

APPENDICES

APPENDICES DEVELOPMENT CONTROL PLAN NO 49 WARNERVALE EAST AND WADALBA NORTH-WEST

APPENDIX A

EXTRACT FROM WYONG COUNCIL LANDSCAPE POLICY

WYONG SHIRE COUNCIL LANDSCAPE POLICY GUIDELINES



CONSULTANT INTRODUCTION

APPROVED CONSULTANTS

The Policy emphasises the use of Approved Consultants. Once endorsed, these consultants are eligible to work on the Landscape Design and/or construction of projects requiring Development Consent. Council reviews the work of consultants and will advise consultants if it considers the work does not satisfy the intent of the Policy.

APPROVED CONSULTANT LIST

Council has compiled a list of Approved Consultants for public distribution. This list is updated every three (3) months.

ENTRY TO THE LIST

To register on the list the prospective consultant should contact Council's Customer Service Officers on (02) 4350 5555 for a Consultant Registration Form and package.

CONSULTANT REGISTRATION FORM

All Consultants are required to fill out and return a Consultant Registration Form to be registered on the Approved Consultant List. This will indicate the qualifications, training and experience of the firm's personnel. For those firms whose proposed qualified representative does not satisfy the qualification eligibility as determined by the policy, Council will recommend their eligibility based upon the information contained on the Consultant Registration Form and supporting information. See Category Eligibility below.

QUALIFIED REPRESENTATIVE

The policy requires that a consultant firm is represented by a qualified representative.

CATEGORY ELIGIBILITY

The qualified representative for approved consultant firms will have different levels of category eligibility. Eligibility is determined by your training and experience as set out in the Consultant Eligibility Guidelines.

CONSULTANT RESPONSIBILITIES

An Approved Consultant will be expected to maintain an up to date set of the Policy Document and Guidelines and act within the intent of the policy. The Review Committee will monitor the performance of Approved Consultants. Consultants who do not achieve an acceptable standard of Design or Construction will be removed from the list.

The consultant should provide Council with reports as shown on the Applicant and Consultant Process Guidelines producing designs, written reports and documents.

- 1 Design Report:** Report on site conditions, client requirements and the approach used to satisfy the intent of the policy and meet approval requirements for the project. Design Report Checklists for allotments and subdivisions detail different requirements for approval of the development.
- 2 Implementation Report:** Report on the implementation of the design and identify any necessary rectification works.
- 3 Rectification Report:** Report on the completion of any necessary minor rectification works carried out following occupation.
- 4 Maintenance Report:** Report on the implementation of the maintenance programme and raise any specific issues that Council may have to address.

These reports should contain information that the consultant considers necessary to support the certification that the works required by that stage of the policy process have been carried out.

INTRODUCTION

General

Category 3 projects will be located in the most visible or environmentally sensitive areas or other locations defined by Council. The landscape works must represent a quality professional product with an appropriate environmental basis. The consultant should have experience reflecting the sensitivity of the project.

Qualified Person

There should be one qualified person to sign the requisite reports for the purposes of the Landscape Policy.

The qualified person should be in the position in their organisation to determine and guarantee the design concepts contained in the Design Report are carried through to final design stage.

ELIGIBILITY CRITERIA

There are two types of eligibility available to prospective approved consultants as outlined below.

Professional Affiliation Eligibility

To satisfy this criteria the applicant should be eligible for Corporate Membership of the AAILA or as a registered Landscape Architect.

Alternatively, the applicant may apply for merits based eligibility as outlined below.

Merits Based Eligibility

To be eligible based upon merits the applicant should demonstrate satisfaction of the following criteria for experience, education and examples of completed projects.

Experience

The qualified person should have professional landscape qualifications such as those below and backed by extensive experience in a relevant discipline such as:

- ◇ Landscape Planning
- ◇ Landscape Design
- ◇ Environmental Science

- ◇ Park Management
- ◇ Horticulture

The qualified person should have design office experience for a minimum of two years to include:

- a Site survey and assessment;
- b Landscape design and documentation to contract stage;
- c Contract administration of landscape works;
- d Trade co-ordination and direction on site;
- e Ability to determine necessary consultants to complete projects;
- f Consultant engagement and direction;
- g Demonstrable design experience with environmental and visually significant sites; and
- h Co-ordination of projects.

The applicant should have an understanding of environmental conditions applicable to the site, in the context of Wyong Shire.

The applicant should have experience in a diverse range of completed projects incorporating the use of hard landscape materials surface treatments and planting works experience.

Education

The qualified person's education should include landscape design and environmental science.

Minimum requirements for education are the successful completion of one of the following awards:

- ◇ Associate Diploma in Landscape
- ◇ Associate Diploma in Horticulture
- ◇ Degree in Environmental Science

(Note: The qualified person must have demonstrable landscape design experience as noted above.)

Selected Project List

Applicants should provide a list of sites to demonstrate experience and provide evidence of the role of persons who worked on projects.

ELIGIBILITY CRITERIA

There are two types of eligibility available to prospective approved consultants as outlined below.

Qualification Entry

Consultants for Construction Category 3 should be eligible for membership of the Landscape Contractors Association of Australia.

Alternatively, the applicant may apply for merits based eligibility as outlined below.

Merits Based Entry

Experience

The qualified person should have:

- a Demonstrable experience in landscape construction for a minimum of two years.
- b An understanding of environmental conditions applicable to the site, in the context of Wyong Shire.
- c An understanding of and experience in the construction use of hard and soft landscape materials and surface treatments as follows:
 - i Hard landscape construction to include:
 - ◇ Paving to a high standard,
 - ◇ Retaining structures,
 - ◇ Drainage works, and
 - ◇ Erosion control techniques;
 - ii Soft landscape construction to include:
 - ◇ Large scale planting,
 - ◇ Planting using super advanced stock, and
 - ◇ Planting and maintenance of stock in different environmental conditions.

d Construction supervision experience which includes:

- i Site survey;
- ii Ability to interpret and tender on landscape contract documentation;
- iii Trade co-ordination and direction on site;
- iv Ability to determine necessary contractors to complete projects;
- v Sub-contractor engagement and direction; and
- vi Demonstrable construction experience with environmental and visually significant sites.

Education

Minimum requirements for education are the successful completion of one of the following awards:

- ◇ Associate Diploma in Landscape
- ◇ Associate Diploma in Horticulture

Selected Project List

Applicants should provide a list of sites to demonstrate experience and provide evidence of the role of persons who worked on projects.

APPLICANT AND CONSULTANT ACTION

Applicant makes development enquiry to Council.

Applicant engages Approved Design Consultant (who may be a Construction Consultant as well).

Applicant and **Landscape Design Consultant** sign Developer Intention Form.

Landscape Design Consultant and Engineering Consultant co-ordinate design requirements and contact the Environmental Planner to discuss specific requirements as listed in guidelines.

Landscape Design Consultant prepares:

- ◇ Site Analysis
- ◇ Landscape Assessment Report to include initial design concept

Applicant submits Development Application to Council which must include:

- ◇ Development Intention Form
- ◇ Landscape Assessment Report
- ◇ Engagement of an Approved Construction Consultant eligible for the category of work.

Landscape Design Consultant:

- ◇ Prepares Landscape Design Report
- ◇ Endorses any variations to the Landscape Assessment

Engineering Consultant:

- ◇ Submits Engineering Design accompanied by the Landscape Design Report and Environmental Protection Plan

COUNCIL ACTION**Category Determined.**

Enquirer issued with Applicant Package:

- ◇ Developer Intention Form
- ◇ Landscape Policy and Applicant Guidelines
- ◇ Approved Consultant List

Environmental Planner co-ordinates response to Landscape Assessment Report received and reviewed by Landscape Designer.

Development Approval Issued with Approved Landscape Assessment Report and Plans

Tree Clearing Permit issued if required.

Engineering Personnel to advise Landscape Designer impacts upon Landscape Design.

Landscape Designer to provide comments on the Engineering Design, and then approve Landscape Design.

Environmental Planner:

- ◇ Assess that Environmental Protection Plan is consistent with Landscape Assessment Report
- ◇ Reviews Environmental Protection Plan if it varies from Landscape Assessment Report
- ◇ Determines need for Section 102 amendment

Landscape Design registered with Engineering Design.

 WYONG SHIRE COUNCIL LANDSCAPE POLICY GUIDELINES


**CATEGORY 2 AND 3 SUBDIVISION PROCESS
 APPLICANT AND CONSULTANT**

APPLICANT AND CONSULTANT ACTION**COUNCIL ACTION**

Applicant makes development enquiry to Council.

Category Determined.

Enquirer issued with Applicant Package:

- ◇ Developer Intention Form
- ◇ Landscape Policy and Applicant Guidelines
- ◇ Approved Consultant List

Applicant engages Approved Design Consultant (who may be a Construction Consultant as well).

Applicant and **Landscape Design Consultant** sign Developer Intention Form.

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Environmental Planner co-ordinates response to Landscape Assessment Report received and reviewed by Landscape Designer.

Development Approval Issued with Approved Landscape Assessment Report and Plans
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Tree Clearing Permit issued if required.

Landscape Design Consultant:

- ◇ Prepares Landscape Design Report
- ◇ Endorses any variations to the Landscape Assessment

Engineering Personnel to advise Landscape Designer impacts upon Landscape Design.

Engineering Consultant:

- ◇ Submits Engineering Design accompanied by the Landscape Design Report and Environmental Protection Plan

Landscape Designer to provide comments on the Engineering Design, and then approve Landscape Design.

Environmental Planner:

- ◇ Assess that Environmental Protection Plan is consistent with Landscape Assessment Report
- ◇ Reviews Environmental Protection Plan if it varies from Landscape Assessment Report
- Determines need for Section 102 amendment
- Landscape Design registered with Engineering Design.

