

**Response to report prepared by
Blackwell & Associates Pty. Ltd.**

**A review of SECWA's
vegetation clearing and
pruning policies**

April 1990

GENERAL OVERVIEW

Trees near power lines have to be pruned to ensure public safety and the security of energy supplies to customers.

In recent years there has been intense public debate on the methods used by SECWA -- and local government authorities -- to remove tree hazards from the electric power system.

In 1987, SECWA commissioned a study of its procedures by a recognised authority as part of its obligation to the wider community to adopt practices which reflect community concern while at the same time satisfying operational and legal requirements.

SECWA has made a detailed examination of Marion Blackwell's recommendations together with current and future operational practices. The aim has been to identify and adopt practices which, while accommodating community concerns, will not harm the integrity of Western Australia's electricity supply system or compromise public safety.

It must be remembered that, while acknowledging the special interests of residents of the metropolitan Hills areas, most tree pruning activities in the State are conducted under the responsibility of local government authorities.

While acknowledging there will still be some opposition to any pruning of trees, SECWA believes the strategies set out below will be of benefit to the community interest.

SECWA thanks most sincerely Marion Blackwell and her associates for the time they have spent on their report. While there are reservations about some of the assumptions made in the report, SECWA believes there is now a far better understanding by all parties of the issues involved.

As a result of the Marion Blackwell review and other matters concurrently under consideration, SECWA will adopt the following strategies which impact upon its vegetation control and associated practices:

- SECWA has been working with Fluor Maunsell (consultants) on developing policies for power line tree and vegetation clearing treatment and will be submitting the document to the Environmental Protection Authority.
- SECWA will modify low voltage overhead line design practices to minimise environmental effects of power lines commensurate with practicality and economics.
- When installing new services or undertaking major maintenance works, SECWA will use low voltage Aerial Bundled Conductors (ABC) in environmentally sensitive areas.
- SECWA will continue to promote mandatory provision of underground power up to 22 kV in most urban areas.
- SECWA will promote active discussion with other utilities of solutions to the problem of common alignments.

- ° SECWA will work with local government authorities to develop strategies for streetscape management, tree pruning and long range planning.
- ° SECWA will review its advisory publications on tree planting and species selection. Selection of the right trees/shrubs for street verges is of utmost importance.

INTRODUCTION

Blackwell and Associates were commissioned by SECWA in late 1987 to prepare a report on SECWA's vegetation clearing and pruning policies.

The firm's terms of reference were to investigate, report and make recommendations on vegetation and tree pruning policies for urban locations, taking into account the safe and reliable supply of electricity to customers by means of 415 volt and 22,000 volt overhead lines within Mundaring Shire and also to address briefly other practices which may influence or improve SECWA's policies and procedures.

RESPONSIBILITIES OF SECWA

SECWA is responsible for the safe, reliable and economic supply of electricity. As a statutory body, empowered by law and working on behalf of the State Government and all Western Australians, SECWA is mindful of community values, attitudes and expectations. These community characteristics vary from one geographic location to another and also change with time. SECWA endeavours to be fair and equitable in its dealings with all people and their communities, to take into account special local requirements, but not to disadvantage other groups, or the general community.

As the needs of our customers have become more sophisticated, reliability and quality of electricity supply have achieved more importance. The report highlights the relatively low level of faults caused by trees which is an indicator of the success of tree pruning to maintain a high level of reliability. Faults caused by trees were a much more significant problem before planned pruning of trees was carried out.

The key issue in heavily-treed areas is the risk of bushfires and the threat they pose to public safety. The risk of a bushfire being caused by power lines is demonstrated to be low, but it is difficult to judge how many bushfires could be acceptable to a community. The answer of course is none at all as the consequences of one fire can be devastating, particularly in heavily wooded areas.

SECWA has to be cost conscious as well as equitable in addressing initial costs of power systems as well as ongoing costs of operation and maintenance. Coping with limited financial resources is one of the major problems facing SECWA today. SECWA is very aware that increased costs are ultimately reflected in increased tariffs for customers.

