

6 Site specific considerations

The recommendations provided for each site in this chapter are necessarily 'rules of thumb' as shade planning is an emerging discipline and is subject to ongoing study. Those involved in shade projects should adapt the recommendations with discretion, ensuring that particular characteristics of a specific site are considered.

As each chapter of this publication contains vital information for effective shade planning, it is suggested that chapters 1 to 5 be read before the site specific considerations.

Early childhood services

Early childhood services typically include centre-based, mobile child care, family day care and home-based care services. While the focus of this section is on the centre-based service, many of the issues discussed will be of interest to other service types.

Early childhood services can play a significant role in the prevention of skin cancer. There are a number of reasons for this:

- part of the critical period for sustaining damaging levels of solar UVR exposure occurs during early childhood
- children attend these services up to five days per week throughout the year, often during the high UVR risk period of each day
- children frequently play outdoors while attending these services.

In addition, all services are required to have policies and procedures to ensure the health and safety of the children in their care. Long day care services accredited under the National Quality Improvement and Accreditation System are required to ensure that children are clothed appropriately for outdoor play.

While the provision of sufficient UVR protective shade is an important element of an early childhood service's sun protection strategy, it will not guarantee total UVR protection. Shade should be one component of a comprehensive strategy which also includes personal protection measures, ie wearing sun protective clothing, hats, sunscreen and sunglasses. Care should also be taken to minimise the time spent outdoors between 11am and 3pm daylight saving time (10am and 2pm eastern standard time), when daily UVR levels are generally at their peak.

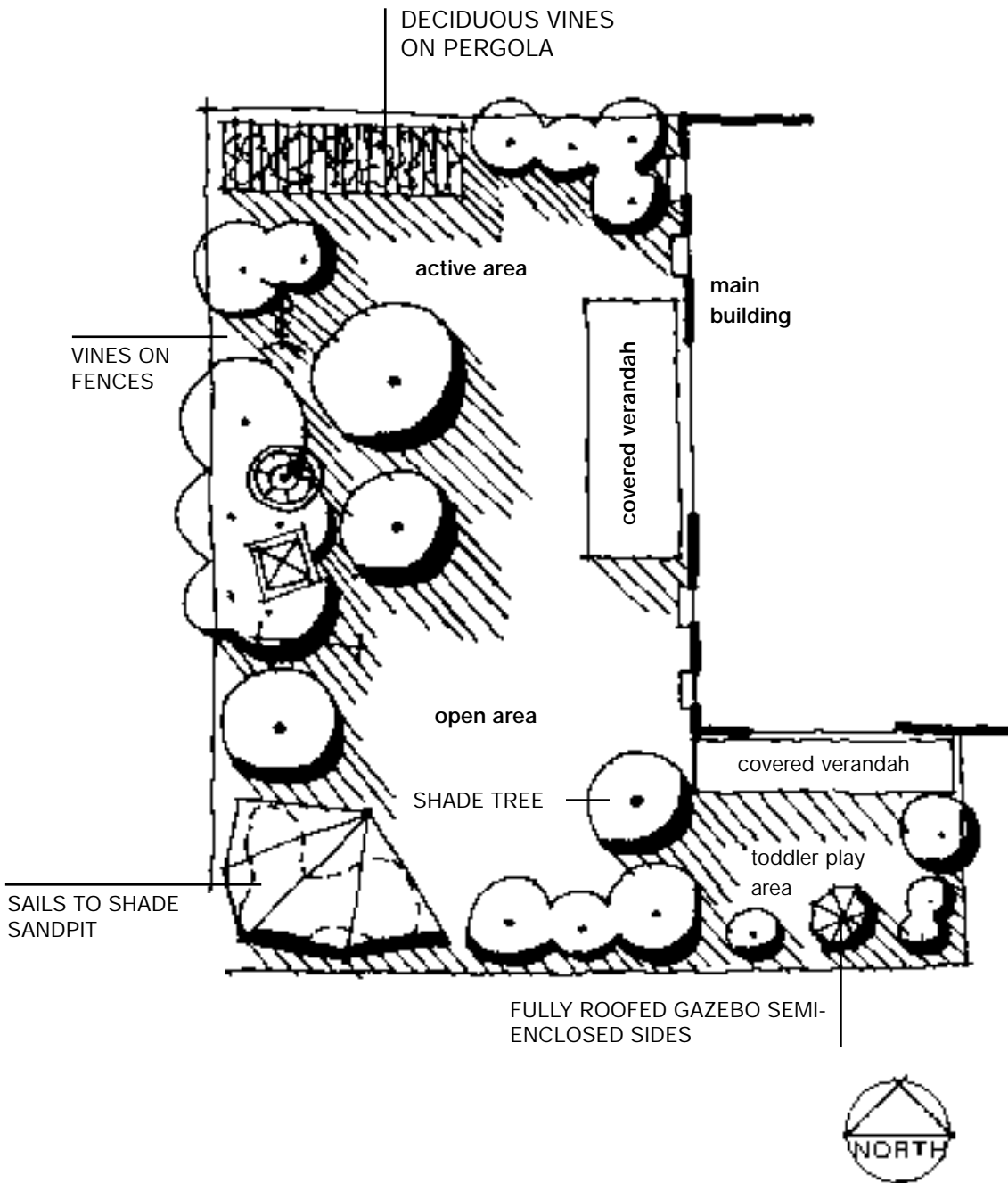
It should also be noted that in regard to the staff at these services, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade at an early childhood centre



planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for early childhood services.