Engineering Design and Landscape Design Approval Issued
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Landscape Design Consultant, Project Manager and Civil Contractor inspect site with Landscape Designer and Subdivision Overseer before works begin on Category 3 development or if required.

Landscape Designer and Subdivision Overseer agree on implementation of environmental protection during construction.

Landscape Construction Consultant carries out works in conjunction with engineering works ensuring that landscape design is not compromised.

Landscape Design Consultant:

- ◇ Inspects site
- ◇ Prepares Rectification Report and submits to Council for linen release

Landscape Designer and Subdivision Overseer agree on implementation of environmental protection during construction.

Landscape Construction Consultant or Applicant's Nominee implements maintenance programme for a minimum 6 months after linen release or as determined by Council.

Landscape Design Consultant:

- ◇ Inspects site with Council's Landscape Designer.
- ◇ Prepares Implementation Report and submits to Council. Report indicates what works are outstanding and estimate of cost.

Landscape Designer:

- ◇ Inspects site.
- ◇ Checks Implementation Report.
- ◇ Determines landscape rectification.

Landscape Construction Consultant completes outstanding works.

Landscape Design Consultant:

- ◇ Inspects site
- ◇ Prepares Rectification Report and submits to Council for linen release.

Landscape Designer inspects outstanding works and reviews Rectification Report then issues approval for landscape component of Linen Plan release.

Linen Plan Issued

Landscape Construction Consultant or Applicant's Nominee implements maintenance programme for a minimum 6 months after linen release or as determined by Council.

Landscape Design Consultant and Landscape Contractor inspect site with Landscape Designer.

Landscape Designer inspects site.

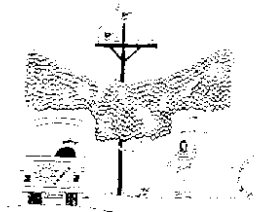
Landscape Design Consultant prepares Maintenance Report to certify maintenance works complete and submits to Council with details of continued maintenance.

Landscape Designer reviews Maintenance Report.

APPENDIX B

EXTRACT FROM

STREETScape DESIGN GUIDE FOR SOUTH AUSTRALIA



STREET PLANTING

To some, the ideal street tree—as illustrated—

- sheds no leaves, fruit or berries
- needs no pruning
- harbors no insects
- grows no roots, will not rot
- is immune to noxious gases
- folds up and vanishes in the event of vandalism or vehicular impact.

The reasons for planting trees are many and varied, but the main function of trees, located in streets, plazas, squares, car parks and so on are:

1. Climatic modification
2. Visual qualities/aesthetics
3. Psychological aspects
4. Wildlife habitat
5. Economic.

1. Climatic modification:

Planting street trees will:

- provide shade and protection for pedestrians and vehicles against sun and winter winds
- reduce air movement and help with dust control
- aid the absorption of water
- help produce oxygen, and
- help reduce air temperature.

2. Visual qualities/aesthetics

Planting street trees will:

- define spaces
- link separate visual elements
- provide vertical elements in the streetscape
- provide screening
- provide a natural element in a man-made environment
- provide scale and identity
- highlight seasonal changes and cast shadows
- introduce many and varied forms and colours.

3. Psychological aspects:

Planting street trees will:

- offer a sense of perspective, distance and speed
- provide privacy, protection and add softness
- aid noise control
- provide safety when using dense plant material
- reduce the psychological impact created by a hard urban environment.



above: An example of the informal mingling of soft landscaping and a paved surface — linking separate elements.

right: Soft landscaping adjacent to the street provides privacy protection and softens the appearance of the building.



4. Wildlife habitat:

Planting street trees will:

- provide a habitat for birds and other wildlife
- provide a landscaped corridor to help the movement of birds from rural to city environments.

5. Economic:

Planting street trees will:

- increase the value of particular developments.

Choice of species for street planting should be on their ability to withstand certain (and varied) environmental and physical constraints.

The specification for a performance standard for street planting may incorporate some or all of the following issues:

- physical characteristics (e.g. height, spread, shade, shade producing characteristics, etc.)
- ornamental nature and colour
- evergreen or deciduous
- native or exotic
- rate of growth and longevity
- resistance to pest and disease attack
- survival characteristics (soil, climatic, pollution conditions, vandalism, vehicular impact, etc.)
- effect on above and below ground services including pavements
- availability of space to grow
- maintenance requirements.

Those involved in the selection of trees should consult with or employ people qualified in horticulture and landscape design.

Some of the organisations which can advise and possibly help are:

- State Government authorities—in particular:
 - Adelaide Botanic Garden
 - Department of Agriculture
 - Woods and Forests Department
 - National Parks and Wildlife (Native Flora Parks)
- Local Government authorities
- Australian Institute of Horticulture
- Australian Institute of Landscape Architects

The E&WS Department can also provide information with respect to location of plant material in relation to sewer mains and sewer connections.

Principles for new Plantings

To ensure the best possible chance of survival and to achieve the best possible growth certain simple principles should be considered.

These principles can be grouped as follows

- Fig. 24 Cut back abnormally long or damaged roots.
- Fig. 25 & 29 When transplanting trees from containers, the existing soil level around the base of the tree should correspond with that of new ground level.



Fig. 24

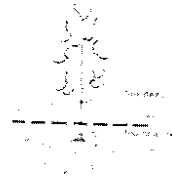


Fig. 25

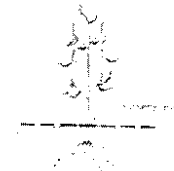


Fig. 26

- Fig. 27 Dig a hole 300 mm wider and deeper than the root system and spread roots accordingly.
- Fig. 28 Separate tangled and bunched roots.
- Fig. 29 Remove rubbish and harmful material from soil before planting.



Fig. 27

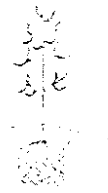


Fig. 28



Fig. 29

- Fig. 30 Eliminate air pockets by firming backfill and water in well.
- Fig. 31 Allow for adequate rainwater catchment and dish for watering and maintain for 2-3 years.
- Fig. 32 When necessary stake and tie young trees to prevent ground level whipping (avoid overstaking).



Fig. 30

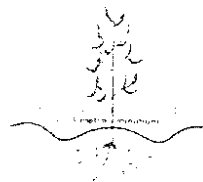


Fig. 31

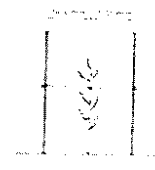


Fig. 32

FIGURE 10-11: The drip line of an urban tree is the extent of its roots.

FIGURE 10-12: A tree growing near a utility main.



The E&WS Department has prepared tree planting schedules. These schedules define the minimum distances recommended species can be located from underground services, in particular sewer mains and connections. If the E&WS planting schedules are adhered to minimum damage will occur to public utilities. But in many instances, trees can be planted where no underground services exist or are likely to be constructed. In these cases a wider range of species should be considered.

Maintenance of Planting

Trees, in particular, depending on species and location, may need pruning from time to time. Correct and adequate pruning techniques carried out by properly trained and qualified people will ensure less maintenance, a well-preserved shape and a healthier tree.



FIGURE 10-13: Incorrect pruning can cause a tree to grow with irregular canopy and may eventually destroy the value of the tree.



FIGURE 10-14: Correct selection of species and professional maintenance will allow the tree to develop to its full potential.

Fig. 33 Shows how indiscriminate pruning results in the destruction of the over-
snap. A mass of tangled branches needing frequent maintenance occurs.

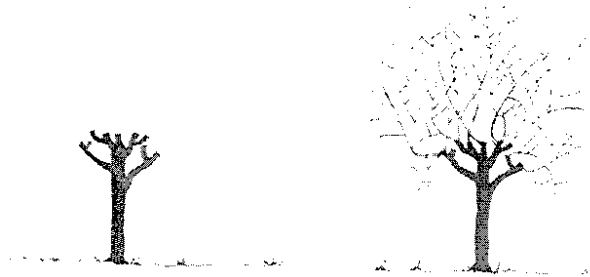


Fig. 34 illustrates correct pruning to achieve a better shaped and healthier tree
needing minimal maintenance.



adequate light and air light
correct pruning technique can
avoid severe limb deformities
and a mass of tangled branches.



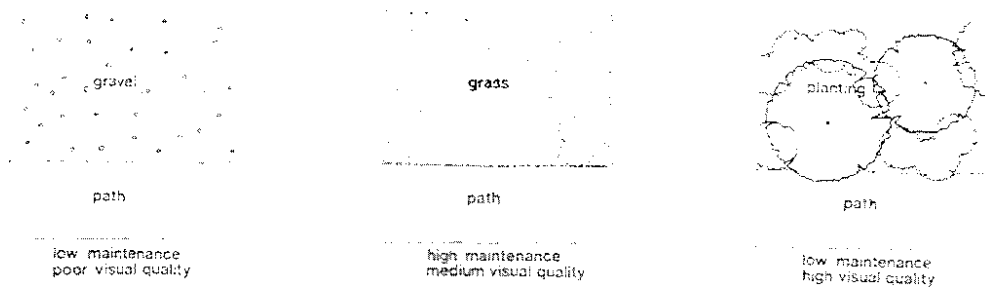
Guide to Pruning

1. Cut out dead wood.
2. Cut out diseased and dying wood.
3. Cut out thin weak wood.
4. Remove crossing growth—dense middle or centre to crown.
5. Further pruning will depend upon individual requirements.

Suitable species, chosen by experienced and qualified people, need not result in increased maintenance.