THE BASIS OF CURRENT SECWA POLICY ON ELECTRICAL DISTRIBUTION SYSTEM CONSTRUCTION

Western Australia in general, and the South West land division in particular, has a power system based on the concept of low voltage and high voltage overhead power lines. This is an economic and technical reality based on the State's geography, the low density of population and widely dispersed electrical load requirements. This is one of the basic factors affecting policy for the construction of the power system and the assessment of costs relative to tariffs and revenue earned from electricity sales.

Power system expansion costs which are uneconomic are normally charged to the individual customers involved. This ensures that all customers are treated equitably and the majority are not asked to bear an unreasonable financial burden for a minority. Examples of this approach are the Contributory Extension Scheme (CES) for overhead lines and the Underground Residential Distribution Scheme (URD) for underground systems. The CES has been used in the hills for many power line extensions in the semi-rural areas.

Any work which is required to meet special local needs is evaluated on the basis that the uneconomic costs are borne by the customer or land developer who seeks the benefits. SECWA endeavours to keep such costs to a minimum in the interest of the customer or developer concerned.

SECWA has a corporate policy to actively promote the undergrounding of future works up to 22 kV in most urban areas.

COMMENTS ON THE RECOMMENDATIONS

RECOMMENDATIONS TO THE STATE GOVERNMENT

- That power supply routing become an integral part of the process of gaining planning approval for all new sub-divisions, and that henceforth it be planned, designed and installed in such a way that it co-ordinates with the requirements of other services. Furthermore that such designs for the reticulation of electrical power be subject to SECWA's assent prior to the granting of development approval.

SECWA Comment:

SECWA agrees with this recommendation and is currently pursuing this matter with the Department of Planning and Urban Development.

SECWA also agrees there is scope for improvement in the co-ordination of the installation of services in new sub-divisions. We are currently pursuing this option with the other service organisations.

However, it is not a practical option to pre-design the reticulation of sub-divisions prior to planning approval being granted.

- **That undergrounding of the electricity supply for all new sub-divisions throughout the State becomes a requirement of planning legislation. (Except where this proves to be impractical due to environmental constraints).**

SECWA Comment:

SECWA fully supports the provision of underground power as a condition of development in most urban areas and has encouraged it for many years. Underground power may be uneconomic and difficult to justify in non urban areas.

- **That in circumstances where power lines must remain above ground the "Overall Guidelines for the Location and Maintenance of Public Utilities" be reviewed by the Department of Local Government and the State Planning Commission with regard to the current requirement that street trees are to be located on the same alignment as power poles.**

SECWA Comment:

The common alignment of street trees and power lines is a problem worthy of review. It is not a simple matter to resolve as it impacts upon the allocation of alignments for other services such as telephone, water, gas, sewage, road alignments, footpaths, street lighting and storm water drainage.

The species selected for street trees are seen as of equal importance to service alignments. Only low growth species should be used in the street verge. Some local authorities are removing big street trees and replacing them with low growth types. SECWA fully supports this approach.

- **That a long term strategy be adopted to progressively underground existing overhead power lines based on a hierarchy of economic, safety, environmental and aesthetic priorities.**

SECWA Comment:

To progressively underground existing overhead power lines cannot be economically justified. Funds would be diverted away from work which has a higher priority and stronger justification. Existing overhead lines tend to be placed underground because of technical necessity as electrical load density increases with new offices, shops, hotels and general commerce. The Central Business Districts of Perth, Fremantle and Bunbury are examples. Local authorities that request special works subscribe to the cost of conversion. SECWA will continue this practice.

The comparison of costs stated in the report between overhead and underground systems is not valid. The costs of underground systems in the hills area are understated and the maintenance costs of overhead systems are treated simplistically. To ensure a more realistic approach, use of present value analysis would be necessary to take account of the initial capital and ongoing maintenance expenditure over a period of time. The average costing data used by the consultant ignores the special and more difficult conditions that exist in the Hills area.

