infrastructure that supported them.

Since then Sydney Cables Downunder has not actively sought publicity for its cause, rather the main thrust has been to work cooperatively behind the scenes with the relevant authorities to find practical solutions to the problems of overhead cables.

As an organisation, we have listened to and consulted widely with other organisations and the public in general to gauge public opinion on the issue and determine the support for the retro undergrounding of existing cables in the Sydney Basin and other population centres within the State. It is pleasing to say that to date there has been overwhelming support, which has made it possible for the organisation to grow and widen its support base. Had this support not been forthcoming, Sydney Cables Downunder would have ceased to exist a long time ago.

Our stance was recently vindicated by the motion put before the 2001 Local Government Association Conference calling on the NSW Government to immediately begin a project to bury all overhead power cables in the NSW. It is not widely known that prior to the motion being presented to the conference, the wording was altered at the expressed wishes of smaller regional councils so that they could be included. Upon presentation to the conference the motion had such support that it required no debate and was carried unanimously.

On Page three of the "The Sydney Morning Herald" of December 24 it was reported that a survey conducted by the paper showed that two thirds of people surveyed by the paper were willing to pay up to \$80 per year to have Sydney's overhead cables buried. Like the LGA conference, it is astounding that such a proposal should carry such popular support without any public debate.

Our investigations have shown that many of the leading cities of the world have long since buried their overhead cables and that New York in particular began the task of burying its overhead Electricity and Phone cables in 1888. It is reported in the New York archives that all the built up areas of that city had underground power by the turn of the century (1900). Four year before the first electric streetlights were commissioned in Sydney

In Australia it has been noted that as many as four other states are currently burying or are investigating the retro undergrounding of electricity cables in suburban areas.

On balance, the question is no longer a matter of if Sydney's cables will be buried, but how. Likewise it is no longer a question of how much it will cost but a matter of how it may be funded.

FUNDING.

SCDU believes that funding is the key to any successful undergrounding project. It is for this reason that we have spent so much time and effort on this aspect. We have recognised that to date much debate has taken place on the cost issue and that funding, which is the key to a successful project, has been completely ignored. Unfortunately we have not had the resources to allow us to extend this research as far as we would have liked.

Points we considered are as follows:

- Due to budgetary constraints we consider a user pays or levy approach as the most desirable method, though we would have no objection to other methods that did not negatively impact on essential State Government Services,
- Any levy (for which there are ample precedents) should pass the tests of affordability, fairness and acceptability by the population at large,
- Any such levy should be constructed so as not to present an undue burden on pensioners and the less affluent,
- Various levy systems were considered; for example flat across the board, a percentage added to the electricity account with a cap for large users and a levy on motor vehicle registration in recognition of the road safety aspect.
- Any levy should be applied across as wider cross section of the community as possible so as to lessen the individual burden,
- The levy should be applied over time so as to lessen any impact on the consumer. (ie; A lesser amount over a longer period.)
- As all residents of an area would receive a benefit, (be it in the form of increased road safety, street lighting, lower, across the board electricity distribution costs), then all residents should to a greater or lesser degree be prepared to pay for the cost of cable burial, should they already have underground electricity or not
- Any cost savings as a result of the underground program would be offset against the cost.

It is not our intention to debate these points at this time. We only wish to indicate that the percentage method would appear on balance to satisfy important criteria; in that it would least affect pensioners and the needy, while those who would benefit the greatest from increased reliability would contribute a greater share.

COST

Much has been written and debated about the cost of burying Sydney's overhead power distribution system. Unfortunately most of the comments made to date have been at best inaccurate.

SCDU have had discussions with a wide range of participants in other cable burial projects in an attempt to understand the true costs.

After wide consultation we based our costs on the Western Australian project as this would seem to be the closest example we could find to any project for cable burial in NSW.

In adopting this line we were able to take costs directly from the Federal Governments report "Putting Cables Underground". We are none the less aware of differences between these figures and what the current cost is today. However by adhering religiously to the published figures there is transparency in our calculations and inflation factors can be added in later.

Cost increases in WA are basically attributable to:

- a. Inflation,
- b. Addition of a second duct or conduit for the latter inclusion of a fibre optic cable for communications purposes.

Other factors that need to be considered are:

- Most of the soil in Western Australia is sand or sand based. This is generally thought to reduce the cost, however on information gleaned from the construction industry this soil type creates problems that are not found in ordinary soil. For example, trenches tend to collapse and require shoring, while in horizontal boring the sand is not only abrasive but also tends to pack around the boring stem creating its own problems and substantially raising boring costs
- Most materials used in Perth are sourced from Sydney creating on costs that would not be applicable to a Sydney based project
- By refining the type of cable used and network design it should be possible to reduce costs further
- As any NSW project would be infinitely larger than any project staged interstate larger economies of scale should be realised
- As any project in NSW would traverse several "Retail Distribution Areas", the creation of a single body to conduct the burial of cable should be considered, as this would ensure planning and the contracting out of supply and construction contracts are more efficient and cost effective.

COST BENEFITS

Data taken from the Federal Government report “Putting Cables Underground” indicates that underground power distribution is at least four times more reliable than above ground and that the cost of maintenance is halved.

Given events over the last several years it could well be argued that these benefits have been understated.

Direct Benefits.

- Tree trimming has been both a financial as well as a contentious issue in the community. Tree trimming would be eliminated when the power lines are underground. The “Putting Cables Underground” report puts the average cost for tree trimming at \$1085 per km of line per annum.
- Green House gas emissions would be reduced with the resultant decrease in transmission losses. For example the resultant increase in efficiency of the overall distribution translates into a requirement for less electricity being generated with a corresponding reduction in Green House gas generation. . In the “Putting Cables Underground” report this varies at between \$0, \$240 and \$292 per km of line per annum, depending on which table is being quoted.
- Lower Distribution costs due to a lowering of maintenance requirements will translate into Lower electricity charges. The “Putting Cables Underground” report puts the average cost for benefit for line maintenance at \$1220 per km per annum.

Indirect Benefits.