service types

Shade planning and design for each service type will be influenced by the number of children in care and the size of the outdoor play space.

project team

Ideally, representatives from management, teaching staff and parent groups as well as relevant professionals, eg architects, landscape architects, should be involved. This will help to ensure that the need for shade is considered within the context of other issues and requirements.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered, eg play equipment could be re-located to a shaded area, low branches could be removed from trees to allow children to play underneath.

site usage patterns

It is important to take into account the usage patterns at the site, including the type of activities that occur and the time of day they occur. Within the outdoor space at a centre-based service there are usually a number of distinct play areas including:

- an open area for gross motor skills, eg running
- a quiet area for focused play, eg a sandpit
- a formal quiet area for contained play, eg finger painting
- an active area for busy physical play, eg climbing
- a transition zone between indoor and outdoor areas, eg a verandah.

If babies and toddlers are being catered for, there should be a separate play area for them, within the outdoor space.¹

While each of these areas has its own shade requirements, the design approach should aim to create shade that complements and reinforces the ordering of different play areas and movement paths.²

climatic conditions

It is important to take into account any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions. The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site. Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light. The use of adjustable shade systems and/or deciduous vegetation may provide greater flexibility.

1 NSW Department of Community Services. *Best practice guidelines in early childhood physical environments*. Sydney, 1996. pg 91.

2 Queensland Health and Department of Architecture, University of Queensland. *Shade for young children*. Brisbane, 1997. pg 17.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for outdoor play spaces. Coarse and/or soft surfaces eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. Generally, an approach which combines both built and natural shade is preferable. Using a variety of forms of shade will help to create a different identity for each area and a more interesting play space. Visually attractive components include:

- coloured sails
- structures with textured sides or spaces to view through
- structures that support flowering vines
- trees, shrubs and vines (deciduous and evergreen) with different seeding, flowering and fruiting habits (ensure that these are not potentially hazardous to children).

Using a variety of tree and shrub species will also help to create a more interesting and stimulating environment for the children.

supervision

Children need to be readily viewed by staff at all times for both safety reasons and teaching purposes. Examples of designs that may hinder supervision include shade structures with solid and/or opaque sides and low placement of overhead 'sails'. Trees and shrubs also have the potential to obstruct supervision if they are inappropriately located.

approval

Development approval must be obtained from the local council, or for government properties from the Development Assessment Commission.

natural shade

Natural shade should be a major element of shade provision within an outdoor play space. Trees with dense foliage and wide spreading canopies provide the best protection, although leaves can create ongoing maintenance problems for sandpits.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Generally, they should be planted on the north, north-eastern and north-western sides of the play space. Root barriers and subsoil drainage will help to ensure that adjacent paved areas are not damaged by tree roots.

Dense shrubs also have the potential to provide shade. They should be planted around the perimeter of the site so they do not obstruct supervision. Pruning shrubs on the underside may allow for shaded play nooks to be created underneath. Shrubs and trees selected for the play space should be non-toxic and should not be dangerous in other ways. For example, avoid species that:

- have seed pods or stone-fruit (a potential choking hazard for children under five years of age)
- attract bees
- have thorns or spikes
- are known to cause adverse health effects such as asthma and skin irritation.

Also note that some species of trees have a tendency to drop their branches.

If natural shade is the long term favoured option for areas within the site, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

Early childhood services

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into play and circulation areas. Where possible, guy ropes should be avoided, as they may be a trip hazard. In addition, vertical barriers at the sides of shade structures should be designed to prevent children using them for climbing.

scale

Scale is an important issue to consider when designing shade for early childhood environments. For example, what may seem a comfortably sized space for an adult may be overwhelming to a small child.

This issue however, needs to be balanced with the need for adult access to children's play spaces. For this reason, a head clearance height of approximately two metres is recommended for shade structures. If vertical barriers are to be placed at the side of structures, they should allow for views through at child height, rather than adult height.

The useability of the floor space underneath the structure is another issue that needs to be considered. It should be of a sufficient size and shape to allow children to gather or play actively underneath.

demountable structures

Demountable shade structures should only be used to supplement more permanent forms of shade. Some demountable structures, eg umbrellas, offer limited protection. Umbrellas also provide limited group space underneath and may be unstable during windy conditions.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

rain protection

It may be desirable to incorporate built structures into the design that offer both UVR and rain protection.

minimum regulation size play spaces

In outdoor play spaces built to minimum regulation size, it is not always possible to use the variety of shade solutions suggested in this publication. The placement of a permanent or adjustable shade system over a major part of the play space may be the only viable solution.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

an additional resource

The Queensland Health publication *Shade for Young Children* is a useful additional resource. Full reference details can be found under *further reading* at the end of this section.

recommendations and considerations

The recommendations below are minimum shade guidelines for centre-based services. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

open area	<p>Partial shade is recommended, especially over grass which needs some sun for growth.</p> <p>Natural shade is the most appropriate option.</p> <p>Consider arranging planting in clusters so that groups of children can access shade.</p> <p>Deciduous trees will allow for penetration of warmth and light to the play space during winter.</p>
quiet area	<p>Shade throughout the year is recommended, particularly over sandpits.</p> <p>A permanent shade system is the most appropriate option.</p> <p>The need for winter warmth and light should be considered.</p>
formal quiet area	<p>Shade throughout the year is recommended.</p> <p>Consider using a combination of built and natural shade.</p> <p>The need for winter warmth and light should be considered.</p>

Early childhood services

active area

Shade throughout the year is recommended over fixed play equipment and areas where children play for extended periods of time, eg a digging patch.