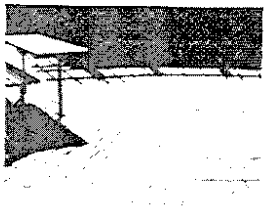
Correct and responsible selection can result in low maintenance landscape zones. See Fig. 35.

Fig. 35 Illustrates a simple maintenance comparison to achieve a better streetscape without necessarily increasing maintenance costs.



below: Low maintenance concrete paving which is slippery and unattractive.

below: A high maintenance, unsealed surface and grassed verge.



above: low maintenance brick paving visually better and more lasting.

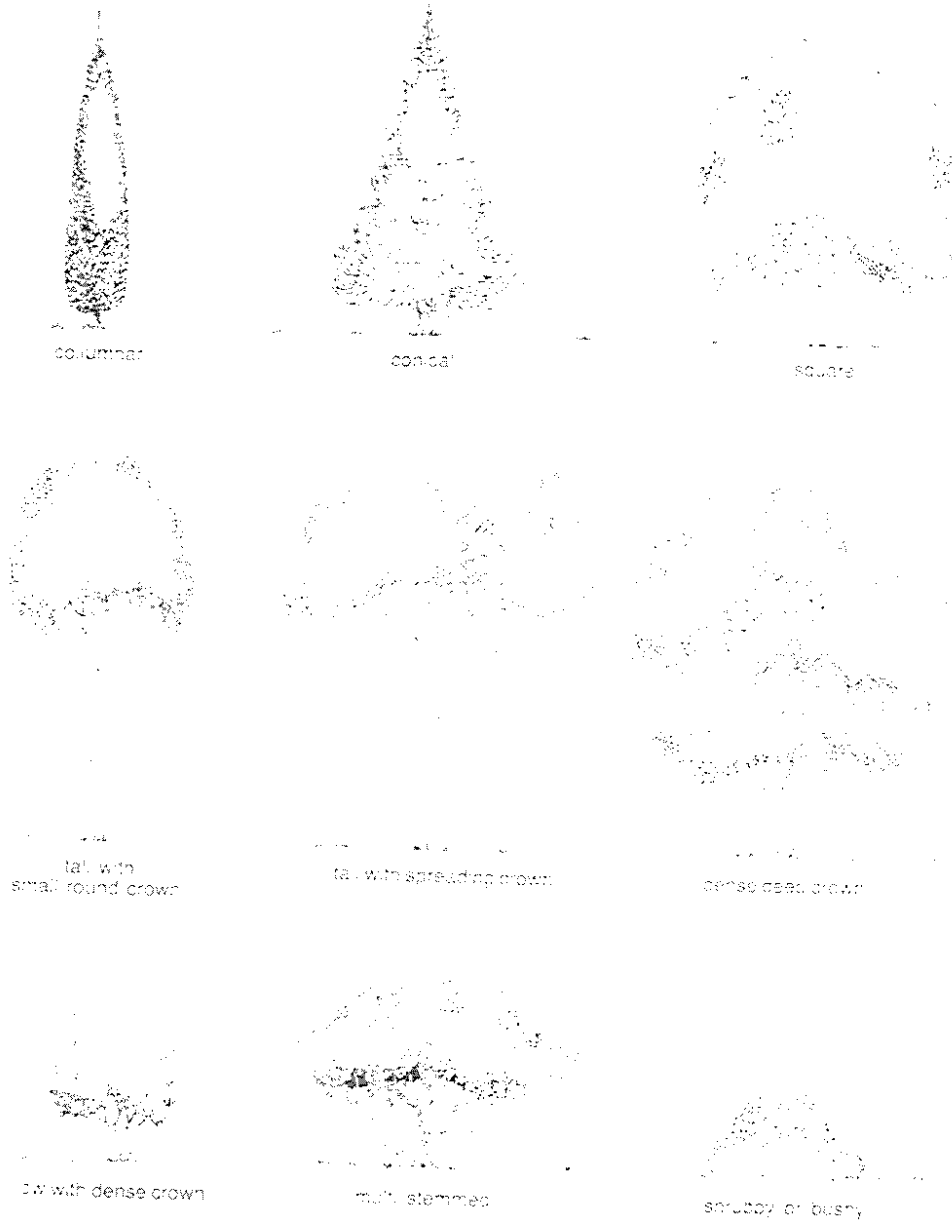
Minimal disturbance planting
area during 2012



Shape of Trees

Trees acquire varying shapes on maturity and so, when selecting species for a particular function, the ultimate shape of the tree should be a major consideration.

Fig. 66 illustrates some of the shapes of mature trees.



General Properties of Mature Trees

- Fig. 37 The spread of the root system of mature trees can be double the height of the tree.
Root growth is generally located in the top metre of soil—except for tap-rooted species.
Raindrops from leaves provide food to the feeder root system.

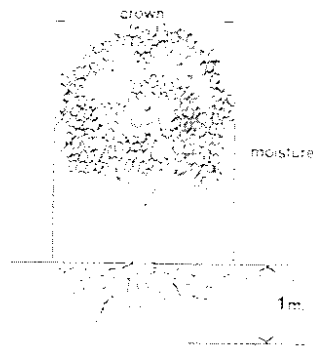


Fig. 38 Deciduous trees provide shade in summer.

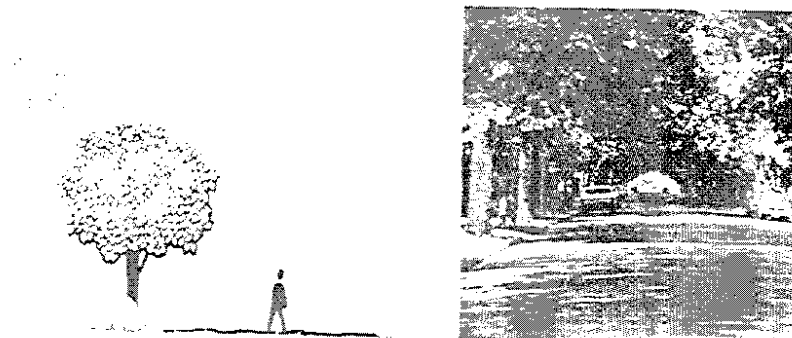
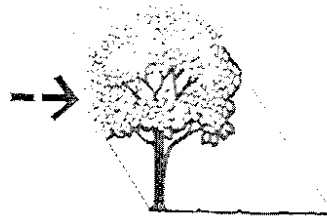


Fig. 39 The same trees allow winter sun to penetrate.



Fig. 40 Evergreens provide permanent shading and screening



Relationship between trees and shrubs

Where existing vegetation occurs within the road reserve every endeavor should be made to preserve the vegetation and incorporate it into an overall design.



Fig. 41 Existing vegetation should be preserved wherever possible and incorporated into the overall design.



Fig. 42 The overall design can be improved by the planting of new trees and shrubs.

Fig. 41 In many instances trees selected at random do not relate visually and there is no common order, rhythm, or theme

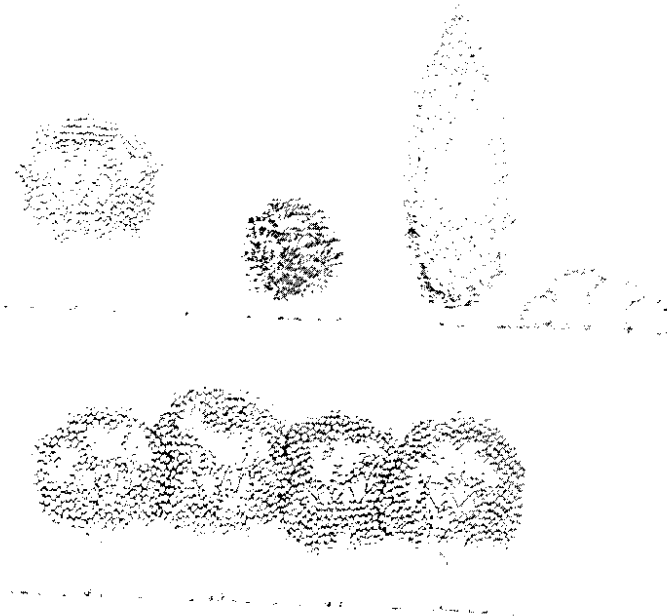


Fig. 42 Trees which have common or similar properties can provide a coherent visual element when located in relationship to each other and to the scale of development.



Fig. 43 Trees and shrubs too loosely grouped become individual elements and do not form an integrated visual unit.



Fig. 43

Fig. 44

Fig. 44 Here the trees and shrubs become one co-ordinated element in the landscape or streetscape

Fig. 45 Regular spacing of trees, particularly small trees where canopies are far apart, can become visually monotonous and appear out of scale.



Fig. 46 The grouping of trees, varying the number of trees in particular groups, and varying the space between groups, will help relieve this visual monotony and increase awareness of scale.



Fig. 47 By varying the selection of species, the texture and color of a continuous area of landscaping can also be varied, and may become more interesting. Care must be taken to avoid instances shown in Figures 41 and 43.

Fig. 48 Trees and shrubs can be grouped so as to create volume or space.

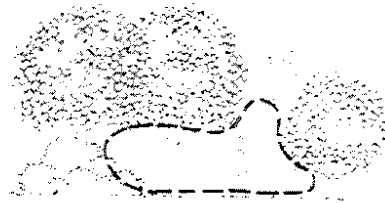


Fig. 49 Trees and shrubs can be specifically selected and grouped to indicate—
(a) a change in level;
(b) a change in direction;
(c) screen undesirable views Fig. 70.

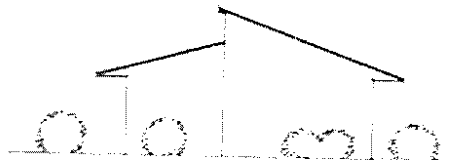


Top and above. Planting can indicate a change in direction or a change in level.