- Reduction in the number and severity of Motor Vehicle collisions, which directly and indirectly cost this state \$223,981,220 each year. On data obtained from the report “Road Crash Costs In Australia” this equates to a direct injection each year of an average of \$6 Million to the NSW health budget plus another \$29 Million in long term care.
- For the fiscal years 97, 98, 99 there were an average of 322 Bush Fires per annum caused by overhead powerlines. In the recent bush fires in NSW there were reports of a lack of water for fire fighting due to Power Lines being destroyed by fire. After the fire had passed through, residents could not return home as water and sewage services had failed due to burnt poles and wires resulting in a lack of power for the pumps
- In the storms in late November early December many businesses in the Hornsby Ku-Ring-Gai areas were without power for up to a week. In many of these businesses, employees were stood down, as they could not be gainfully employed. Such events have ripple down effects right through the community. If the Powerlines had been underground this would at best not have occurred and at worst been minimised
- Council clean up resulting from recent storms has been hampered due to the necessity of clearing and rendering safe downed power lines. This has slowed the process exacerbating the problems and leading to increased costs.

Associated Benefits

Perhaps the greatest benefit from burying the Sydney and the States overhead power distribution system has not yet been realised or explored. In this we are referring to economic development and jobs.

During the run up to the 2000 Olympic games the construction sector outperformed all other sectors of the economy and brought to this state economic prosperity that otherwise would not have occurred.

Likewise with the burying of Sydney's and the States electricity cables there will be a similar expansion of the States Economy.

Direct areas to benefit are;

- Construction industry as a result of the civil engineering works in the actual cable burial,
- Cable manufacturing industry based in the South Western suburbs of Sydney for the manufacture of cable,
- Aluminium refining for cable manufacture in the Newcastle / Hunter region,
- Plastics and Plastics compounding industries in the Southern and South Western suburbs of Sydney,
- Transformer, Electrical Component and switchgear Manufacturers located in the Sydney and Western Sydney regions.
- General Industry and Commerce through a more reliable cost effective and efficient electrical distribution system.
- Tourism industry, as the general amenity of the Sydney region is improved making the city and its surrounds a more desirable tourist destination.
- Expansion of the States economy due to new investment in infrastructure and a continuing expansion of private investment as industry and commerce are attracted by an efficient and reliable power reticulation network.

Conclusion.

It is a common process for industry to reinvest in capital items as technology increases. This is done to allow for old equipment to be retired and new more efficient and cost effective equipment that takes advantage of the latest technological advances to be installed.

There is no better example of this process in NSW than in the transport sector. Dennis and AEC double decker buses have been replaced by Leyland buses which in turn have since been replaced by modern Mercedes buses, most of which are air-conditioned and run on environmentally friendly LP gas instead of diesel. Likewise the railways have revolutionised their rolling stock and instead of red rattlers we now have modern air conditioned Tangara and XPT Trains. A similar revolution has taken place with Sydney's Ferries from large cumbersome steam powered ferries to fast modern Jetcats.

In the Energy Sector the greatest visible advance has been the introduction of "Aerial Bundled Cable" yet the visual aesthetics of this large single black cable that generally replaces several slim uninsulated wires has come at the cost of consumer opposition. At the same time the poles that were meant to carry a few relatively light conductors are being asked to carry heavier bundled cable and often an increasing burden of other cables without any obvious thought to their ability to do so. This has resulted in poles bending and leaning. With road widening and a corresponding narrowing of the nature strip, the likelihood of a collision involving a power pole is significantly increased. To this must be added the realisation that collisions with power poles, by their nature are more damaging and create greater trauma than other types of collision.

While many of the world's great cities have underground power and other cities in our region are working towards the same, Sydney the city built around the world's greatest harbour still struggles with an overhead power distribution system.

The situation is further compounded when it is realised that these cities that are modernising and burying their power distribution systems, will in turn be able to attract investment dollars ahead of Sydney due to the inherent reliability and lower cost of their electricity distribution system.

At a time when we have well and truly left the horse and buggy era behind and entered the era of the computer and Internet, we are still burdened by a power distribution system that often cannot live up to the demands of modern equipment and appliances. Much of the problems created for this sophisticated equipment are overcome with the burial of the power distribution network. By comparison, in other regions suffering these same problems industry has begun marketing "Uninterruptible Power Supplies" for computers and microprocessor controlled equipment and "Surge Protectors" etc for less sophisticated equipment. Do we as a society want to employ the same band-aid solutions or provide a well thought out and properly engineered resolution to the problems?

The question now is; Are we prepared to move forward into the twenty first century or will we leave the problem for our successors to attend to?

Putting Cables Underground

A Practical Solution

**A Discussion Paper Of Practical Issues
For The Burial Of Sydney's Overhead Cables
Prepared By
Sydney Cables Downunder**



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27.10.2001

Sydney Cables Downunder had its birth in 1996 during the Optus Pay TV Cable uproar.

During that period a number of groups sprang up in Sydney and Melbourne protesting against the erection of additional cables in suburban streets for the provision of Pay TV services to private residences.

Initially these groups operated independently but it was soon recognised that there was a need for cooperation and so **Sydney Cables Downunder** was formed to coordinate the actions of these independent community based groups.

Initial protests were centred on the new OPTUS cable, but as events unfolded Telstra also began to erect an overhead Pay TV Cable and the protest was widened to include this cable.

Since those early days Sydney Cables Downunder has evolved into a more pragmatic organisation with the recognition that as well as **environmental** issues there are **sound economic and technical** reasons for all overhead cables to be removed from suburban streets. Currently public demand is not as visible as it was in 1996 yet public recognition of the problems has seen support increase.

Today the issue is even broader and encompasses aspects of **safety, reliability** and **economic** concerns with the distribution of electricity. On the basis of figures contained in the recently released report, "*PUTTING CABLES UNDERGROUND*"², SCDU has been able to demonstrate that there are real tangible **savings to be gained from the burial of the existing network**. As will be seen, a hundred years ago as Sydney first began erecting overhead wires & cables, other great cities of the world were well advanced in burying theirs. In this respect Sydney now has a lot to do just to catch up.

Sydney Cables Downunder has not actively sought publicity for its cause, rather the main thrust has been to work cooperatively behind the scenes with the authorities responsible to find **practical solutions**.

In November 1998 Hornsby Shire Council passed a resolution (commonly referred to as "*The Hornsby Motion*")¹ supporting the burial of overhead cables. This same resolution has now been passed by fourteen Sydney councils and the number continues to increase.

This document has been prepared to canvass a broad set of principles to further the debate of ridding suburban Sydney streets of this unsightly, unreliable, uneconomic and unnecessary overhead infrastructure. However it should not be taken as a grand plan rather it has been kept simple and flexible so that it may be modified and moulded as requirements dictate.