Moveable equipment used for active play, eg climbing frames, should be placed in the shade. Consider using a combination of built and natural shade.

The need for winter warmth and light should be considered.

fixed play equipment

Safety is a major consideration for shade provision over fixed play equipment.

Shade structures over fixed play equipment should not have footholds or grip surfaces which would allow for climbing.

The roofline of the shade structure should extend at least 500 millimetres beyond the edge of the deck of the play equipment, to prevent child access on to the roof.

The roof of the shade structure should allow for a minimum head clearance height of two metres above the deck of the play equipment.

Tree trunks and the upright posts of shade structures should be located a minimum distance of two metres away from the most fully extended part of the play equipment, eg the side of a climbing platform or the end of an extended swing arc. This will ensure sufficient freefall zones.

Any shade structure in the play area should be designed with reference to AS/NZS 4486.1:1997 (see *further reading*).

transition zone

Verandahs will provide permanent shade as well as rain protection.

The angle of the roof and the extent of overhang should be designed to maximise shade for the major part of the day, especially during summer.

The width of the verandah should be a minimum of four metres to allow for shaded play space underneath.

Roof materials should be selected to minimise heat build-up during summer. The roof should be insulated (with at least a ceiling cavity, and preferably with insulation material too) and airflow points should be provided.

transition zone continued	<p>Terraces, with a deciduous, vine-covered pergola or an adjustable shade system, will provide seasonal shade. Some canopies will also provide rain protection.</p> <p>Retractable or louvred shade canopies should be easily adjustable, ideally by one person at ground level.</p> <p>A combination of fixed roof verandah and terrace spaces may be desirable for some services.</p> <p>Vertical pull-down blinds at the side of a verandah or terrace can provide additional protection from UVR when the sun is low in the sky.</p>
baby/toddler area	<p>Shade throughout the year is recommended.</p> <p>Consider using a combination of natural and built shade.</p> <p>The need for winter warmth and light should be considered.</p>

further reading

- AS/NZS 4422:1996 *Playground surfacing—Specifications, requirements and test methods*. Standards Australia and Standards New Zealand.
 - AS/NZS 4486.1:1997 *Playgrounds and playground equipment Part 1—Development, installation, inspection, maintenance and operation*. Standards Australia and Standards New Zealand.
 - The Asthma Foundation of South Australia. *The Low Allergen Garden* pamphlet.
 - Family Day Care and Home Based Child Care Services Regulation 1996 (NSW).
 - National Childcare Accreditation Council. *Putting children first—Quality improvement and accreditation system handbook*. Sydney, 1993.
 - Queensland Health and Department of Architecture, Queensland University. *Shade for young children*. Brisbane, 1997.
 - Walsh P. *Early childhood playgrounds — Planning an outside learning environment*. Alberts Park: Robert Andersen and Associates, 1988.
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Schools

Schools

Schools can play a significant role in the prevention of skin cancer. There are a number of reasons for this:

- part of the critical period for sustaining damaging levels of solar UVR exposure occurs during the school years
- students are at school up to five days per week, throughout most of the year and during the high UVR risk period of each day
- students often spend a significant amount of time outdoors while at school.

In addition, schools have a duty of care to provide a safe environment for students.

While the provision of sufficient UVR protective shade is an important element of a school's sun protection strategy, it will not guarantee total UVR protection. Shade should be one component of a comprehensive strategy which also includes encouraging the use of personal protection measures ie wearing sun protective clothing, hats, sunscreen and sunglasses, as well as implementing sun awareness education. Outdoor activities should be rescheduled (where possible) outside the hours of 11am to 3pm daylight saving time (10am to 2pm eastern standard time), when daily UVR levels are generally at their peak.

It should also be noted that in regard to school staff, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