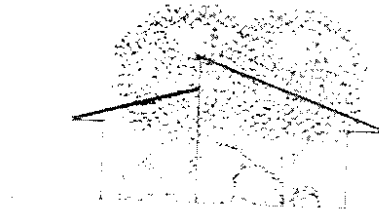
Relationship between trees and shrubs and the built environment
It is important to achieve a good balance between built forms and soft landscaping.

Fig. 50 Here the landscaping is not in scale with the building and there is no sense of harmony or balance.



51 The selection of appropriate species will result in a balanced relationship between landscaping and buildings.

Fig. 61 In this example, a better balance and harmony exists between building forms and landscaping.



The house is well integrated with the surrounding landscape.

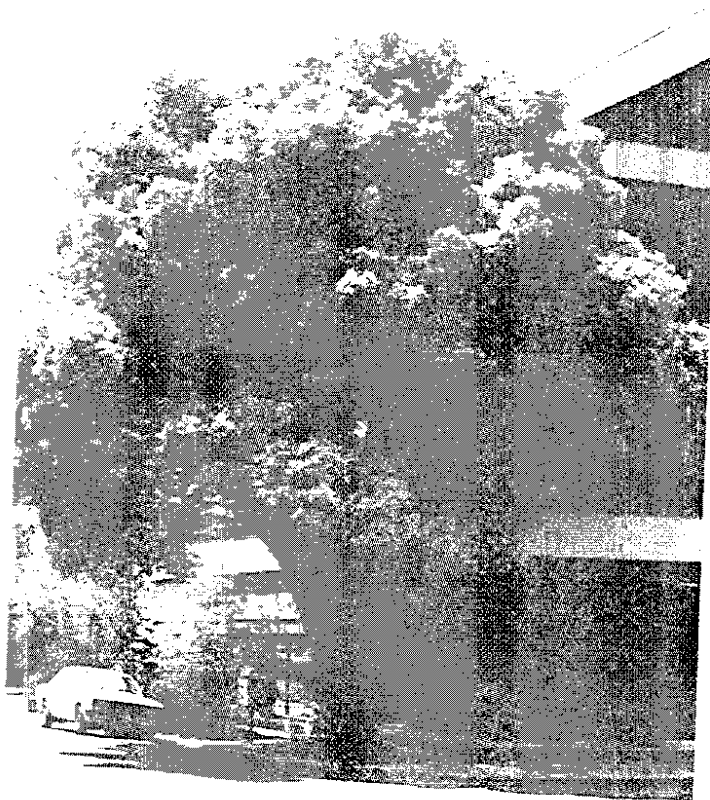


Fig. 52 Here the trees do not relate directly to the structure.

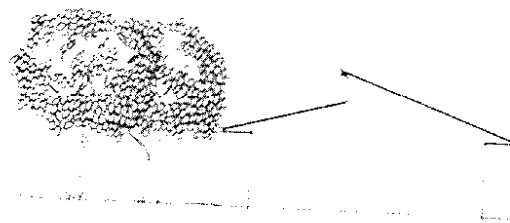
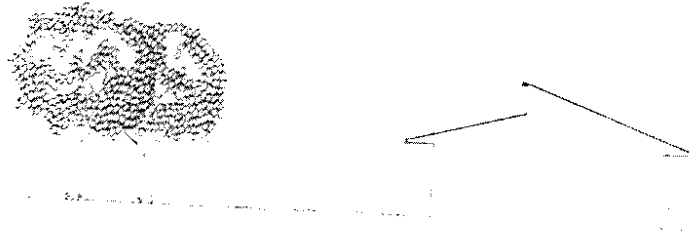


Fig. 53 Here the relationship between the trees and the structure has been strengthened.

For all houses to use solar energy, a clear air space on the northern side is required.

Therefore, the location of evergreen trees in the street or landscaped areas adjoining buildings should be in such a way so as to allow sunlight to reach the north elevation.

Fig. 54 Evergreen species should be located a minimum distance of twice their height to the north of the house.

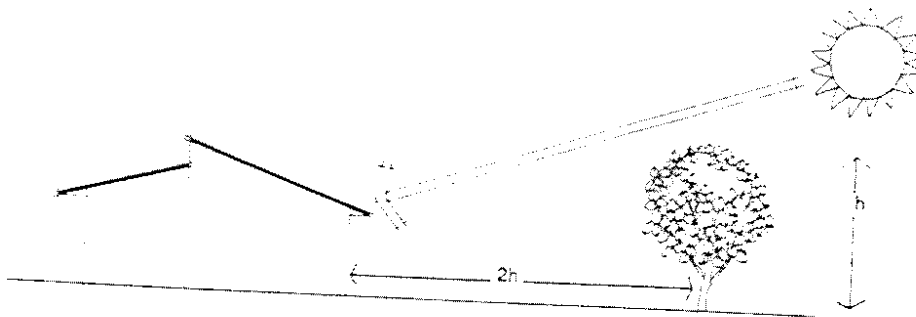


Fig. 55 The tree located here does not relate to and provides little protection for either pedestrians or motor vehicles.



Fig. 56 Inadequate for both pedestrian and motor vehicles.

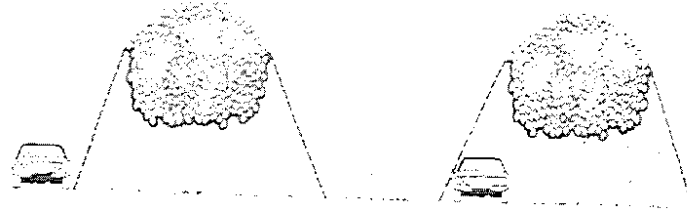


Fig. 55

Fig. 56

Fig. 56 In this case the tree provides protection for both.

Fig. 57 Here the selected species does not give adequate protection or cover to the pedestrian and vehicle.

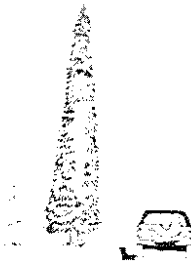


Fig. 57



Fig. 58

Fig. 58 Correct species selection will provide a more desirable cover, and the relationship between pedestrian, vehicle and plant material will be improved.

Fig. 59 Similarly the incorrect choice of species can create physical problems.

Fig. 60 Correct species choice allows for free access to footpath from parking and avoids physical problems.



Fig. 60 Correct species selection will avoid such problems.

Fig. 61 The selection of trees should relate to physical constraints, e.g. power lines



Fig. 61

Fig. 62

Fig. 62 Where power lines exist low trees may be appropriate



Fig. 62 (top) and (bottom) Selection of trees in relation to physical constraints, e.g. power lines

Fig. 62 (top) and (bottom) Selection of trees in relation to physical constraints, e.g. power lines

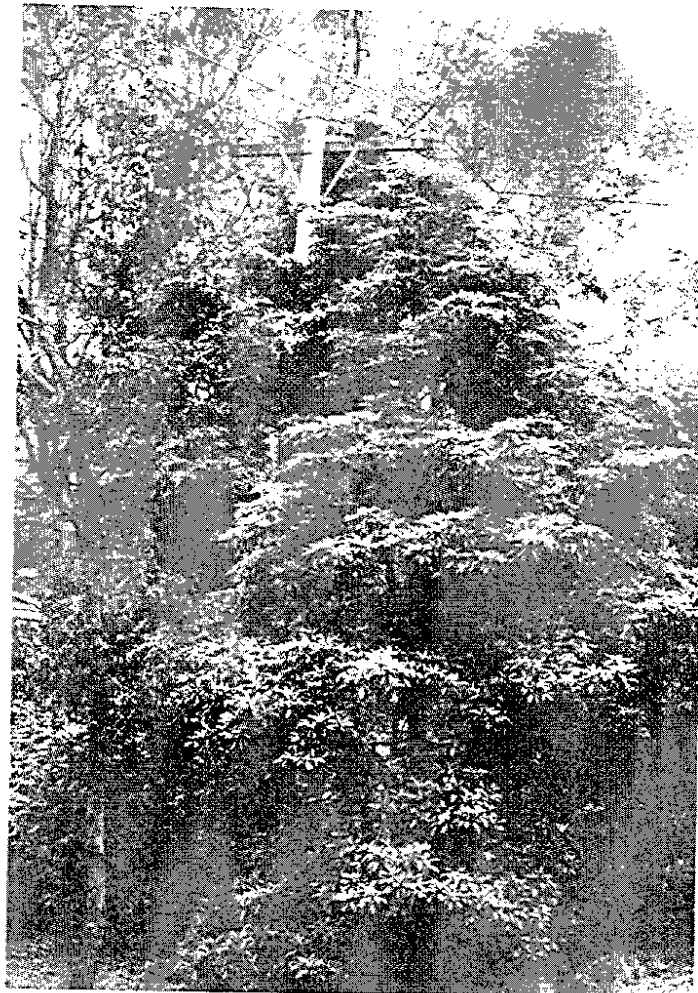


Fig. 63 Due consideration should be given to modifying the power line pole by adding
alley arms, minimising contact between wires and trees.
Planting in relationship to street lighting should be carefully co-ordinated.

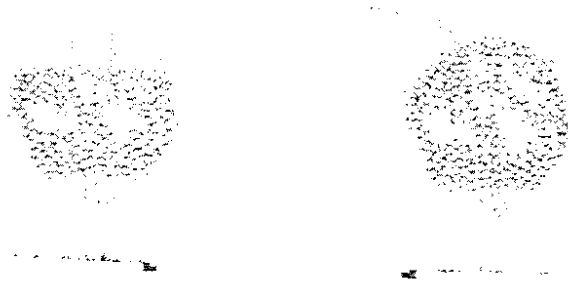


Fig. 64 Planting when located directly under street lighting can significantly reduce the
function of lighting and also reduce safety in relation to vehicle and pedestrian
traffic. Alternative forms of lighting, such as low-level pedestrian lighting,
should also be considered.

