

Independent Pricing and Regulatory Tribunal P O Box Q290 QVB Post Office NSW 1230

Dear Sir

Submission to the Review of Undergrounding Electricity Cables

Rockdale City Council supports the proposal to underground electricity distribution cables in urban areas. There are many opportunities and benefits associated with such a major undertaking, which need to be considered in comparison with the costs. Below are listed the issues submitted for consideration in the Review, sorted in the order of the Terms of Reference.

All utility services are located in road reserves, under the management of Councils and road authorities. This proposal to underground aerial cables raises opportunities to realise many benefits for the urban environment, such as better street lighting designed to suit the unique needs of each location, improved urban ecology and aesthetics from **an** improved urban forest, and improved utility distribution and ducting systems. Achieving these outcomes will require coordination between the various commercialised utility companies, the undergrounding project managers, and the land managers, usually Councils. Success of the scheme will therefore require an effective management system.

1. The Level of Capital Expenditure

The undergrounding of power cables will consume significant resources, but does give rise to a broadscale opportunity to rationalise the distribution of utility services. Streets in major centres contain numerous pipes, ducts, cables and conduits for the various utility providers, all in separate trenches, crowding the sub-surface area. A more efficient and functional system for utility reticulation is desirable. A project to delivery such rationalisation may be developed through the encouragement of the newly emerging industry sector - utility distribution network providers. New approaches for joint reticulation ducting may delivery future cost benefits.

Street lighting on many streets is installed on the existing power distribution poles. Street lighting on the power poles will need to be replaced as the electrical distribution network is dismantled, and the lighting shemes redesigned to suit the proposed changes to the streetscape, and to introduce traffic impact safe poles. Construction of a new scheme of street lighting is an additional cost, but many further benefits arise from this work.

The benefits include improved light distribution designed to suit the location's needs and not the existing distribution pole spacings; the use of contemporary high efficiency lamps; and directionally accurate light distribution from modern luminaires. The new lighting schemes will deliver energy consumption reductions and further environmental gains from reduced light 'pollution'. In some locations it may be cost efficient to use solar powered lighting in lieu of mains supply powered lights.

2. Feasibility of Common Utility Trenching

Since the original installation of overhead electrical distribution in Sydney, many further modifications and additions have been made to the utilities located in the road networks. Natural gas required a revision and relining of the gas reticulation networks. Telecommunication services have been multiplied many fold and are likely to continue to expand. New service providers have added additional utility networks. The potable water reticulation network will require renewal progressively in the coming decades. Each utility is separately installed and maintained in separate corridors within the road reserves. Only in recent decades has common trenching been introduced in mostly new greenfields subdivisions.

All the modifications, additions and renewals raise the opportunity for a rationalisation of utility distribution. This project brings an opportunity for a multiple use utility duct network to be installed by a new industry sector. A large duct, with capacity to house multiple telecommunications cables, power cables, gas reticulation, water reticulation, and other networks yet to be rolled out, could be placed in many streets. As utility providers upgrade and replace existing networks, they would relocate into the common duct provided and maintained by a provider from the new industry sector.

Council's are awaiting the outcome of the appeal to the Court decision on Councils' powers to levy rents for utilities occupying road reserves. Joint duct occupation would be of benefit to all parties, and would potentially be cheaper for utility companies in the long term.

Alternatively, there is capacity to utilise the existing underground telecommunications infrastructure. Telecommunication cables are already underground in most urban areas, and in many locations the existing buried services have surplus cable capacity and/or surplus conduits. Duplication of conduits in streets where existing surplus capacity exists is wasteful and unnecessary.

The industry structures adopted when Telecom Australia was corporatised placed the ownership of the cable reticulation network within Telstra. If it was with a separate government authority, then access for all telecommunications service providers could be assured. There is no economic benefit in having multiple cable systems buried in separate ducts along roads. Practical space requirements would make such an outcome unworkable.

3. Comparison of Maintenance Costs

Savings will be gained from the reduction in the maintenance of street trees, trees within fronting properties, and trees along the individual property service cables. The frequency of faults due to storm events and impacts with poles and cables will be reduced. However, a different deterioration and damage incident regime will apply for underground cables.

4. Types of Costs Avoided

The routing of oversize vehicles is a difficult task, and when the load height exceeds the clearance height of aerial cables it becomes the governing constraint. Significant costs are incurred to find routes with sufficient clearance, and for the temporary removal of cables to permit the passage of an oversize load. The removal of overhead wires will free up the movement of many oversize loads such as the relocation of houses.