- That the legal situation be resolved with regard to the following:
 - Differences with regard to the Commission's responsibility in the State Electricity Act and the Cabinet edict about the Commission's responsibilities;
 - Current vague and/or unclear areas of maintenance responsibility. Repercussions from the uncertainty with regard to these could affect the Commission's operations as well as potentially incurring an incumbent increased liability;
 - Possible complications and increased liability which could arise from future misfeasance legislation, that is currently being given consideration by the Government.

SECWA Comment:

The legal liabilities and responsibilities of SECWA in respect of tree maintenance would benefit from review to clarify some areas. This will be pursued.

- That SECWA be given the responsibility for all tree maintenance work in the vicinity of its overhead power lines in order to achieve appropriate standards including the fulfilling of necessary programme constraints. Furthermore that enabling legislation should be enacted detailing SECWA's areas of responsibility in this regard.
- That an overseeing independent committee or body be established to review in an on-going capacity and to co-ordinate the policies and practises of all 'service authorities'. Such a committee or body might be established under the auspices of the EPA and should also take into consideration broader community values, so that each authority does not operate in isolation or be oblivious to the on-going evolution of community expectations.

SECWA Comment:

SECWA favours an integrated approach to streetscape management, tree pruning and associated long range planning. SECWA believes this should be the responsibility of local authorities. Local authorities are the focal point for community needs, expectations and mediation. They should be encouraged to take a co-ordinating role for local environmental issues and their management.

SECWA's enabling legislation, however, is clear in requiring the organisation to take legal responsibility for maintaining the integrity of the electricity supply system. It is difficult to see how this legal responsibility as it affects trees and power lines can be transferred to an independent committee.

A number of the photographic tree cutting examples in the report appear to be local authority work, but convey the impression that they are the work of SECWA. For example, some of the photographs of tall trees are in the city of Kalgoorlie-Boulder where there was concern about the stability and safety of such tall trees in an urban area. An integrated approach addressing the conflicting objectives of streetscape management could resolve these types of issues.

SECWA has supported a Local Government Association field trial of regrowth retardants, to reduce clearing and pruning costs and the frequency of ongoing pruning work while retaining the vegetation in the street verges.

- That SECWA's "Power Line Clearing Policies and Procedures" be reviewed for the purpose of re-printing by a body or person who has biological expertise and relevant practical experience. In particular, the extent and detail of clearing and pruning practices should be re-evaluated in the light of current knowledge. It is recommended that more sensitive and practical clearance profiles should be delineated. Furthermore, that consideration should be given to variables such as:

- biological factors, eg vegetation type, inherent characteristics and propensities of individual species of trees;
- local environmental conditions and associated fire risk;
- line characteristics such as length of span, voltage, swing and sag of the conductor(s) concerned and the use of insulated LV cabling.

SECWA Comment:

A SECWA in-house study is in progress which will address most of these issues.

- A booklet be produced for householders and other land owners, be they corporate or government. This booklet should be an illustrated guide to tree planting near power lines which deals with primary issues of safety, and an appropriate species for differing locations and circumstances within the State of Western Australia, together with fundamental principles of correct tree pruning etc. This document might be given a catchy name such as "The Right Tree Booklet".

SECWA Comment:

SECWA will revise its publications on tree planting and selection.

- That there is a need for improved public relations strategies including mediation and other mechanisms for resolving controversial issues.

SECWA Comment:

SECWA, in conjunction with the local authority, is always willing to meet with community groups to explain its policies and discuss local issues associated with its activities.

RECOMMENDATIONS ADDRESSED TO SECWA

- Takes full responsibility for tree maintenance in the vicinity of its power lines on public lands.

SECWA Comment:

SECWA cannot accept full responsibility for tree maintenance in the vicinity of power lines in public road reserves. The expectation of the local community to have the right to influence the nature of the streetscape is accepted, but is inextricably linked with the community accepting some responsibilities for managing it. SECWA will pursue this matter in discussions with local authorities.