Peter Downey

Chairman
Sydney Cables Downunder.

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EXECUTIVE SUMMARY

It is time, in fact it is past time, for Sydney and other major urban centres in NSW to immediately begin to underground **all** their overhead wires and cables.

The reasons are compelling.

- Undergrounding will all but completely remove the disruption and danger that is associated with overhead electricity wires and cables creating a much safer environment.
- Undergrounding will greatly enhance reliability of the electricity supply network, which is crucial to today's operation of business and consumer services. Computers, ATM's, EFTPOS, telephone systems, medical alert systems, cash registers, inventory control systems, data terminals, food temperature control, as well as the Internet and e-mail. The list grows daily and all applications demand an increasingly reliable and clean supply of electricity.
- Undergrounding means that the environment and the streetscape, will be vastly improved. Ugly poles with their tangled web of wires, cables, boxes and transformers will disappear. Trees will look like trees again instead of mutilated stumps. With the undergrounding of electrical wires and cables, the telecommunications and Pay TV cables will automatically follow. (As required by the National Communications Code.)
- Undergrounding will mean greatly reduced maintenance. The system will be more durable and economic for both the consumer and the distributor.
- Undergrounding will create substantial investment and employment on a continuing, managed basis.
- Undergrounding, over time, will largely pay for itself in cost savings to the distributor and consumer alike.
- Sydney is regarded as one of the great cities of the world, yet unlike other great cities and even other cities in our own country we still spoil our suburban streets with the blight of overhead wires and cables.

When will we begin to plan our own undergrounding process?

When will we catch up?

Simply put, the advantages are compelling and the cost savings simply can not be ignored.

HISTORICAL PERSPECTIVE

1884 *New York State Legislature was impressed with work by Edison on undergrounding overhead wires, passes laws requiring that all overhead phone and electrical wires be buried.*

1888 *Work had not yet begun on the burial of overhead wires and Hugh P. Grant Mayor of New York City took matters into his own hands. Leading a team of axmen around the city they cut down the offending poles. It was reported that the Mayor cut down the first pole himself.*

1896 *Sydney Council passed a resolution to set up what was later to become the Sydney County Council and is known today as Energy Australia. The first power station was constructed at Pyrmont.*

1900 *It was reported that the built up parts of New York City have now been undergrounded and in these areas overhead wires are a thing of the past.*

1903 *Henry Ford began mass production of the first Model T car. The Wright Brothers made the first powered flight at Kitty Hawk.*

1904 *Sydney Council turned on the first electric street lighting and in Sydney overhead wires and cables become a reality.*

1971 *Applied technology of flight and motor vehicles had progressed to the point where astronaut James Irwin landed his Lunar module on the moon and drove the Lunar Rover a distance of 28 kilometres on the lunar surface.*

1984 *New York celebrated 100 years since legislation was enacted requiring the undergrounding of all overhead cables.*

2000 *Over a hundred years have passed since Sydney Council first moved to set up a reticulated power supply. Yet today Sydney still uses essentially the same technology as was originally used in 1904. Technology which today is basically of a third world standard.*

During this same period in Sydney, the sanitary cart and later the pump out tanker have been replaced by a comprehensive underground sewage system. Yet the technology and reliability of the electrical distribution system has stood still in time.

Is this the Sydney of the future, an Olympic city, the gateway to a nation, or a city stranded in the past?

PAST ACHIEVEMENTS

NSW has had many builders leading it through time. These men of vision are remembered for their foresight and imagination long after they have left office. Among these great builders are the following:

- **The Building Governor**
So called for the large number of building projects he initiated. **Governor Lachlan Macquarie**
NSW Governor 1810 - 1821
- **Sydney Harbour Bridge**
Initiated by **The Hon' G W Fuller**
NSW Premier 1922 - 1925
- **Sydney Opera House**
Initiated by **The Hon' J J Cahill**
NSW Premier 1953 - 1959
- **Darling Harbour Project**
Initiated by **The Hon' N K Wran**
NSW Premier 1976 - 1986
- **Sydney Harbour Tunnel**
Initiated by **The Hon' B J Unsworth**
NSW Premier 1986 - 1988
- **2000 Olympics**
Initiated by **The Hon' J J Fahey**
NSW Premier 1992 - 1995
- **Undergrounding Of Sydney's Overhead Cables**
Still awaiting a decision.

Who will have the vision to bury Sydney's overhead wires and Cables and be recognised with their forebears as the great builders of NSW?

“The costs of action must be weighed against the costs of inaction.”

William Jefferson Clinton, 1998
President of the United States of America.

INTRODUCTION

In December 1998 the Federal Department of Communications released a report *“Putting Cables Underground”*.² This report canvases a wide range of issues involved in the burial of all electricity and communications wires and cables across the length and breadth of Australia, but draws no conclusions nor makes any recommendations. This discussion paper has been written to fill a gap left by that report, by extending to a logical conclusion practical issues concerning the burial of wires and cables in the Greater Sydney Area.

Prior to the commencement of any examination of undergrounding overhead wires and cables, it is first necessary to understand the ground rules and set out some guiding principles. These principles should be achievable, wide ranging and inclusive as possible.

The first issue to determine is, where the legislative responsibility lies for the increasing number of wires and cables that clog our streets.

1. **Power Wires and Cables.** These are regulated by State Governments. In NSW they are owned by that Government due to their ownership of the distribution authorities or companies.
2. **Telephone and Pay TV Cables.** These come under Federal Communications legislation and are regulated by the Federal Government. Unlike the power companies, the communications companies are mainly private corporations.
3. It must be recognised that the National Telecommunications Code requires **communications cables be buried within six months of the burial of power wires and cables.** Consequently if the power wires and cables are buried communication cables must follow. **Hence the issue is a matter of State Jurisdiction.**

The first point to consider is the area to be undergrounded. This should be as large as possible to maximise benefits and economies of scale and drive down unit costs. This is most important. If consideration is given to the Greater Sydney Area (generally bounded by Camden, Richmond and the coastline), it follows that a properly implemented project of this size will generate large economies of scale. This will ensure the economic viability of the project and make it possible for other areas within the State to piggy back onto the Sydney project and take advantage of the lower cost structure.