Damage repairs and hazards to life when trucks hit wires, such as garbage trucks emptying wheelie bins, trucks delivering materials, and construction equipment will be avoided. Crane safety will be enhanced. It will no longer be necessary to shield overhead cables at worksites, or use alternative materials handling methods because of the constraints imposed by the presence of overhead wiring. The costs associated with accidents and the accident histories of machinery striking wires is recorded by Worksafe, and all such costs will be avoided.

Road safety will be improved by the removal of roadside rigid poles. Poles on roadsides for other purposes can be designed to be frangible, or provided with protective barriers.

Street lighting can be designed for the locality's lighting needs, to suit the new tree planting pattern, and not be limited to coinciding with the electricity distribution pole spacing. Lighting poles can be slip based or other frangible designs, and can be located in optimum locations for safety and lighting. To develop a comparative cost saving, the data from roadside collisions with poles in the ACT could be compared with similar data for NSW. The ACT has had a policy of banning rigid poles from roadsides for many years, and represents what NSW could achieve with similar a roadside hazards policy.

Replacement of street lighting can deliver modem sustainable street lighting solutions. The new lighting schemes will deliver energy consumption reductions from contemporary energy efficient lamps and further environmental gains from reduced vertical light discharge into space from efficient luminaires. In some locations remote from mains power supplies, it may be cost efficient to use free standing solar powered lighting in lieu of mains supply powered lights. These savings are however to be offset against the cost of replacing the existing street lighting systems.

Electromagnetic radiation around aerial cables exceeds the radiation distributed around buried cables. Burying power cables will significantly reduce the level of passive exposure to this energy field.

Environmental costs related to the value of wildlife that will no longer be subject to electrocution, (bats, birds and possums) should be considered.

The costs of incidents from the hazards of overhead wires to recreational pursuits including flying kites or moving sailing craft should also be considered.

Electrical power losses through discharge to the surrounding air and tree branches brushing wires would no longer be experienced. Additionally, the inductance and capacitance effects and resultant problems arising from corroded aerial cables in seaside localities are avoided. The costs of power losses and additional protection systems will be avoided.

5. Distribution and Timing of Benefits

Value of this new undergrounding work, and the associated street lighting and streetscape planting works in the economy will be of major significance.

Improvement to the urban environment and public amenity will be gained. The value of trees in streetscapes and as individual trees will be enhanced when they are no longer distorted by years of polling and pruning. The additions to the urban forest which will be possible when the overhead cables are removed will add great value to the urban environment. Additional wildlife habitat will be created on streets and front gardens, with fewer losses of wildlife due to electrocution on the wires. Wildlife movement corridors will be enhanced. Additional greenhouse gas reduction capacity will also result from the increase in the mass of the urban forest.

Plantings of major trees of a wider selection, not restricted to small trees and shrubs that can be accommodated under the wires, will enhance species diversity. Avenue planting will become possible on most streets, creating streetscapes of significance. Compare the value of a Canberra streetscape of a mature avenue of trees, to the value of the hit and miss plantings to avoid services in Sydney. The only difference applying in Canberra is that the power lines are not on the street frontage, whilst the other utilities are all under the road as in Sydney.

Better landscape outcomes are not limited to the public lands. Private front gardens can be better planted, without the need to avoid plantings where aerial feeds exist overhead.

6. Options for Funding Undergrounding Projects

Funding of the net capital costs, after adjusting for cost savings due to the alterations to maintenance programs and costs, may be from a levy on all electricity consumers, with an apportionment for the quantity of power consumed. The net capital costs must also include the entire replacement of street lighting, as no Councils would be funded for the full replacement of these assets, and this electrical work is closely related to the undergrounding of the reticulation.

The entire community benefits from most of the outcomes of undergrounding power cables. Payment for the projects should not be levied on all land owners or land managers, as that will place an inequitable burden on public land managers. Much public land does not use or need electricity services, and where electricity is used, the service and the amount consumed is paid for. Payment for undergrounding projects should be linked to the service provision and level of usage, and not to the existence of supply where it is not used. A levy on land managers where a supply is adjacent but not used would place a unreasonable burden on land used for recreation and other purposes.

7. The Impacts on Customers

To keep the process of undergrounding of power at **an** economically affordable scale, the work must be staged over an extensive period. There will be demand for supply expansion in areas of redevelopment, and such areas cables should be placed underground at the time of the service upgrading projects.

Councils can provide a program of works locations based on the size of works packages necessary, the level benefits to be gained, the timing of other utility or streetscape works, and

aligned with a follow-up planting program to deliver the local amenity benefits through better streetscape planting. The extent of necessary works associated with undergrounding of cables, including replacement of street lighting, street tree plantings, and utility adjustments and pavement restorations, will require a coordinated and planned process by Councils and all the utility supply authorities.

Yours faithfully

S PH LACKADDER GENERAL/MANAGER