- Develops a commitment to a new philosophy with regard to both policies and procedures concerned with power line clearing and tree maintenance based upon enlightened environmental awareness, improved planning and design guidelines and 'quality of life' issues, including conservation of landscape character and minimisation of the impact of any necessary clearing. Furthermore, it is recommended that SECWA applies this philosophy by means of engaging/applying professional advice (preferably in-house) with regard to aesthetics and the maintenance of tree health in the management of service corridors, including road verges. Pursuant to this, such advice should be implemented by means of skilled field operational procedures;

This professional input and training should include:

- landscape assessment and planning in relation to all routing, as well as consideration being given to the detailed alignment of overhead power lines, so as to best integrate these structures into the landscape, as compared to common occurrence where they feature prominently on skylines, roadsides and/or other viewsheds;
- landscape design advice with regard to all tree/vegetation clearing and pruning in the vicinity of SECWA's power lines aimed at minimising adverse visual impacts whilst still achieving required safety standards;

- the requirement that all personnel involved in tree maintenance work, complete a specifically designed course in tree surgery including reference to safety measures, bushfire prevention and the application of aesthetic principles;
- that these teams of trained personnel be used specifically for this type of work under the general supervision and control of an in-house fully trained tree surgeon;
- that should a public contract be let for any of this work, it would need to be subject to the furnishing of proof that the personnel involved had successfully completed the same, or an equivalent course in tree surgery which fulfils SECWA's requirements.

SECWA Comment:

SECWA is aware of the environmental and quality of life style requirements, and seeks to minimise the impact of operations on particular locations. These issues vary in emphasis from location to location and should be reflected in the requirements of the local authorities which have the specialised local knowledge. This would be assisted by the declaration of areas with special needs coupled with a willingness to accept the additional costs and responsibilities this may incur. SECWA understands the reluctance of local authorities to cover the significant costs of maintaining native bush trees. It is acknowledged that any strategy will need to reduce these costs to a level which is acceptable to the local authorities.

SECWA will seek to establish closer relationships and better dialogue with local authorities on electrical distribution works proposals. Resources have been decentralised to ensure this can be achieved. The local District Officer now has this responsibility.

The need to train our people better in tree trimming and pruning activities is accepted. However, it is not a practical proposition to establish tree surgery skills in the workforce.

SECWA will encourage the development of specialised private contractors for this work. They could be used as appropriate, to meet the needs of both SECWA and the local authority.

- Undertakes as a standard practice regular reviews, trial and wherever practicable the use of new and/or alternative technologies in lieu of overhead power lines. For example it is recommended that:

- the undergrounding of electric power in new sub-divisions be a standard procedure;
- assessment of alternative technologies such as bundled cabling or undergrounding be undertaken for all 'renewal' and 're-alignment' situations, taking into consideration not only installation costs but the cost of on-going maintenance over the life-span of each installation;

SECWA Comment:

The mandatory provision of underground power in most urban areas has been actively promoted by SECWA for some years. The URD scheme is extremely popular in the sand plain areas where it is financially attractive to developers. In the Perth metropolitan area there is a growing demand for URD services in new sub-divisions. In areas outside the densely populated urban areas of Western Australia, the provision of such services is considered to be uneconomic and impractical. URD is generally not attractive in Hills areas due to the high cost of excavation in hard ground and the need for backfilling of cable trenches with soft soil to protect cables. Developers are deterred by the costs involved.

SECWA favours the use of low voltage aerial bundled conductors (ABC) when power line reconstruction and re-alignment becomes necessary in the Hills areas as well as for new construction work in new sub-divisions. Successful trials have been conducted over the last two years in Gooseberry Hill and Lesmurdie. SECWA proposes to phase in ABC as existing low voltage lines require upgrading, or major maintenance work is undertaken. The increased cost of ABC installations under these conditions can be justified by the anticipated savings from reduced vegetation control activities.

ABC is not yet technically viable for higher voltage lines and cannot be installed at this time. Tree pruning will have to continue adjacent to such lines. The use of ABC for the low voltage mains on the same poles could be an option in some cases.

- Implements long-term programmes, of ten years or more duration, for the maintenance of trees in the vicinity of overhead power lines. These programmes need to be planned in advance so that they allow for the development and carrying out of optimal maintenance strategies. Such strategies do not need to be complex, merely requiring the use of currently available expertise, thus increasing both the efficiency and effectiveness of the maintenance carried out, as well as reducing the amount of pruning needed.