It must also be recognised at this point, that the Federal Government’s Report, *“Putting Cables Underground”*,² investigates the undergrounding of communications and power wires and cables up to, but not including, 33kV in population centres greater than thirty thousand residents. Like the Report, this paper will confine itself to electrical wires and cables within the same criteria of population size and cable capacity. However, unlike the report, this paper will address the issue of economies of scale that would be generated by a large undergrounding scheme and the benefits that will flow from it.

Secondly, there is the consideration of funding. **Funding - not cost - is the key to any viable project.** Unfortunately this aspect is not understood by most commentators. Likewise the cost of undergrounding must be compared against the cost of leaving the current system in place and doing nothing. As will be seen **the total cost of doing nothing is considerable and, cumulatively over time, greater than the cost of undergrounding.**

THE CASE FOR UNDERGROUNDING

There are many financial arguments for the burial of overhead cables. Unfortunately these are not always possible to quantify, as often, no records have been kept.

Sydney, from time to time, experiences violent storms which have a devastating effect on the city's overhead infrastructure. One of the worst storms this decade, in January 1991, resulted in the total loss of overhead power and telephone services in over one hundred kilometres of residential streets in the Ku-ring-gai Council area alone. Rectification work and reconnection of the affected properties took in excess of one week. This event has recently been eclipsed by even greater storms centred in the southern suburbs of Sydney.

While the first concern is the cost of making good damaged and destroyed services, it simply ignores other items of cost which include:

- the waste of food in fridges and freezers, both domestic and commercial;
- possible health concerns from spoilt food stuffs;
- loss of business for many shops, restaurants, cafes and business in general;
- employment and wages of those engaged in the above businesses;
- loss of amenities to the residents in the affected area;
- general disruption to the NSW economy.

It must be recognised that these costs are passed on directly or indirectly to the consumer, either as higher prices or charges, and / or insurance premiums.

The 1991 incident highlights an important lesson. Not only was there no power but, with no communications, it was not possible to report the situation to the authorities. Nor could the residents concerned contact family and friends to assure them of their safety. Likewise no one could contact residents to ascertain their situation. This is a most important issue as **today we take power and communications for granted. Yet without them we are powerless.** With our ageing population we rely more and more on the phone for contact with the sick and elderly and for them to summon help.

The use of the phone today covers many applications for which it was not originally intended. Apart from keeping in touch at the domestic level, it is used as a tool for aged or ill persons in their home, in the form of the "Medi Alert" and "Vital Call" systems. Similarly there are many burglar alarm systems (some equipped with panic buttons) that use the phone system for back to base monitoring. Many modern phones also require power, a typical example being the cordless phone used by many elderly people as a safety item and to reduce the need to rush to a fixed phone when it rings. In these cases, **no power means no phone.**

Many pieces of computer based equipment we to-day take for granted, cannot tolerate a brownout¹¹ of the electrical supply in excess of three cycles or three fiftieth's of a second (such an event may hardly create a flicker of the lights).

Such computer equipment includes ATM's, EFTPOS terminals, word processors, telephone systems, inventory control systems, not to mention the humble cash register. Also we must not forget data terminals in places such as department stores, Medicare offices and banks, while at the same time the modern PC is today a prerequisite for any business.

Nowadays there is a new means of communication, "the Internet", "e-mail" and "e-commerce" which not only rely on the phone line but also a reliable supply of electricity for the computer:

- **power and communications are items of strategic importance as witnessed in recent world conflicts;**
- **surely it makes sense that an up-to-date, electricity supply, which is clean and reliable is provided for such modern equipment;**
- **surely it follows that if the supply of these services is damaged, business and the community will pay the cost;**
- **surely it makes sense that these services be as safe and secure from damage as possible;**
- **doesn't it make sense that the most secure place for these wires and cables is underground?**

Many of our **worst motor vehicle accidents involve power poles**. They present hard unforgiving surfaces, which instead of absorbing any of the energy created by the collision concentrate the force of the collision over a small area. This results in a greater intrusion into the passenger compartment than otherwise would be the case, culminating in severer injuries to the occupants.

Many poles are by necessity poorly sited and close to the kerb. The proximity of the pole to the edge of the road results in many severe motor vehicle accidents, which may never have occurred, or at worst, would have been minor incidents if the pole had not been there. However, it is not always possible to move or resite these poles as this may cause the overhead power wires and cables to encroach on private property.

By comparison, purpose built light poles are constructed to collapse in the event of a collision. In a retro undergrounding project these would be moved back out of harms way from the kerb to the property alignment. It has been estimated that such action would reduce accidents of this nature by in excess of 80%.

Should there be any dissent over this issue, one has only to observe the growing number of floral tributes, photos and crosses attached to power poles in the Sydney region:

- **by comparison, underground cables are inherently more reliable and cost significantly less to maintain;**
- **by comparison, underground cables are more economic leading to a reduction in distribution costs.**

THE EVIDENCE FOR UNDERGROUNDING

While many statistics are not kept, there are a number, which can be found in annual reports and other publications from State Government instrumentalities.

1. Motor Vehicle Collisions with Utility Poles

For the periods 1996/97 - 1997/98. - 1998/99, are shown in the table 1.1 below. Costs in the table are costs to the community in 1996 \$A as calculated by the Bureau for Transport and Communications Economics and shown in table 1.2.

| | | | | | |
|----------------|---------------------|----------------------|---------------------|--------------------|----------------------|
| Collisions | 41 | 305 | 609 | 1172 | 2127 |
| Injuries | 47 | 419 | 839 | - | 1305 |
| Cost | \$70,500,000 | \$136,175,000 | \$9,741,629 | \$6,806,976 | \$223,223,605 |
| 97/98 Year | Fatal | Serious | Other injury | Non Casualty | Total |
| Collisions | 42 | 321 | 643 | 1125 | 2131 |
| Injuries | 44 | 439 | 878 | - | 1361 |
| Cost | \$66,000,000 | \$142,675,000 | \$10,194,458 | \$6,534,000 | \$225,403,458 |
| 96/97 Year | Fatal | Serious | Other injury | Non Casualty | Total |
| Collisions | 45 | 305 | 611 | 1135 | 2096 |
| Injuries | 46 | 424 | 847 | - | 1317 |
| Cost | \$69,000,000 | \$137,800,000 | \$9,834,517 | \$6,592,080 | \$223,226,597 |
| Average | \$68,500,000 | \$138,883,333 | \$9,923,535 | \$6,644,352 | \$223,951,220 |

Motor vehicle collisions with utility pole.³

Table 1.1

| Severity | Fatal | Serious | Other injury | Non Casualty |
|-------------------|-------------|-----------|--------------|--------------|
| Cost to Community | \$1,500,000 | \$325,000 | \$11,611 | \$5,808 |

* Cost shown is the cost per accident.