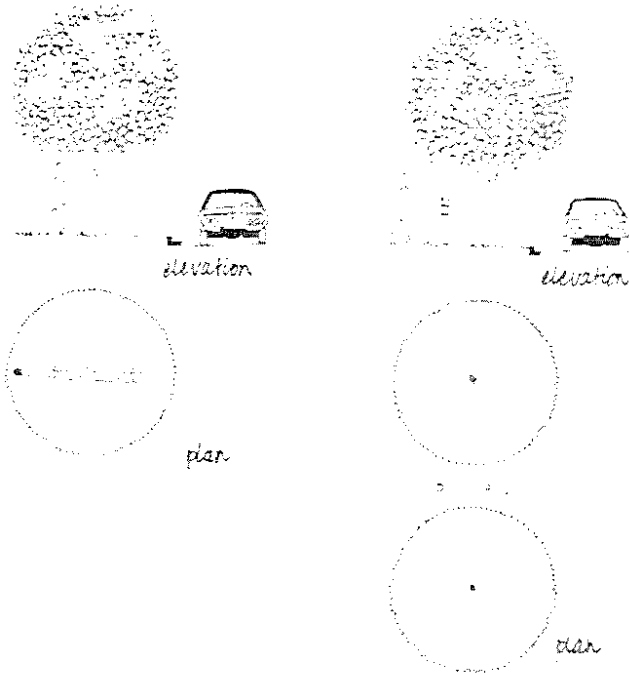


Fig. 65 Low-level plants located close to a path or carriage-way, when fully grown, may become an obstruction.



Fig. 66 To overcome this, the ultimate size of the plant should be considered, and the plant, path or road located accordingly.

A good pedestrian planting relationship.

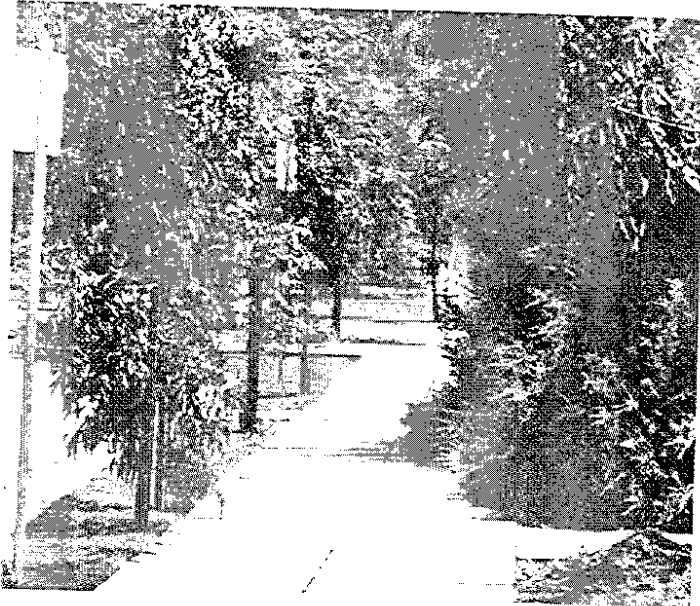


Fig. 67 The wrong type of tree planted close to a kerb or path can damage the kerb, path and road pavement.



Fig. 68 In such a case either—
 (a) species should be changed
 (b) distance from kerb and pavement should be changed.



Fig. 69 Depending on trunk services on the "non mains" side of the street (refer to 2.2 services), it is possible to have taller trees on this side. Plant material should be carefully selected and maintained to avoid irreparable damage to underground services. Species should also be selected after due consideration given to regulations imposed by the E&WS Department.

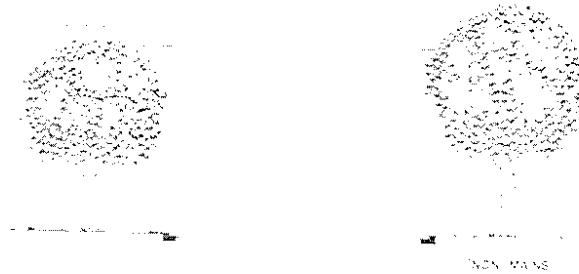


Fig. 70 Often trees on opposite sides of a street are not compatible and a feeling of imbalance is evident.

Trees of similar form and magnitude create a feeling of harmony of form, wind and rustling shade.

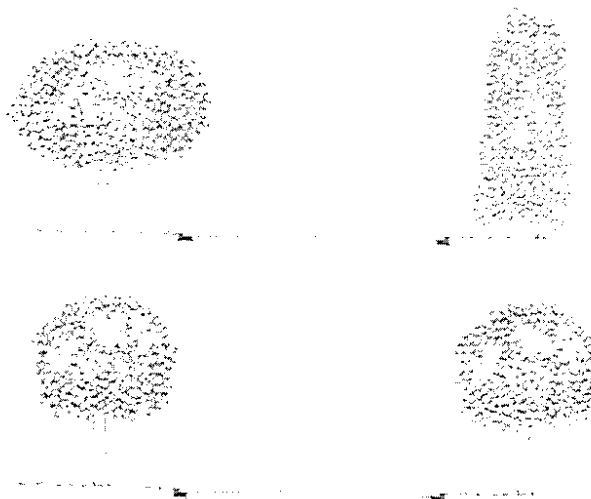


Fig. 71 By using trees of similar form and proportion a feeling of harmony will occur.

Fig. 72 Planting on opposite sides of the street can be in the form of individual species or groups of trees.

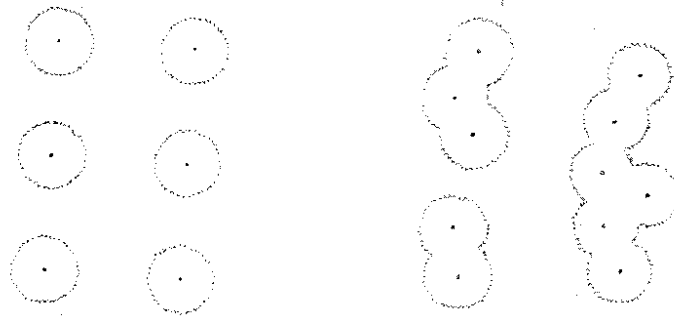


Fig. 73 When trees on one side of a street are neatly lined up, and spaced equidistant, the effect is linear and rather formal avenue planting.

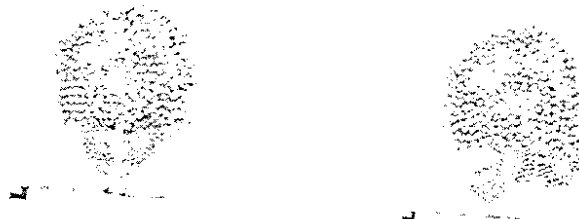


Fig. 73

Fig. 74

Fig. 74 A more informal effect can be got by staggering the alignment and varying the space between trees.



An example of avenue planting

Fig. 75 In some cases landscaping can be used to separate pedestrians from motor traffic, railways, tramways, etc.

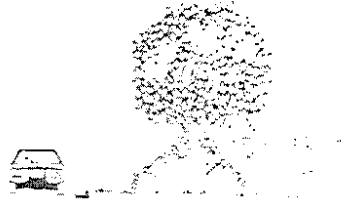


Figure 76 shows a view of a private outdoor space separated from a public area by a wall and landscaping.

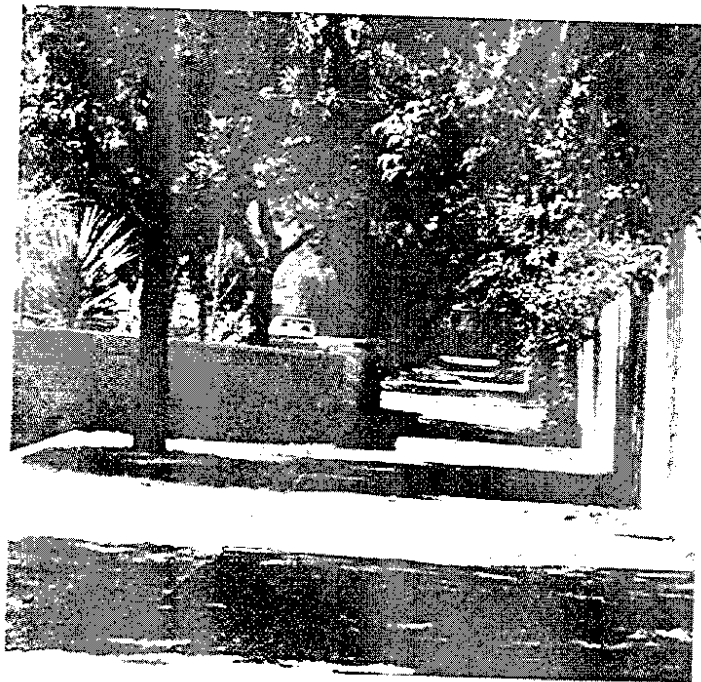


Fig. 76 In other cases landscaping can separate pedestrians from a nearby private outdoor space.