These strategies would include:

- the above mentioned training programmes for all tree maintenance personnel;
- the professional assessment of each area prior to commencement of treatment;
- the flexible cyclical programming of maintenance procedures relating to individual circumstances, whereby pruning operations will sequentially require less work to be undertaken, due to the benefits derived from the previous cycle's corrective pruning, thus successively reducing the likelihood of problems and therefore the on-going cost of maintenance.

SECWA Comment:

It is SECWA's view that long term strategies for the management of trees are best carried out by the local authority which can make special provision for local trees and vegetation species of special significance, manage the fire risk and consider options such as growth retardant.

The local authority has the overall responsibility for management of streetscape facilities other than those constructed and maintained by the utilities. The health and on-going welfare of trees in the street verge, either planted or native, is normally the role of the local authority. Many inner metropolitan local authorities exercise this role and work closely with SECWA to trim and cut trees using their own resources.

- Address the field of risk assessment/management in the delivery of electricity as a whole, paying particular attention to the use, where appropriate, of new and alternative technologies.

SECWA Comment:

A review is planned of the policies and strategies to address this recommendation.

- Set up an efficient computerised programme for the recording and compilation of pertinent and accurate statistical information relating to the precise causes of outages, the initiation of fires etc, so as to provide a more realistic analysis and overview of the actual effect of trees and other vegetation upon the supply of electricity by means of overhead power lines. This information would contribute greatly to the elucidation of efficient strategies for meaningful on-going maintenance procedures which would assist in reducing the number of outages and the risk of fire. The installation of this regimen could also be regarded as a responsible action on the part of the Commission with regard to liability. It would involve the training of staff in the accurate observation and recording of pertinent facts regarding outage and fire incidents, possibly in the form of a comprehensive pro-forma sheet/checklist.

SECWA Comment:

The collection of more detailed and accurate data is desirable and is being pursued by SECWA.

- Continues and expands the implementation of other remedial strategies such as:
 - reduction of flammable materials from within the vicinity of power lines;
 - installation of separators on LV lines;
 - pursuance of safer drop-out fuses;

- strengthening of power poles where this is not likely to incur additional hazard to motorists;
- addressing the relative safety merits of using frangible power poles in areas subject to risk from motor vehicle collision;
- surveying and treating suspect/unsound/damaged trees in the vicinity of power lines as part of the continuing maintenance programme;
- implementation of measures to discharge lightning down power poles.

SECWA Comment:

The recommendations relating to power pole strengthening, frangible power poles and lightning discharge measures are not relevant to the issues covered in the terms of reference for the consultant report.

SECWA is not responsible for clearing flammable materials from the vicinity of power lines.

We agree with the on-going need to install low voltage line separators and safer drop-out fuses.

The management of suspect, unsound or damaged trees should be a local authority responsibility as both public and private trees can be a risk to the general community and not just to power lines.

- Endeavour to raise the Commission's public image through the following procedures:

- by publicising the positive steps being undertaken by the Commission;
- by continuation of the public relations advertising programme concentrating upon the promotion of good safety practices;
- by maintaining a record of public complaints and accolades, from which it should be possible to take appropriate action regarding areas of significant public discontent and reinforce where practicable those strategies received in a positive light;
- by entering into public mediation upon contentious issues;
- by planning ahead in terms of informing the public regarding the intention and reasons for actions being taken prior to their occurrence.

SECWA Comment:

The comments on procedures to raise the image of SECWA are appreciated. Recent customer surveys have shown that SECWA is perceived as being a responsible and positive organisation. SECWA shall continue to focus on improving relationships with the community and serving its customers.

The procedures listed are now a routine part of its operations. SECWA works closely with local authorities and State Government departments such as EPA and CALM.

SECWA will be arranging discussions with local authorities to progress the initiatives outlined in this report. SECWA is confident the introduction of new technologies and closer working arrangements with local government will be of significant benefit to the whole community.


GENERAL MANAGER
ELECTRICITY SUPPLY