Cost to the community of motor vehicle accidents.⁴

Table 1.2

2. The Rural Fire Service⁵

For the periods 1996/97 - 1997/98 - 1998/99 reported the following number of fires which were **directly attributed to overhead power wires and cables**. Refer table 2.1.

| Period | 1996 / 97 | 1997 / 98 | 1998 / 99 | Average No of fires per year |
|-------------------|------------|------------|------------|------------------------------|
| Bush Fires | 159 | 485 | 321 | 322 |

Bush fires caused by overhead power lines.

Table 2.1

3. Energy Australia

Annual report for 1998/99

“In the massive Hailstorm that hit Sydney in April, Our crews went beyond the call of duty to restore power to more than 25,000 homes. Just four hours after the storm hit, we restored power to 23,000 homes. By early the next night we had repaired all hailstorm damage to our network, restoring availability of supply to the remaining 2,000 affected customers. Our call centre also handled a large workload in the aftermath of the hailstorm answering almost 3,500 telephone calls in the first 12 hours.”

“.....customer service responded to 3,145 emergencies and handled more than 10,000 calls as a result of the southern and inner Sydney hailstorm.”

Annual report for ‘97-‘98

Erratum *“Energy Australia’s System Reliability Index for 1997/1998 was 100 minutes. This was an increase from the 1996/1997 performance of 72 minutes per customer, rather than an “improvement” as stated. **The increase was due to the impact of storms on the electricity supply network.**”*

Annual report for 1996/97

“A major storm over the 1996 Father’s Day weekend tested our ability to respond to the threats of nature . Strong winds persisted for almost 20 hours with the maximum gust 124 km/h.

*We recorded 117 high voltage circuit breaker and 426 low voltage distributor fuse operations . **Mains staff attended more than 4,160 separate reports of wires down, wires arcing or trees resting on wires.**”*

4. Integral Energy

Annual report for 1998/99

“Unplanned outages at 118 minutes lost per customer were over the target of 95 minutes due to storms at the beginning of the financial year.”

“The following Figures provide network data for Integral Energy, based originally on network information at the time of the merger of Prospect and Illawarra electricity in October 1995.

| Period | 1995/96 | 1996/97 | 1997/98 | 1998/99 |
|--|---------|---------|---------|---------|
| Number of Requests for Emergency Service | 53,376 | 42,455 | 36,984 | 36,717 |
| Average duration (minutes) | 111* | 134* | 124 | 136 |
| Hazardous Jobs | 2619* | 2,712 | 3,913 | 3,253 |
| Average duration (minutes) | 101* | 79* | 61 | 103 |

* Northern figures only South coast figures not available. “

Annual Report for 1997/98

“Unplanned outages at 118 minutes lost per customer were over the target of 73 minutes due to extreme storm activity.”

*“Eight serious wind and electrical storms between November 1997 and June 1998 wreaked havoc across the franchise area, leading to widespread network damage and loss of supply to thousands of customers. **As a result, the overall network reliability index target of 110 minutes supply lost per customer per year was not achieved. Despite the increased frequency and severity of the storms, average supply restoration times improved from 143 minutes to 140 minutes.**”*

Annual Report for 1996/97

“The unplanned reliability target of 75 minutes supply lost per customer per year was met at 73.6 minutes although the figure does not include an amount of 41.1 minutes discounted due to a heavy storm in August 1996.”

5. News media

The following are just two of an almost daily series of excerpts from the popular press.

April 14, 1999

“A storm ripped through Sydney’s southern suburbs. Extensive damage was done to roofing and overhead electrical and communications wires and cables.”

May 15, 1999

“A second storm ripped through Sydney suburbs. More than 17,000 homes are blacked out as a result of trees and debris being blown across power lines. At its peak half of Sydney’s fire fighting appliances were employed putting out small electrical fires from uprooted trees to transformers.”

Immediately **prior** to and on the night of the April storm, Energy Australia were running corporate TV commercials commending their work force for dealing with **“15,000 calls for assistance in one twenty four hour period That’s more than one call per second.”**

While the maintenance crews are to be commended for their efforts, the fact remains that none of these incidents would have occurred if the offending wires and cables were out of harms way **underground.**

6. Additional Items

Both Energy Australia and Integral Energy state in their annual reports the need to reduce Greenhouse gasses and reduce costs of distribution in an increasingly competitive environment.

Energy Australia.

“It is time to put a stake in the ground, to open the debate on Greenhouse gasses and ensure that the cost of energy production reflects the cost to the environment.”

“Our pure energy program, which reduces Greenhouse emissions is being actively promoted to customers”

Integral Energy

“Revenue pressure will increase under the latest IPART (Independent Pricing and Regulatory Tribunal) recommendations to cut the cost of electricity distribution over the next five years.”

By burying the wires and cables that are used to distribute power to our homes and industry, distribution maintenance costs are halved and a saving in the production of Greenhouse gasses estimated by some to be as high as ten percent, is achievable.

7. Traffic

Reports of *“wires down and disrupting traffic”* have become almost a daily occurrence on Sydney’s Breakfast and Drive Time radio programs. These reports are of traffic incidents and so do not tell the full story of dislocation to industry, commerce and private life, or the potential life threatening situations they create. One such incident is estimated by the NRMA to have cost the community \$M1.5

8. Maintenance Costs

On the basis of data to hand⁶, the **cost of maintenance of underground cables vs above ground is in the region of two - to - one in favour of underground**. However, on advice from the supply industry, this figure is at the lower end of the range and greater economies are obtainable. It should be recognised that due to their design and environment, underground cables deteriorate very little in comparison to their above ground counterparts. Likewise they suffer little at the mercies of the weather and are virtually immune from motor vehicle accidents and trees being blown across them.

9. Reliability

The reliability of underground systems is inherently greater than for overhead.

A survey of Australian distribution utilities⁷ has found that an increase in reliability in the order of 4.2 to 1 in favour of undergrounding is to be expected. It must be recognised however that for problem areas, usually where there are a large number of mature trees and shrubs, reliability will be significantly greater still.

Should there be any dispute on this point it must be recognised that Energy Australia has a policy of undergrounding their Main Feeder Network to increase reliability of supply to its customers, and has recently spent in excess of \$M40 in the northern beaches area of Sydney in an expansion of this policy.