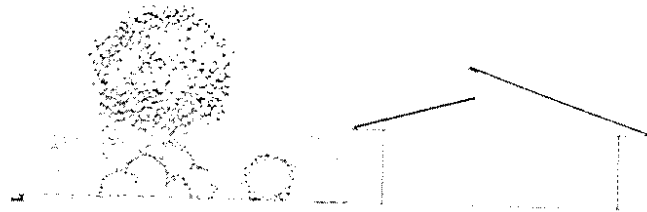
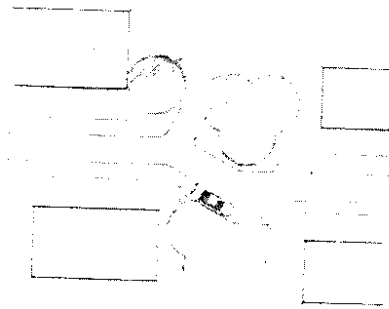


Fig. 77 With verandah alignments and narrower pavements there are opportunities to group plants and vary the character of particular developments. Group planting can be used to define private entrances and visitor car parking areas.



Group planting defining visitor car parking area here would be appropriate.



In certain instances it may be appropriate to use trees as play climbing equipment. In other areas it may be possible to locate fruit bearing trees. In all cases safety of the public—in particular children—should be considered. e.g. a 'climbing tree' should not be located close to overhead electrical services.

Relationship between plant material and varying soil and climatic conditions

Throughout South Australia there are many and varied soil and climatic conditions.

Many combinations of different soil and climatic conditions also occur and this will affect the choice and general performance of plant material.

Consequently, appropriately qualified people with landscape design and/or horticultural backgrounds should be consulted to recommend specific plant choice for particular areas.

Information regarding soil and climatic conditions and suitability of species to these conditions can usually be provided by—

- (a) The Local Government authority for the area
- (b) The Adelaide Botanic Garden
- (c) South Australian Department of Agriculture
- (d) Woods and Forests Department of S.A.
- (e) C.S.I.R.O.

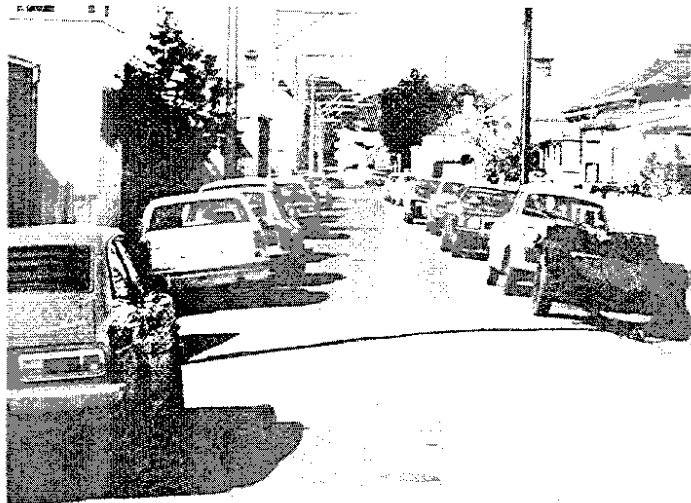
Fig. 78 Illustrates generally the different soil types which can be expected in the Adelaide metropolitan area.



PARKING

Parking is obviously an important element within many streetscapes. A balance between off-street and on-street parking should be established so that the streetscape is not adversely affected.

City streetscape dominated by parked vehicles



Entrances to residential allotments should relate to parking locations and they should be safe and convenient.

Parking should be an integrated part of the overall streetscape and there are many different ways to do this.

Parking should conform to the National Association of Australian State Road Authorities (NAASRA) Guide to Traffic Engineering Practice to provide sufficient pavement width to allow safe traffic movement. All angle parking must also be approved by the Road Traffic Board.

Some examples are discussed in the chapter "Design Examples" and parking areas which relate to industrial and commercial development are discussed separately.

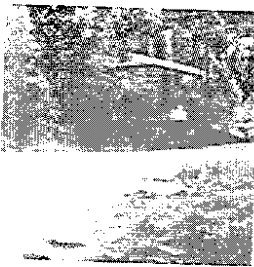
Reference is also made to the "Residential Design Guide for South Australia" Chapter 8—Parking.



above: Parking integrated with landscaping and street pavement
top: A pedestrian area dominated by parked vehicles and services



right: A pedestrian area is separated from vehicle parking



1. This paved pedestrian path is made of a single level of paving material.

2. A good example of an "open" pedestrian path where the trees provide shade and air movement.

3. A half-way approach to the construction of a path.

4. Where an open path is not exact or where the path is hazardous.

PEDESTRIAN AND CYCLE MOVEMENT

The provision of pedestrian and cycle movement systems is an important element of the overall streetscape.

Integrated pedestrian and cycle movement requirements are discussed in the "Residential Design Guide for South Australia" Chapter 6.

Further possible design solutions are illustrated in some of the figures included in the chapter "Design Examples". It should also be noted that existing legislation under the Road Traffic Act prohibits cyclists from riding on the footpath.

Pedestrian and cycle ways should relate to movement needs, community facilities, parking, and access, and should be safe, convenient and attractive.

Furthermore, the grade or slope of a footpath and overway must be sufficiently low for wheelchairs, prams, and cycles.

Where pedestrian systems cross with motor vehicle movement systems, there are various ways of protecting pedestrians.

- e.g. a crossing can be provided by means of:
- a zebra crossing;
 - lights—integrated with traffic light systems;
 - rumble strips;
 - over-passes/under-passes.

The selection of the most appropriate type of crossing will depend to a large degree on the volume of pedestrian traffic. But in many instances a change in paving material will provide additional warning to motorists and facilitate a less obtrusive crossing. Plant material in the vicinity of pedestrian crossings should be selected to maintain adequate sight lines for both motorist and pedestrian.



SPECIAL DESIGN CONSIDERATIONS

Streets are movement corridors for motor vehicles, cyclists, and pedestrians. But it is imperative that streets are also movement corridors for the physically handicapped.

Special design consideration should be given to elderly and disabled people and streets should be designed through which the physically disadvantaged can move with the greatest ease.

The design solutions sought should also be as unobtrusive as possible. In this way facilities for the physically handicapped will be provided as an integral and natural part of the community infrastructure.

Specific reference is made to a document by the Australian Council for Rehabilitation of Disabled "Design for access and mobility" Australian Standard CA 52 and AS 1428.



STREET FURNITURE

In many instances street furniture will be needed and should be regarded as an integral part of the overall streetscape and designed accordingly.

Some basic factors which influence the selection design and siting of street furniture are:—

- Function:** The exact function and necessity for a particular item should be considered.
- Siting and Layout:** Consider the most appropriate siting and, where possible, the grouping of a number of individual items.
- Co-ordination:** It is important to co-ordinate all authorities responsible for the design, installation and maintenance of items of street furniture. This is necessary for an orderly, sympathetic and visually acceptable result.



Fig. 1. An example of unco-ordinated street furniture.



Fig. 2. Co-ordinated furniture is visually more acceptable and more pleasing.

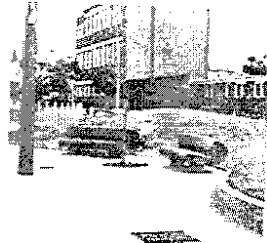
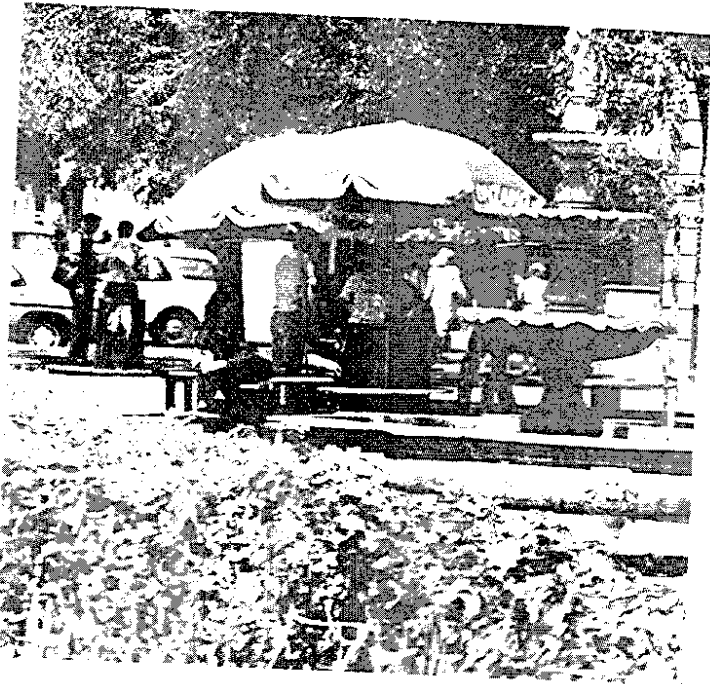


Figure 78: A comparison of bench design. The bench on the left is a traditional design, while the bench on the right is a modern design. The modern bench is more compact and has a more integrated design with the surrounding environment.

Form and Appearance: Street furniture should be well designed with particular emphasis on height, shapes, colours and textures and should be appropriate to each situation. Simplicity is the key. All street furniture should appear permanent and be as vandal proof as possible.

There are some basic design principles for individual important items of street furniture. Although no attempt has been made in this guide to design specific items, some basic design and siting principles for major items are discussed as follows:



Seating
 Fig. 79 illustrates suitable dimensions for outdoor seating to provide the user with comfort.