note

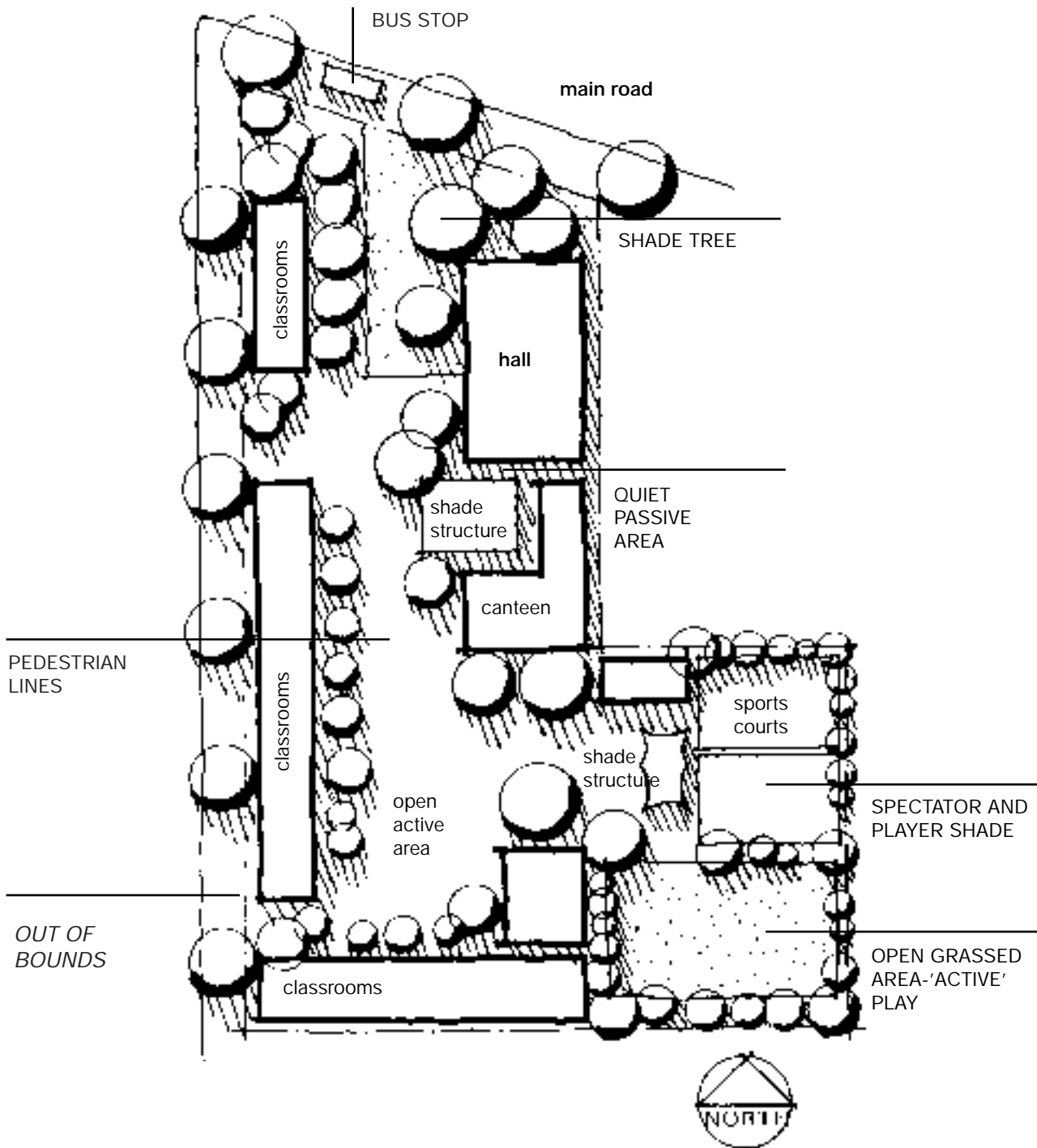
It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

note

According to each school's facilities, site-specific considerations in the sections Swimming Pools, Sports Grounds and Facilities, and Parks and Reserves may also be useful.

an example of shade at a school



planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the contents of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for schools

project team

Ideally representatives from school executive, teaching staff and parent groups as well as relevant professionals, eg architects, landscape architects, should be involved. This will help to ensure that the need for shade is considered within the context of other issues, including long term development plans for the site.

If the school grounds are used by community groups on the weekends or during school holidays, it may be appropriate to liaise with them during the project, particularly if it will cause disruption to the areas they use.

student participation

Students should be consulted and involved throughout the shade project eg they could undertake certain tasks in the Shade Audit.

For ideas on how to work with students to conduct a shade audit, refer to the SunSmart folder in the Anti-Cancer Foundation's Cancer Prevention and Education Teachers' Resource Kit (in each Secondary School library)—activity 13.¹

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered. For example, fixed seating could be re-located to a shaded area, low branches could be removed from trees to allow access, playground use could be reviewed to permit access to shaded out-of-bounds areas.

site usage patterns

It is important to take into account the usage patterns at the site, particularly the times of day different activities occur. Students' play and social patterns also need to be considered, eg primary school children are generally required to eat lunch in class groups while secondary students tend to gather in small discreet clusters.

The outdoor areas of schools usually comprise:

- active playground areas, eg for ball games and free play
- passive playground areas, eg for eating lunch and socialising
- canteen areas
- bus stop areas.

These areas are connected by pedestrian links. While each area has its own shade requirements, they should be considered within the context of the whole school site.

Some schools also have specialist facilities, for example swimming pools, tennis courts, sports fields or agricultural areas.

active vs passive use

Sufficient shade should be provided for students to undertake active outdoor activities such as free play, physical education classes and sport, particularly during summer.

Sufficient shade should also be provided for eating and socialising, 'lining up' (especially after recess and lunch) and assemblies, particularly during summer.

climatic conditions

It is important to take into account any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions.

¹ Anti-Cancer Foundation of SA *Be SunSmart Book 1* (Activity 13), Cancer Prevention and Education Teachers' Resource Kit (in each Secondary School library).

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site.

Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light. The use of adjustable shade systems and/or deciduous vegetation may provide greater flexibility.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for playground areas. Coarse and/or soft surfaces eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. Generally, an approach which combines both natural and built shade is preferable. Using a variety of tree and shrub species will also help to create a more interesting environment.

approval

Government Schools, preschools (and TAFE Institutes) must seek and gain planning approval for all building works from the Development Assessment Commission before any building works can commence. This is a requirement of the Development Act. Also required is certification by an approved and registered Certifier.

For non-government properties, local government may require development approval for built shade structures. Contact your local Council for more information.

natural shade

Natural shade should be a major element of shade provision within a school. Trees with dense foliage and wide spreading canopies provide the best protection.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots. Dense shrubs also have the potential to provide shade.

Avoid shrubs and trees that:

- are toxic
- have seed pods or stone-fruit
- attract bees
- have spikes or thorns
- are known to cause adverse health effects such as asthma or skin irritation.

Also note that some species of trees have a tendency to drop their branches.