10 Food

There has been anecdotal evidence of ruined refrigerated and frozen food in supermarkets during blackouts. Although attempts have been made to quantify the loss, it appears that no hard data is kept of these incidents by either the stores involved or the insurance industry. Nonetheless, it is estimated that the losses are significant, yet these losses are borne by the consumer either, as higher prices or higher insurance premiums.

11. Cost Savings

Cost savings identified in the *“Putting Cables Underground”*² report put the difference between maintenance costs for underground and overhead at \$786 per kilometre per line per year, in favour of underground cables.

12. Other Factors

There have been anecdotal reports⁸ of a drop in street crime rates and motor vehicle accidents where widespread undergrounding projects have been undertaken. This has been attributed to better street lighting and an increase in visibility in suburban streets.

Conclusion

As can be seen from the evidence outlined in this section, there are any number of issues that contribute to the cost of overhead power lines. Cost of maintenance, the flow on effects of supply interruptions, traffic disruption, not to mention cost to the consumer of the overhead system.

But the list does not finish there, if we take as an example collision with power poles. There are flow ons to the ambulance and rescue services through to the hospital system and rehabilitation services. These are direct costs in Dollars and cents and do not include the human cost.

Where does the list end?

It is obvious that even a cursory examination of the facts shows that this is a multi faceted problem for which there is no simple answer. No study would be complete unless it undertook a comprehensive study of the benefits as they relate back to cost savings for the environment, consumer, electricity distributor and the government.

Finally it must be recognised that many of these costs would become cost offsets in any undergrounding project.

Manly copes without power

by KERRIELYN SUTTON

COLES sold out of torches, hotel patrons finished drinks under the half-light of fluorescent "Exit" signs and candles flickered in windows from Eastern Hill to the Steyne on Tuesday night as Manly came to grips with an electricity blackout.

Only in Coles was it business as usual, with its back-up generator lighting up the supermarket while surrounding shops had to close or make do during the power failure.

Supermarket manager Shane Brohier said business was booming as people flooded into the shop.

"We picked up all the people from all the other places," he said. "We sold a lot of candles and batteries and we're completely out of torches."

"It was like an enlightenment for people to pass through all this darkness and see all our lights on."

The New Brighton Hotel, also with the aid of a back-up generator, had to restrict patrons to the public bar but picked up trade from the closed Ivanhoe and Steyne hotels.

Ivanhoe employee Kate Beauchamp, said management, not knowing how long power would be down, gave staff an early mark.

"There were so many people playing the poker machines it would have been absolute bedlam to trace them when the power came back on, and people obviously had to leave so the easiest thing to do was just shut the hotel," Ms Beauchamp said.

Candles light up the night

"We lost a fair bit of money through the poker machines but that was about it. "Just as well it was a Tuesday night. If it was a Saturday night I would have sued EnergyAustralia."

Brian Thompson, owner of Riminal Fish Cafe, rang patrons with reservations and made the decision to shut up for the night and made a gloomy prediction.

"Most people we phoned decided to go to Dee Why or somewhere — which was a pretty sensible thing to do. "Tuesday is our low night of the week so if it was going to happen I suppose Tuesday would be the night for it," Mr Thompson said.

"Maybe it's a little bit of a lead-up to 2000 and the millennium bug. Maybe they were just trying us out to see how we'll go."

With a gas-run kitchen, calculator and candlelight dining, Ceruttis kept its doors open but according to owner David Gray the blackout will have a significant effect on the restaurant's weekly takings.

"The place is lit up with candles anyway, that's how we create our ambience," Mr Gray said. "But we lost about 20 or 30 reservations."

"Most restaurants rely on the Monday, Tuesday, Wednesday trade."

Chaos as truck clips tree

ALEXANDER St in Collaroy was closed for two hours yesterday after a truck overtook a parked semi-trailer and left mayhem in its wake.

The incident occurred about 1pm when a two-tonne truck swerved to miss a semi-trailer which was being unloaded by the side of the road. The smaller truck clipped an overhanging gum tree, bringing it down on to a Commodore utility and snagging Optus cables which ripped off the facing of a house.

Senior Constable Kevin Munce, from Northern Beaches police, said he expected the driver of the smaller truck to be fined.

"The semi-trailer was right to be there because it was making a delivery but the smaller truck was 3.2 tonnes and will be receiving a ticket for driving contrary to sign," Senior Constable Munce said.

"We had to have cars at either end of Alexander St directing traffic for nearly two hours."

Crane blacks suburb

A CRANE pulled down high voltage power lines, blacking out Warriewood and North Narrabeen for as long as three hours in some places yesterday.

About 1200 residents went without power for about 40 minutes from 11.40am but a further 80 went without until about 2.30pm.

But Warriewood resident Rona Abbott said she was sick of Energy-Australia having an excuse at the ready every time there was a problem.

"I've lived here eight years and they keep pulling out these excuses that a car ran into a tree," she said.

"We live in an age where we are dependent on electricity. People are paying for a reliable supply. It's just that they have old equipment."

EnergyAustralia spokesman Eric Aubert said the company could not help that a crane pulled down its power lines.

He said only 10 per cent of blackouts were caused by equipment failure.

He said the average time of blackouts on the peninsula had fallen from more than 10 hours seven years ago to one hour, 37 minutes.

"People on the northern beaches enjoy the most reliable power supply in Australia and the world," Mr Aubert said.

Balloon cuts power to homes

AN escaped party balloon cut electricity to more than 3000 homes and blocked several rail crossings when boomgates closed yesterday morning.

A police spokeswoman said boomgates in the Melbourne bayside suburb of Mordialloc dropped when the power went off, leaving motorists unable to cross the Frankston line.

A United Energy spokesman said the power failed when a helium-filled party balloon with a metallic streamer came down across two lines.

The resulting outage cut power to 3200 customers in the Aspendale-Mordialloc area at 11.20am.

Most had power restored by 11.40am, but some had to wait for another four hours without power.

Traffic standstill

SYDNEY'S worst traffic nightmare — Parramatta Rd blocked in both directions — became a reality yesterday.

Two trucks were involved in a minor collision on the major city feeder at Croydon before one careered into a power pole, bringing lines down across the road about 11.20am.

Traffic banked up for more than 1km in both directions as the electricity was switched off and traffic was diverted through back streets.