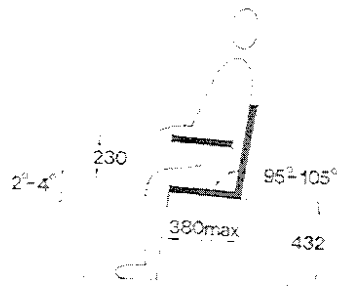


Fig. 80 Shows a poor relationship between seating, pedestrian, street and planting

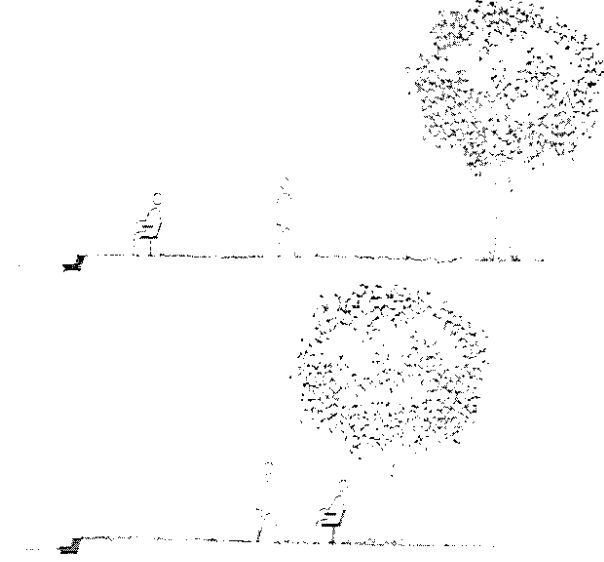


Fig. 81 Shows that by relocating the seat, a better relationship is achieved. The seating is somewhat removed from motor traffic and also takes more advantage of the function of the tree.

Fig. 82 Where there is a pleasant view or interesting activity, seating should not face motor traffic.

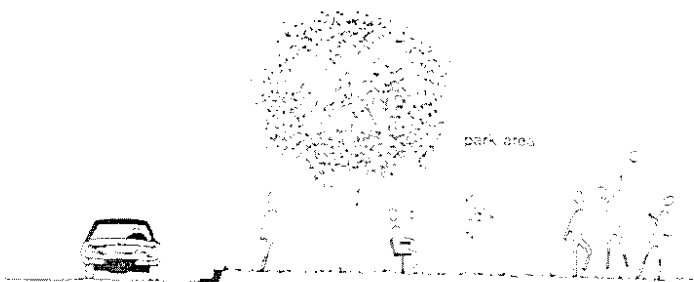
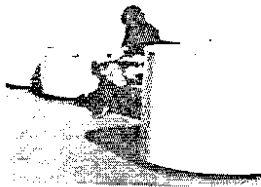


Fig. 83 In such a case seating should relate to the view and activity and the shade potential of the tree

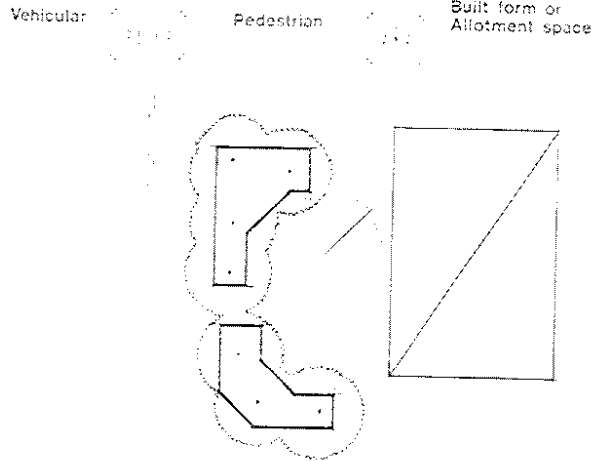
Plant containers

Fig. 84



above: Planting tubs used to form a sculptural group.
top: Planting boxes, co-ordinated in scale form and appearance, into the overall design - separation of pedestrian and vehicular traffic.

This shows how plant containers can define and control space



They can also form sculptural groups, indicate a change in level but should not be used where plants will grow naturally in the soil.

Planting boxes will need adequate sunlight, irrigation and drainage. In particular, qualified people should be consulted to recommend the types of soils most suitable for use in planting boxes.

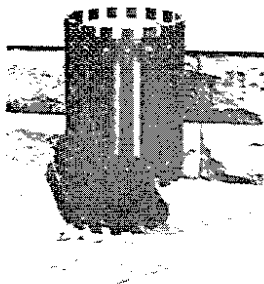
Sometimes it may be possible to incorporate other items of furniture such as artificial lighting, seating, litter bins and shelters in conjunction with plant containers.

Litter bins

Litter bins should be located in conjunction with other items of street furniture. Their location and ease of access should encourage, rather than prohibit, use. They should be fireproof, appear to be permanent, be easily maintained and serviced regularly.

Fig. 85

Shows how two street furniture elements (shelter and litter bin) have been located separately. It is impractical and inconvenient.



Litter bin, shelter, and planters placed separately.

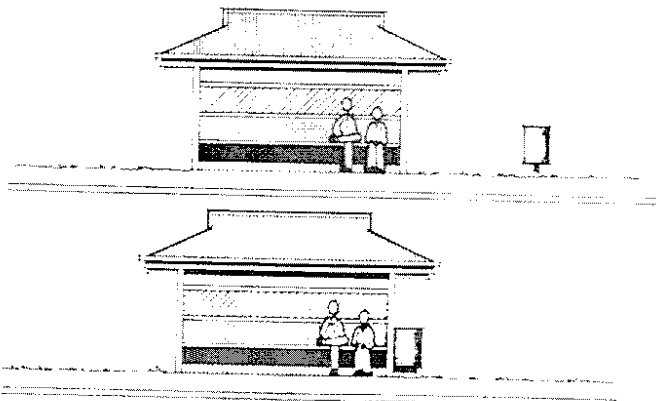


Fig. 86

Shows how these two separate items can be combined to form one streetscape element, and become more practical and convenient.

Bus shelters

A bus shelter should provide good protection from rain, wind and hot summer sun.

It is also necessary to locate shelters to enable users and operators adequate sight distances. Consequently, planting should be placed accordingly.

Fig. 87. An example of a bus shelter with a view of the shelter and a bus shelter.

Fig. 88. An example of a bus shelter with a view of the shelter and a bus shelter.



Fig. 87 Shows, in plan, how planting will obscure the view of people using, and operators approaching, the bus shelter.

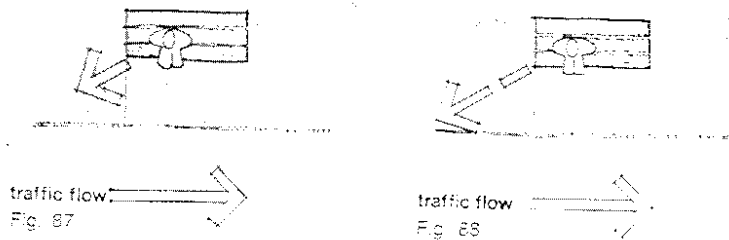


Fig. 88 Shows how this can be resolved.

Fig. 89 Illustrates how the shape and orientation of the shelter is not appropriate to the prevailing wind and rain direction.

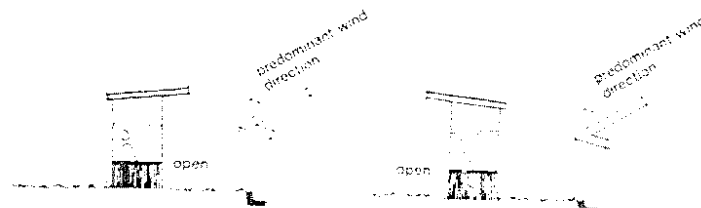
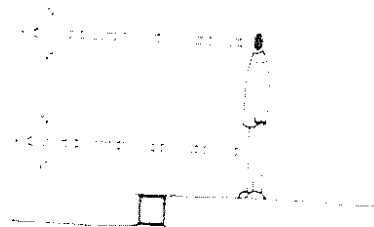


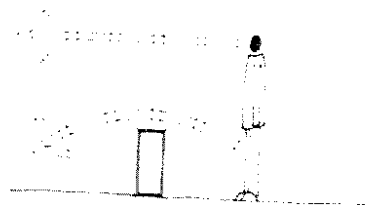
Fig. 89 Shows that by changing the design and orientation of the shelter, better protection can be provided.

Barriers—different barriers create different effects

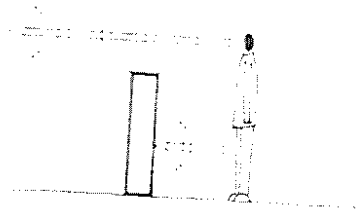
no visual
no physical barrier.



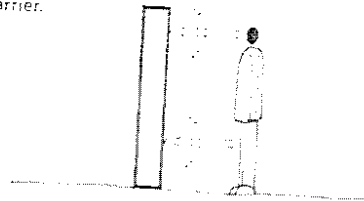
no visual
small physical barrier.



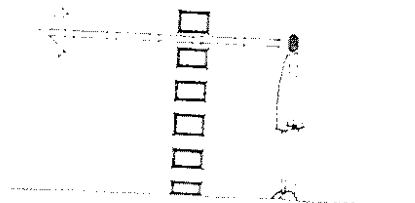
no visual
large physical barrier.



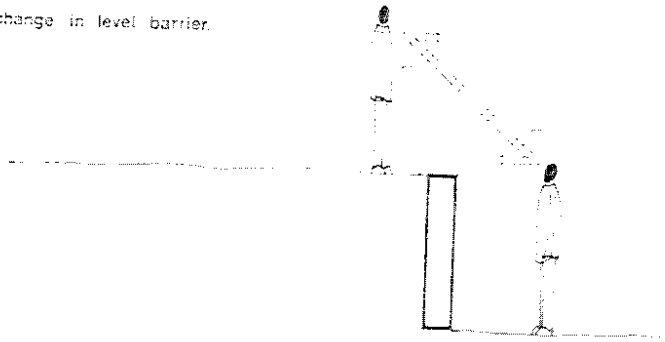
complete visual and physical barrier.