If natural shade is the long term favoured option for areas within the site, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into play and circulation areas. Where possible guy ropes should be avoided, as they may be a trip hazard. In addition, vertical barriers at the sides of shade structures should be designed to prevent children using them for climbing.

Schools

demountable structures

Demountable shade structures should only be used to supplement more permanent forms of shade. Some demountable structures, eg umbrellas, offer limited protection. Umbrellas also provide limited group space underneath and may be unstable during windy conditions.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

rain protection

Schools often lack sufficient wet weather shelter. Built structures that offer both UVR and rain protection can help overcome this issue.

vandalism

As school grounds are often accessible after hours, the risk of vandalism is an issue that needs to be considered.

emergency access

Shade structures and/or planting should not restrict emergency vehicle access to school buildings and grounds.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

carnivals

Shade is an important consideration for sports and swimming carnivals and other school events, eg fetes. Demountable structures may be useful on these occasions.

recommendations and considerations

The recommendations below are minimum shade guidelines for schools. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

active playground

Partial shade is recommended for open playground areas, especially over grass which needs some sun for growth. Natural shade is the most appropriate option.

Consider arranging planting in clusters so that groups of children can access shade. Deciduous trees will allow for penetration of warmth and light to the playground during winter.

Shade throughout the year is recommended over play equipment and sandpits. Consider using a combination of built and natural shade.

The need for winter warmth and light are issues.

passive playground

Shade throughout the year is recommended for areas of passive playground use, eg fixed seating, assembly areas.

Moveable seats should be placed in the shade.

Consider using a combination of natural and built shade.

The need for winter warmth and light should be considered.

Schools

canteen areas

Shade throughout the year is recommended for queuing areas.
Built shade, eg a broad awning, is the most appropriate option.
Rain protection is recommended.

pedestrian links

Shade is recommended for thoroughfares linking buildings and facilities within a school.
Consider using a combination of natural and built shade.
Rain protection is recommended, particularly where students are moving from one building to another throughout the day.

school bus stops

Shade is recommended for waiting areas at school bus stops, particularly during summer. Consider using natural shade, although where possible built structures that offer both UVR and rain protection should be provided.
Although school bus stops will usually be part of the general streetscape and therefore outside the school boundaries, it may be possible to shade the area by planting trees immediately within the boundary.
Local councils and transport authorities could be lobbied to provide built shelters.

sports fields and facilities	Refer to the section on Sports Grounds and Facilities in this chapter.
swimming pools	Refer to the section on Public Swimming Pools in this chapter.
general	Experience over a range of schools indicates that a typical amount of shade to ensure adequate protection would be 2.5m ² per student. ¹ However the adequacy of shade protection cannot be measured by area alone. Shade quality, shade location and site usage patterns are also critical factors.

further reading

- *Administrative Instructions and Guidelines*, Section 3; Student Matters, Point 88, Sun Protection, DETE 11/99 (they were DEC's then)
- *SunSmart Policy Guidelines for Schools*, ACF, 1999
- The Asthma Foundation of SA. *The Low Allergen Garden* pamphlet.
- *Be SunSmart Book 1* (Activity 13), Anti-Cancer Foundation's Cancer Prevention and Education Teachers' Resource Kit (in each Secondary School library)

¹ Greenwood J (Shade Consultant and Architect). Advice to NSW Cancer Council (unpublished). 1998.

Swimming pools

Swimming pools

Swimming is a popular activity in Australia, particularly during summer. For many people the public swimming pool offers a convenient and safe place for swimming. However, when pools are located outdoors, patrons' risk of excessive solar UVR exposure can be extreme. This is because:

- public pools are commonly used in summer when annual UVR levels are at their peak
- pool users typically wear minimal clothing
- there is often little shade
- there may be high levels of indirect UVR.

Thus the provision of sufficient UVR protective shade at these facilities is an issue that must be considered by pool owners and managers. Apart from contributing to the health and safety of their patrons, the increased comfort levels afforded by a well-designed shady environment are likely to increase customer satisfaction and even patronage.

It should be noted however that as shade can never provide total UVR protection, patrons should also be encouraged to adopt personal sun protection measures ie wearing sun protective clothing, hats, sunscreen and sunglasses. Signage reminding pool users of these strategies, as well as the need to take particular care between 10am and 3pm, could be erected. Sun protection messages could also be broadcast over the public address system.

It should also be noted that in regard to pool staff, eg lifeguards or swimming teachers, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