East-bound lanes were re-opened by midday and west-bound lanes were cleared ten minutes later.

Blackouts in strong winds

MORE than 700 homes were out of power on Sunday when strong winds brought down power lines across the northern beaches.

Dee Why, Cromer, and Wheeler Heights were worst hit with 600 homes out, followed by Harbord, Killarney Heights, Manly Vale and Church Point.

An Energy Australia spokesman said yesterday the lines, brought down by strong winds or by falling trees and branches, were back on line by 7.30pm on Monday.

Reports of blackouts in Brookvale yesterday were not recorded, he said.

All done with mirrors

A power pole snapped and fell on a van bringing down lines at Fingal Bay on Monday.

The pole, which was not in good condition, snapped when it was hit by the external passenger-side mirror of a delivery van as it pulled away from the kerb in Market Street.

Half of the pole fell down on the truck bringing power lines with it.

A PRACTICAL SOLUTION

There have been a number of underground schemes carried out in Australia over the last several years. The most ambitious of these is the undergrounding of the suburban area of Perth W.A., to a lesser extent Unley in S.A., and the Inala district in Brisbane.

Perhaps the most celebrated undergrounding scheme in Australia was the burial of 132 kV transmission lines in Homebush NSW, which was carried out to enhance the visual amenity of the area for the year 2000 Olympic Games.

However, in comparative terms there has not been any large integrated and widespread undergrounding projects carried out in this country. It therefore follows that there has been no reliable costing structure developed that seriously addresses the economies of scale that such a project can generate.

For the purpose of establishing an average cost we will use the figure of **\$3,295⁹** per property as being the maximum average cost of undergrounding all power cables in the Greater Sydney area. This figure has been established by examining the actual costs of undergrounding projects in other states. **However, due to the size of the area to be undergrounded in Sydney, greater economies of scale should ensure this figure will be substantially lower.**

Method of Financing; To date Sydney Cables Downunder has held confidential discussions with senior personnel involved in infrastructure development in two of Australia's major banks. These discussions have established that when such a project is implemented there will be finance available.

Method of Payment; A recent Cost Benefit Analysis based on data¹⁰ contained in the Federal Government's report, "*Putting Cables Underground*"², found that for a project of 28 years duration with a construction period of 25 years **it is possible to bury Sydney's cables and pay for the construction with a contribution from the consumer of less than \$20 per quarter.** This contribution could be reduced further if productivity improvements within the industry were used as an offset.

Alternate methods could be by way of a lump sum payment or, in cases of hardship a lump sum payment deferred till there is a change in property ownership.

Upon completion of the project and as a consequence of greater economies of the underground system, a reduction in the electricity tariff in the region of 10% becomes a practical consideration.

Past NSW Governments have introduced tolls and levies for specific purposes where there has been a perceived need. The Sydney Harbour Bridge, the Harbour Tunnel and more recently the M2 Motorway and Eastern Distributor were financed by way of a toll, the Opera House by a lottery, the beaches and waterways were cleaned up by an Environmental levy on the quarterly water account and the 3X3 fuel levy was introduced to improve roads.

As shown, there have already been any number of successful precedents. Consequently, there is no reason why similar arrangements could not be employed to fund the burial of overhead electricity wires and cables.

Methodology for Burial; From a logistics and coordination perspective, the establishment of an Undergrounding Authority, independent of the electricity suppliers, to implement and coordinate the burial process, would seem a logical approach. The purpose of this authority being to let contracts to the private sector for undergrounding and to supervise its implementation. By coordinating the process in this manner, it would ensure that the maximum benefits of economies of scale are achieved while maximising resources and ensuring the lowest possible cost structure.

(A similar approach is currently in use for the construction of facilities for the Sydney 2000 Olympics.) Any cost overruns, or economies, could be accounted for by an adjustment to the time period over which the consumer levy is applied.

Within this framework the following different construction and funding models are possible:

- the authority be given responsibility for the funding and contracting out of the work on behalf of the existing service providers. (Service provider being electricity distribution authority, pay TV operator, telephone company. etc);
- private sector to construct and fund the underground system with payment being made via cost savings to the distribution authority and / or a levy on the clients' quarterly accounts. Ownership remains with the service provider;
- private sector to construct, fund, own and operate the system with ownership reverting to the service provider upon final payment, e.g; 25years;
- private sector constructs, funds, owns and operates the underground infrastructure and rents access to it, to the various service providers. Alternatively, funding is arranged by the Undergrounding Authority who owns and operates the infrastructure.

A particular appeal of the last item is that with one organisation owning the cabling and renting access to it, any supplier, upon entering into an agreement, can have access to the cables, including access to the properties that are connected to it. This would have the benefit of increasing competition without the need for additional cables. Put simply, the service providers do not own any cables but rent access to a common cable system.

These are just four different possibilities and there are obviously a number of different variations that could be considered.

It can be seen there is ample evidence that a properly conceived undergrounding project can be implemented, paid for by cost savings and consumer levy. This project would upon its completion return cost savings and a higher level of reliability to the consumer. Further, any scheme with such funding would have a neutral impact on the State's Budget.

Will NSW rise to the challenge, or will we simply follow other states who are currently undergrounding or considering undergrounding their networks ?

SCHEDULE FOR UNDERGROUNDING

One of the most important aspects to be taken into consideration in any undergrounding project is the priority given to any one area over the others. There will be impatience with no-one necessarily wanting to wait for their area to be undergrounded. There will also be priorities from an economic and maintenance perspective. With this in mind, the following suggested schedule of priorities have been assembled.

This order of priorities will give all residents and taxpayers a benefit early in the undergrounding process and serve to alleviate any impatience. If properly managed, it will serve to lower costs through early attention to problematical and high cost areas.

Order of Priority for Undergrounding.

1. Main roads and immediately adjacent areas.
2. Secondary or feeder roads and immediately adjacent areas.
3. Areas subject to a high frequency of blackouts.
4. Areas requiring a high degree of maintenance or scheduled for upgrading.
5. All other suburban streets.

By giving main roads and feeder roads priority, everyone will benefit, and observe the progress of, the undergrounding project from an early stage. Likewise, by attacking problem areas towards the beginning of the project, there will be an early amelioration of blackouts, brownouts¹¹ and a corresponding fall in maintenance costs. This drop in maintenance costs will help to offset the cost of burial and as they occur early in the process, the benefits will be greater when viewed over the full time span of the total project.