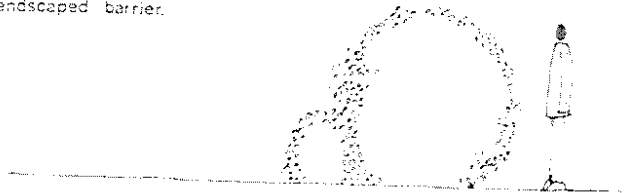
part visual
complete physical barrier.



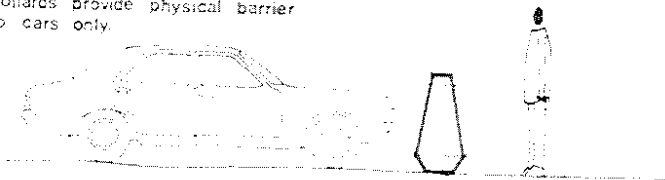
change in level barrier.



landscaped barrier.



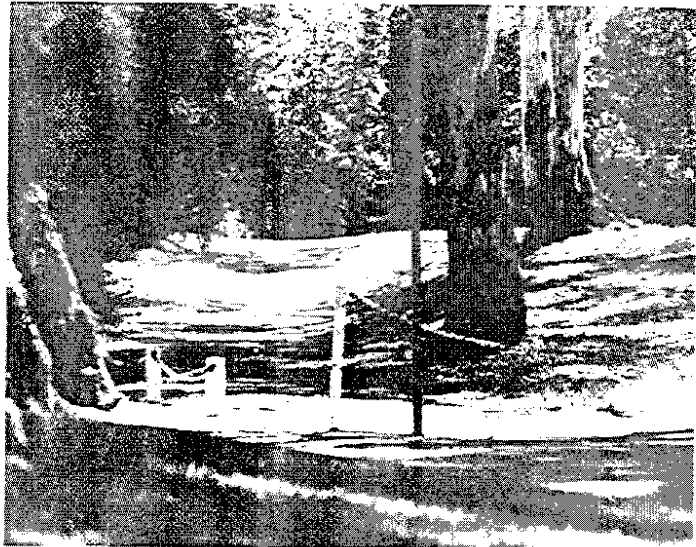
bollards provide physical barrier to cars only.



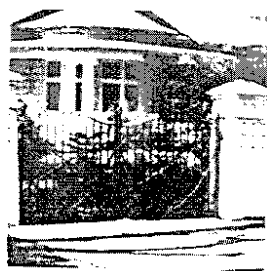


above: A barrier of natural stone, integrated with soft landscaping

right: A heavy-duty barrier of log vehicle movement, allowing free pedestrian movement and maintaining visual freedom



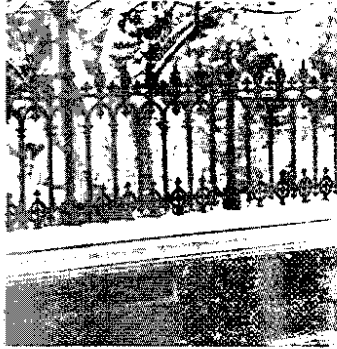
below: A barrier of living vegetation and pedestrian traffic while maintaining a visual aspect



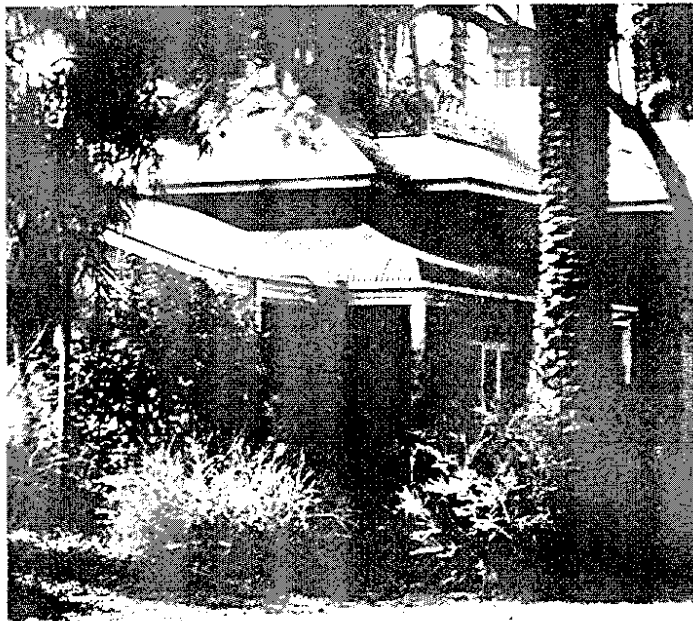
right: Part of a barrier with a physical and visual function



1001. A see-through barrier
helps to avoid pedestrian
accidents in urban and suburban
settings.
1002. A practical and visual
barrier.



1003. A barrier installed to define
a low pedestrian
movement restrict vehicle
movement and retain an attractive
landscape.
1004. The kerb acts as a small
physical barrier. An open visual
front is maintained.





Street lighting integrated in scale and appearance into the overall streetscape.

Lighting

Such traffic control devices as roundabouts, channelisation, etc., require all-night lighting to provide safe traffic movement. Various elements of streetscapes may also need all-night lighting.

Street lighting will be needed in most circumstances for safety, security and convenience.

It is advisable to examine the specific function of lighting for each situation. For example, lighting will be required for the safe movement of pedestrians, and alternatively for the safe movement of motor vehicles.

Street lighting can also be used to emphasise road hierarchy, e.g. local, collector roads, lights for pedestrians and intersection lights.

As for the other furniture, street lighting should be integrated in appearance and scale to the overall fabric and character of a street so that it is not only functional but also pleasant.

Paving pedestrian

The selection of paving materials and the design of paving are most important. Paving can greatly improve the character of the streetscape.

It can give direction and identity, and also portray a change of function and scale.



A long straight concrete footpath offering little protection against summer sun and winter rain. Now paving takes time to develop.

When selecting materials, the intended use, coupled with aesthetics, method of construction, cost and maintenance should be carefully considered. Preference should be given to those materials which occur locally. Pedestrian paving, located on street verges, should be put in juxtaposition to allow adequate unrestricted access to underground services. Specific reference is made to the articles appearing in the Architects Journal, April, 1974, called "Hard Landscape in Concrete".



right and bottom illustrates the use of various materials for paving thus creating a different atmosphere

- brick
- concrete slabs
- cobble
- interlocking paving blocks



APPENDIX CPRELIMINARY LIST OF STREET TREES SUITABLE FOR
WARNERVALE/WADALBA URBAN RELEASE AREA

TREE SPECIES - Minimum mature height of 8 metres.

- Species vary in tolerances to a range of conditions and are thus not "universally" appropriate. The list should be used as a guide only.

AN = Australian Native (L) = Local Ex = Exotic

Acacia melanoxylon	Blackwood	AN (L)
Acacia glaucescens	Coast Myall	AN (NSW)
Acmena smithii	Lilly-pilly	AN (L)
Acer negundo	Box Elder	Exotic
Angophora costata	Sydney Redgum	AN (L)
Alphitonia excelsa	Red Ash	AN (L)
Bauhinia x blakeana	Hong Kong Orchid	Ex
Calodendron capense	Cape Chestnut	Ex
Cytharexylon spinosum	Fiddlewood	Ex
Cupaniopsis anarcardioides	Tuckeroo	AN (L)
Eucalyptus eximia	Yellow Bloodwood	AN (L)
E. gummifera	Red Bloodwood	AN (L)
E. haemastoma	Scribbly Gum	AN (L)
E. scoparia	White Gum	AN (Q)
E. ptychocharpa	Swamp Bloodwood	AN (NT)
E. calophylla	Marri-red Flowers	AN (WA)
E. sideroxylon "Rosea"	Pink Ironbark	AN (NSW)
E. torelliana	Cadagi	AN (Q)
Flindersia australis	QLD Maple	AN (Q)
F. brayleyana	Flindersia	AN (P)
F. bennettiana	"	AN (Q)
Jacaranda mimosiifolia	Jacaranda	Ex
Koelreuteria paniculata	Golden Rain Tree	Ex

<i>Lophostemon confertus</i>	Brush Box	AN (QLD)
<i>Melaleuca styphelioides</i>	Prickly Paperbark	AN (L)
<i>M. leucadendron</i> (fine leaf)	Weeping Paperbark	AN (QLD)
<i>M. linariifolia</i>	Snow-in-Summer	AN (L)
<i>M. viridiflora</i>	Red Paperbark	AN (Q)
<i>Fraxinus oxycarpa</i>	Claret Ash	Ex
<i>Glochidian ferdinandii</i>	Cheese Tree	AN (L)
<i>Oreocallis wickhamii</i>	Tree Waratah	AN (NSW)
<i>Pittosporum rhombifolium</i>	Diamond Laurel	AN (L)
<i>Podocarpus elatus</i>	Brown Pine	AN (NSW)
<i>Pyrus callerayana</i>	Callery Pear	Ex
<i>P. ussuriensis</i>	Manchurian Pear	Ex
<i>Pistacia chinensis</i>	Chinese Pistacio	Ex
<i>Sapium sebiferum</i>	Chinese Tallow	Ex
<i>Syzygium leuhmannii</i>	Cherry satinash	AN (L)
<i>S. paniculatum</i>	Lilly-pilly (magenta)	AN (L)
<i>Toona australis</i>	Red Cedar	AN (L)
<i>Ulmus chinensis</i>	Chinese Elm	Ex
<i>Waterhousea floribunda</i>	Weeping lilly-pilly	AN (NSW)
<i>Platanus orientalis</i> "digitalis"	Cut Leaf Plane	Ex
<i>Melia azedarach</i>	Aust White Cedar	AN