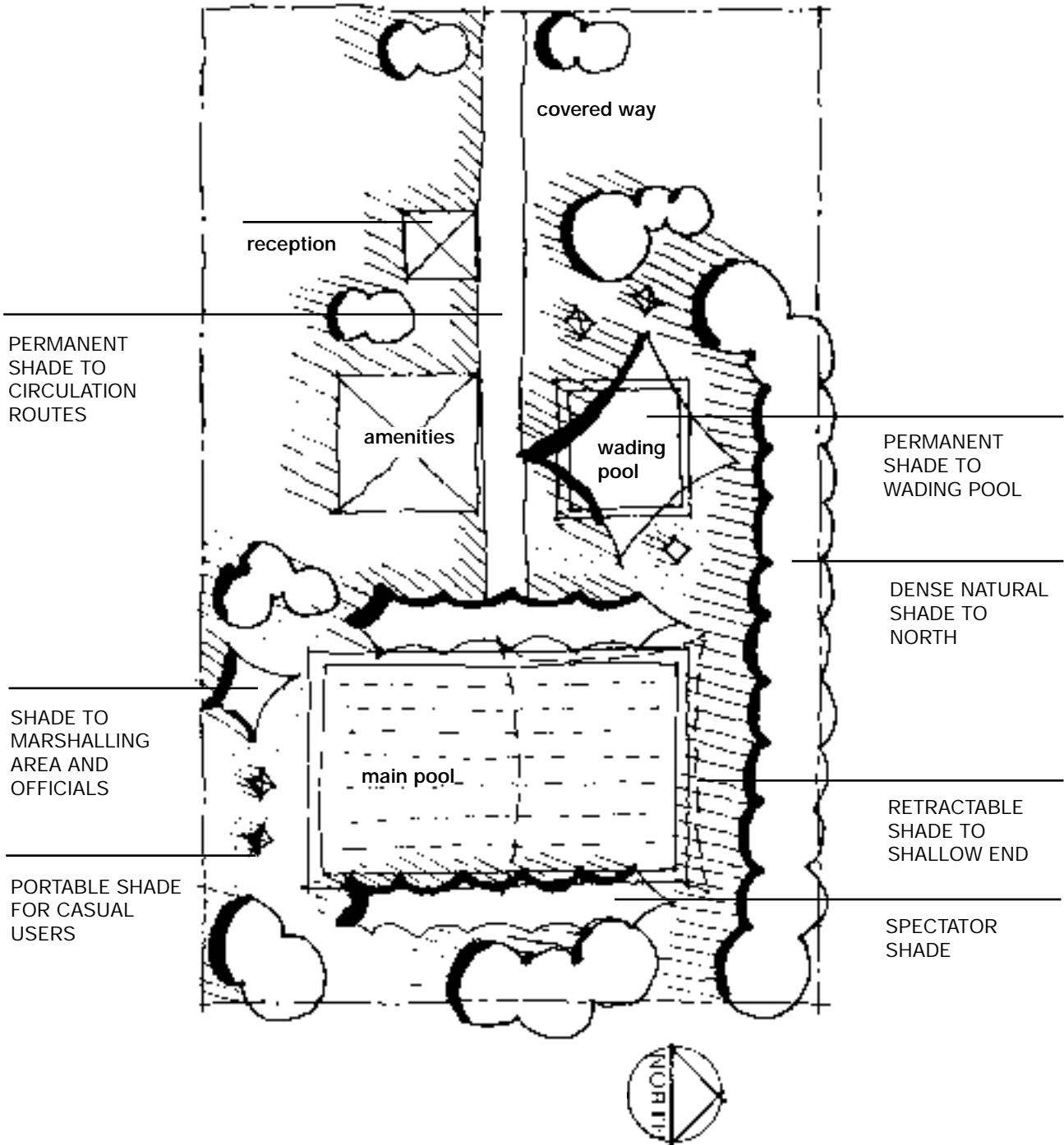
note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well advice on managing a shade project.

Swimming pools

an example of shade at a swimming pool



Swimming pools

planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for swimming pools.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered, eg fixed seating could be relocated to a shaded area.

site usage patterns

It is important to take into account the usage patterns at the site, particularly the time/s of day and year it is most in use. Sufficient shade should be available at the times of heaviest usage, particularly when UVR levels are at their peak. To achieve this it may be necessary to supplement permanent shade with demountable structures.

Generally there are a number of areas of different use within a public swimming pool complex including:

- spectator areas
- aquatic areas
- concourse
- refreshment areas.

While each area has its own shade requirements, they should be considered within the context of the whole site.

carnivals

Providing shade is essential for major events such as carnivals and competitions. Demountable structures can be used to provide additional shade over spectator areas, as well as the areas for competitors and officials. Pool management could offer the use of such structures as part of pool hiring packages.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the pool is situated, as well as any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions.

The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

indirect UVR

Indirect UVR is an important factor to consider due to the high levels of reflected UVR at public swimming pool complexes. While it is difficult to eliminate indirect UVR in this situation, exposure can be minimised. For example, shade structures should be of a sufficient size to ensure people can move away from the edges. The shade canopy should extend at least one metre past the actual area of use and vertical barriers should be built into the sides.

The potential for exposure to indirect UVR should also be considered when selecting ground surfaces for the pool complex. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. An approach which combines both natural and built shade is preferable.

approval

Local councils may require development approval for built shade structures.

natural shade

Natural shade should be a significant element of shade provision for the perimeters of areas adjacent to pools. Trees with dense foliage and wide spreading canopies provide the best protection.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots.

If natural shade is the long term favoured option for areas within the pool complex, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into circulation areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

sightlines

Shade structures should not obstruct lifeguards', spectators' or officials' views of the pool areas.

corrosion

The supporting systems of shade structures should not be placed in or near the pool as structural corrosion may occur.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

personal shade hire

Personal shade structures such as umbrellas could be available for hire. The income from such a scheme could be used to provide additional shade at the site. However, it should be noted that because of indirect UVR umbrellas provide limited protection.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

an additional resource

The Queensland Health publication *Shade for public pools* is a useful additional resource. Full reference details can be found under *further reading* at the end of this section.

Swimming pools

recommendations and considerations

The recommendations below are minimum shade guidelines for public swimming pools. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

spectator areas

Shade is recommended over all seated spectator areas. Built shade is the most appropriate option. Rain protection is recommended.