Thus, while individual streets may appear lower in priority, everyone will enjoy the benefits early in the process, due to the priority given to main and feeder roads, which are used by the whole community. Those suffering supply problems will have their problems addressed without due delay.

BENEFITS SUMMARY

A scheme to underground Sydney's overhead cables which is fully funded from cost savings and consumer levies.

What began as a purely environmental issue, a reaction to unsightly overhead cables has now been shown to encompass many other issues:

- reduction in the number and severity of motor vehicle accidents;
- reduction in blackouts and brownouts;¹¹
- reduction in electrocutions;
- reduction in the operating costs of energy distributors;
- potential to reduce electricity tariffs by up to 10% culminating in greater economic activity and more jobs;
- enhancement of the environment, thus making Sydney a more attractive destination for international tourists, enhancing job creation and increased investment in the tourism industry;
- reduction in green house gasses and the saving of mature forest trees that would otherwise be used for power poles. These same trees then become absorbers or converters of carbon dioxide.

To which must be added the not inconsiderable benefits such a scheme would generate during the construction phase:

- more jobs in the construction sector;
- more jobs in the cable construction industry centred around Liverpool and Minto NSW;
- more jobs in the metals processing industries in the Newcastle and Port Kembla regions, both of which, like the Liverpool and Minto areas, suffer from high levels of unemployment;
- continuation of work for the construction sector after completion of the Olympic construction program.

Finally there are the **political and economic benefits of leadership**. The creation of a platform consisting of a more reliable and economic source of power through an enhanced reticulation network attracting new commerce and manufacturing enterprises to the State of NSW.

COST BENEFIT ANALYSIS

In various sections of this paper, mention has been made of preliminary economic modeling or cost benefit analysis carried out by SCDU.

The model referred to is a computer based one which allows for the changing of various criteria, eg: interest rates, avoided costs, customer contribution, cost per property and number of properties. Hence various scenarios can easily be set up on the model and used to determine the break-even point, time to complete the project and funds needed to be borrowed.

A number of different approaches were tried to establish the best outcome, however the same basic criteria were used. These criteria consisted of a total project duration of twenty-eight years with a construction period of twenty-five years.

The initial model included a delay to the construction start date of twelve months and included a customer contribution of fifteen dollars per quarter. The rationale behind this approach was to generate a pool of funds prior to commencement of construction, thereby lowering the total amount of funds required to be borrowed and thus reducing the interest burden. This initial investigation proved so successful that a decision was made to carry out a second study.

The second study considered it politically inappropriate to have the consumer making a contribution prior to commencement of construction, therefore the construction start date and project start date were not varied.

Unlike the "*Putting Cables Underground*" report, none of the SCDU modelling included the cost of undergrounding communications cables as these cables are owned by mainly private companies as opposed to the electrical cables which are owned by State Government owned Corporations. It should also be noted that the costs associated with the undergrounding process used in the model were based on actual costs established in the undergrounding process in Perth.

None of the models considered possible taxation benefits, nor was consideration given to any special infrastructure development arrangements available from the Commonwealth. It is believed that these would be considerable, thus substantially improving the bottom line performance of the project, reducing the consumer levy and time taken to attain the break-even point.

We believe that this data now warrants a full investigation and that the NSW State Government should institute one without delay.

APPENDIX

1. **Hornsby Motion.** A resolution passed by Hornsby Council commonly referred to as “*The Hornsby Motion*” and supporting the undergrounding of all overhead power and communications cables. This resolution has now been passed and or supported by eleven Sydney Councils. This number is growing as additional councils realise the importance of this issue and the positive effect on their budgets.
A copy of the motion can be found on the following page.
2. **“Putting Cables Underground Report.”** A report prepared by the “Putting Cables Underground Working Group” which was convened under clause 49 of schedule 3 of the Telecommunications Act 1997 to examine the technical, economic, legal and social issues associated with placing cables underground. The report was released by the Federal Minister for Communications Sen R Alston on 8 December 1998. Copies are available from the Department of Communications Information Technology and the Arts Canberra ACT.
3. Collision data supplied courtesy RTA. Original copy held by SCDU.
NB: (i) Accident figures for 98/99 are provisional only.
(ii) Accident figures supplied by RTA were total figures for accidents only and is apportioned on the basis of 1/3 “Serious” and 2/3 “Other Injury”.
4. Figures taken from the “Bureau of Transport and Communication Economics” report “ROAD COST CRASH COSTS IN AUSTRALIA. Report 102” By the “Bureau of Transport Economics”
5. Figures taken from the 1997/98 Annual Report of the New South Wales Rural Fire Service. Additional data supplied courtesy of the Rural fire service.
6. Putting Cables Underground Report. Table 20, p 65.
7. Putting Cables Underground Report Table 19, p63. “Survey of Aust’ Utilities”.
8. Lower incidents of road accidents have been reported from Perth as a result of better visibility due to a change in the type of trees and shrubs on nature strips. General reduction in road accidents and street crime have been reported as a consequence of improved street lighting from a number of areas where overhead cables have been buried and street lighting has been relocated and improved during the process.
9. Based on data contained in the “*Putting Cables Underground*” Report. The average cost of \$3,295 per property is based on actual costs and calculated as follows.
Albany WA 70% rock is representative of 20% of Sydney actual \$3,763
Applecross WA 1% rock is representative of 80% of Sydney actual \$3,178
Average cost calculated on this basis is \$3,295 per property.
10. Putting Cables Underground Report Table 12, p36. “Total Quantifiable Costs or Benefits.”
11. **BROWNOUT** as opposed to a blackout is a momentary or extended drop in the supply voltage originally so called due to the effect of causing lights to dim as opposed to total extinguishment (blackout).

The Shire of Hornsby

20/98 UNDERGROUND CABLES

(P70/0142, P70/0143)

RESOLVED ON THE MOTION OF COUNCILLOR PRINGLE, seconded by
COUNCILLOR NANNELLI,

THAT Council:-

1. support the undergrounding of all overhead cables;
2. write to all local Members of State Parliament requesting that they lobby the Government to actively pursue a policy of retro undergrounding of all overhead cables;
3. write to Baulkham Hills and Ku-ring-gai Councils in order to gauge their interest in participating in a co-operative approach to this issue; and
4. advise Mr Peter Downey from Sydney Cables Down Under of Council's decision.



A'BRIDGED VIEW



POLES APART



POLE POWER