Shade is recommended for general spectator areas, where people relax after a swim. A combination of natural and built shade is the most appropriate option. Sufficient shade should be available to allow most people to access shade. Demountable structures can be used to supplement permanent shade, particularly during summer.

aquatic areas

Shade throughout the year is recommended over toddler pools and the surrounding supervising area. A permanent shade system is the most appropriate option.

Where possible, shade should be provided over the areas of the pool where most people spend their time and where children's swimming lessons are held. At most public pools, these are the shallow end and pool edges.¹ Consider using a demountable structure or an adjustable system, so that shade can be removed during winter.

Demountable shade is recommended for marshalling and official areas during carnivals and competitions.

¹ Minnery J. A report on B.B.C. swimming pools (unpublished report). Brisbane: Q Search, Queensland Institute of Technology (now Queensland University of Technology), 1988.

concourse

Consider extending shade canopies over pools or adjacent spectator areas so that the concourse is also shaded.

Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.

refreshment areas

Shade is recommended for queuing areas at kiosks. Built shade, eg a broad awning, is the most appropriate option. Awnings should be of a sufficient size to cater for capacity crowds.

Shade is recommended over picnic tables and other areas where refreshments are consumed.

Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.

further reading

- Alexander-Gabrielson M. *Swimming pools—A guide to their planning, design and operation*. Illinois: Human Kinetics Publishers Inc, 1987.
- Queensland Health and Department of Architecture, Queensland University. *Shade for Public Pools*. Brisbane, 1996.

Beaches

Beaches

Beaches are traditionally popular places of recreation for residents of coastal areas, as well as for visitors from inland and rural areas. Beach users' risk of excessive solar UVR exposure is extreme because:

- beaches are commonly used in summer when annual UVR levels are at their peak
- they typically wear minimal clothing
- they often spend extended periods of time at the beach
- there is little shade on the beach itself and there may not be sufficient shade at adjacent public reserves
- there are high levels of indirect UVR.

While the provision of sufficient UVR protective shade will contribute to a safer beach environment, it does not guarantee total protection from UVR. Beach users should therefore be encouraged to adopt personal sun protection measures ie wearing sun protective clothing, hats, sunscreen and sunglasses. Signage reminding people of these strategies, as well as the need to take particular care between 10am and 3pm could be erected. Sun protection messages could also be broadcast over the public address system.

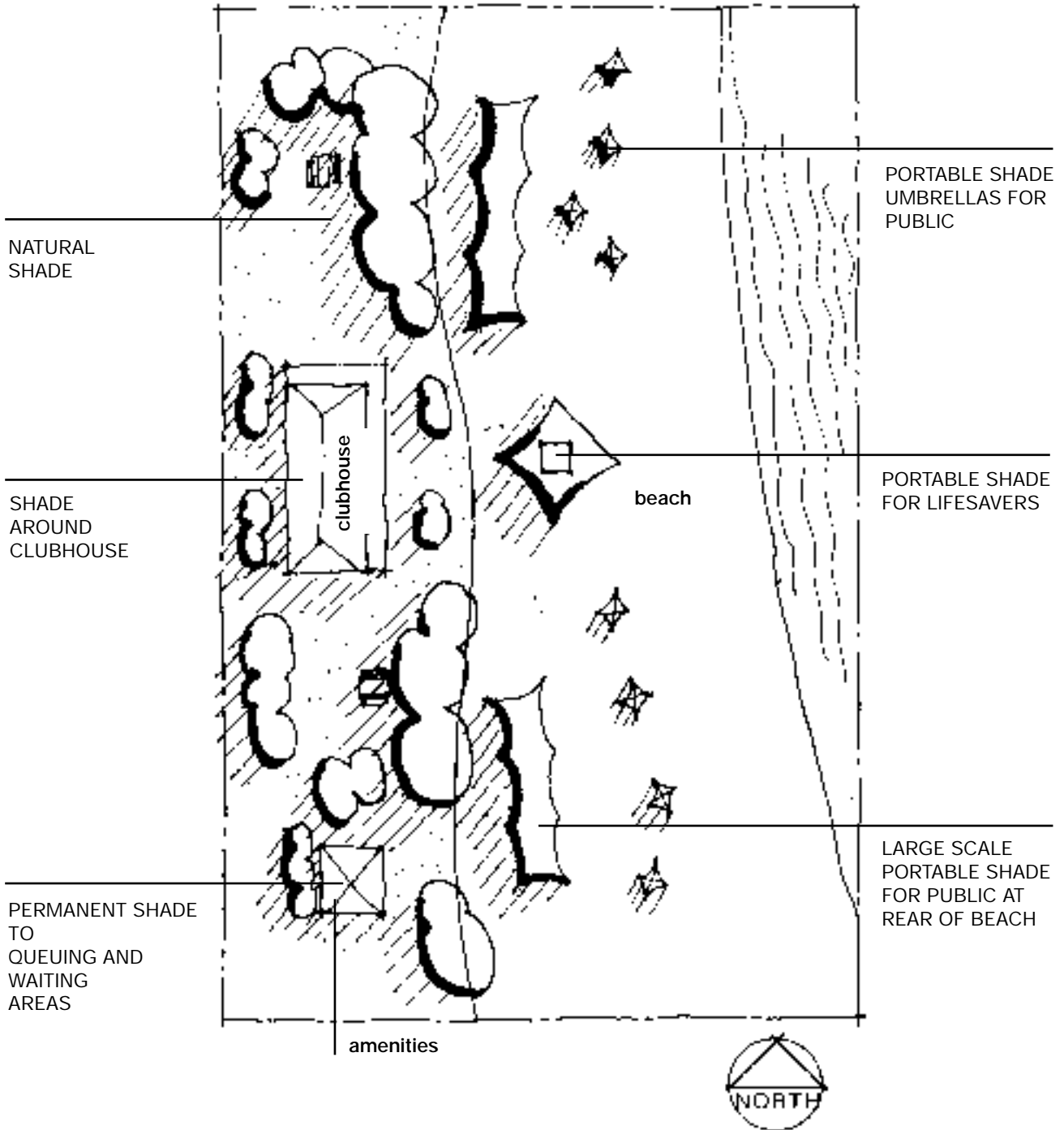
It should also be noted that in regard to beach staff eg beach inspectors and lifeguards, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade at a beach



Beaches

planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for beaches.

sand areas

Providing shade to the sand areas of beaches should be a major consideration. This can be achieved by cantilevering structures over the sand from walkways or areas immediately adjacent to the beach. Trees planted as near as possible to the sand may also provide shade. Lightweight structures such as tension membrane structures or overhead sails, can be erected directly over the sand areas. These could be designed to allow removal during winter months and could provide financial benefits by carrying sponsors' messages.

modifying site usage

While it may not be feasible to provide permanent shade on the beach itself, permanent shade should be provided at adjacent public reserves. Beaches and adjacent reserves should be as integrated as possible so that people will be more inclined to retreat from unshaded sand areas. If reserves are slightly elevated, close to the sand, easily accessible and offer shade, they will be extensively used.

The shade requirements for different areas within a reserve will vary according to the type of activities that occur there. For example, in areas where people are sitting in one spot, eg picnic tables, the need for permanent shade over a significant part of the area is high. In areas where people are active and mobile, eg large grassed areas, it is more difficult to position shade so that it will be effective. Occasional scattered shade however should still be considered for these areas.

carnivals

Shade is an important consideration for large scale events such as surf life saving carnivals. Demountable shade structures can be used to provide shade over spectator areas, as well as the areas for competitors and officials.

indirect UVR

Indirect UVR is an important factor due to the high levels of reflected UVR at beaches. While it is difficult to eliminate indirect UVR in this situation, its effect on adjacent reserve areas can be reduced by planting panels of vegetation between the beach and reserve. Shade structures at reserves, as well as on the sand, should also be designed to control indirect UVR. For example, they should be of a sufficient size to ensure people can move away from the edges. The shade canopy should extend at least one metre past the actual area of use, and vertical barriers should be built into the sides.

The potential for exposure to indirect UVR should also be considered when selecting ground surfaces within reserve areas. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. Generally, an approach which combines built and natural shade is preferable.

natural shade

Natural shade should be a major element of shade provision at public reserve areas adjacent to beaches. Trees with dense foliage and wide spreading canopies provide the best protection.

Trees should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. They should also be salt-resistant. Root barriers and subsoil drainage will help to ensure that adjacent pavements are not damaged by tree roots.

If natural shade is the long term favoured option for the reserve, 'short life' built structures ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges. They should be placed so as to minimise intrusion into circulation areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

sightlines

Shade structures should not obstruct peoples' views of the beach area, particularly lifeguards' views.

corrosion and wind

Shade structures in coastal areas will be subject to corrosion from salt as well as frequent high wind conditions. These issues should be considered in the design of supporting structures and the selection of shade materials.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

personal shade hire

Personal shade structures such as umbrellas or sun domes could be available for hire. Surf clubs, neighbouring shops and/or local councils could provide this service. However, it should be noted that because of indirect UVR, umbrellas provide limited protection.

vandalism

As beaches and adjacent reserves are accessible at all hours of the day and night, the risk of vandalism is an issue that needs to be considered.

Beaches

recommendations and considerations

The recommendations below are minimum shade guidelines for beaches and adjacent reserves. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

sand areas

Consider providing shade to popular sand areas. Long-span lightweight demountable systems are the most appropriate option.

Trees and overhanging built structures located as close as possible to the edge of the beach will provide shade to sand areas, particularly during the afternoon.

Facilities for beach inspectors and lifeguards must be fully shaded.

areas adjacent to beach

Shade should be provided at adjacent reserves, particularly towards the beach side. Refer to the section on Parks and Reserves in this chapter.

Shade is recommended for queuing areas at kiosks. Built shade, eg a broad awning, is the most appropriate option. Awnings should be of a sufficient size to cater for capacity crowds.

Shade is recommended over picnic tables and other areas where refreshments are consumed, particularly during the middle period of the day. Where possible, ground surfaces surrounding these areas should reflect minimal levels of UVR, heat and light.

Sports grounds and facilities

Sports grounds and facilities are traditionally characterised by wide open spaces with little or no shade. As a result, people participating in or viewing activities at these venues often have little choice but to endure exposure to solar UVR for long periods of time. Thus the need for shade is generally high.

The provision of sufficient UVR protective shade at these facilities is therefore an issue that needs to be considered by owners and managers. Apart from contributing to the health and safety of spectators, officials and players, the increased comfort levels afforded by a well-designed shady environment are likely to encourage patronage.

It should be noted however that as shade can never provide total UVR protection, spectators and participants (where possible) should also be encouraged to adopt personal sun protection measures, ie wearing sun protective clothing, hats, sunscreen and sunglasses. Signage reminding people of these strategies, as well as the need to take particular care between 10am and 3pm, could be erected. Sun protection messages could also be broadcast over the public address system.

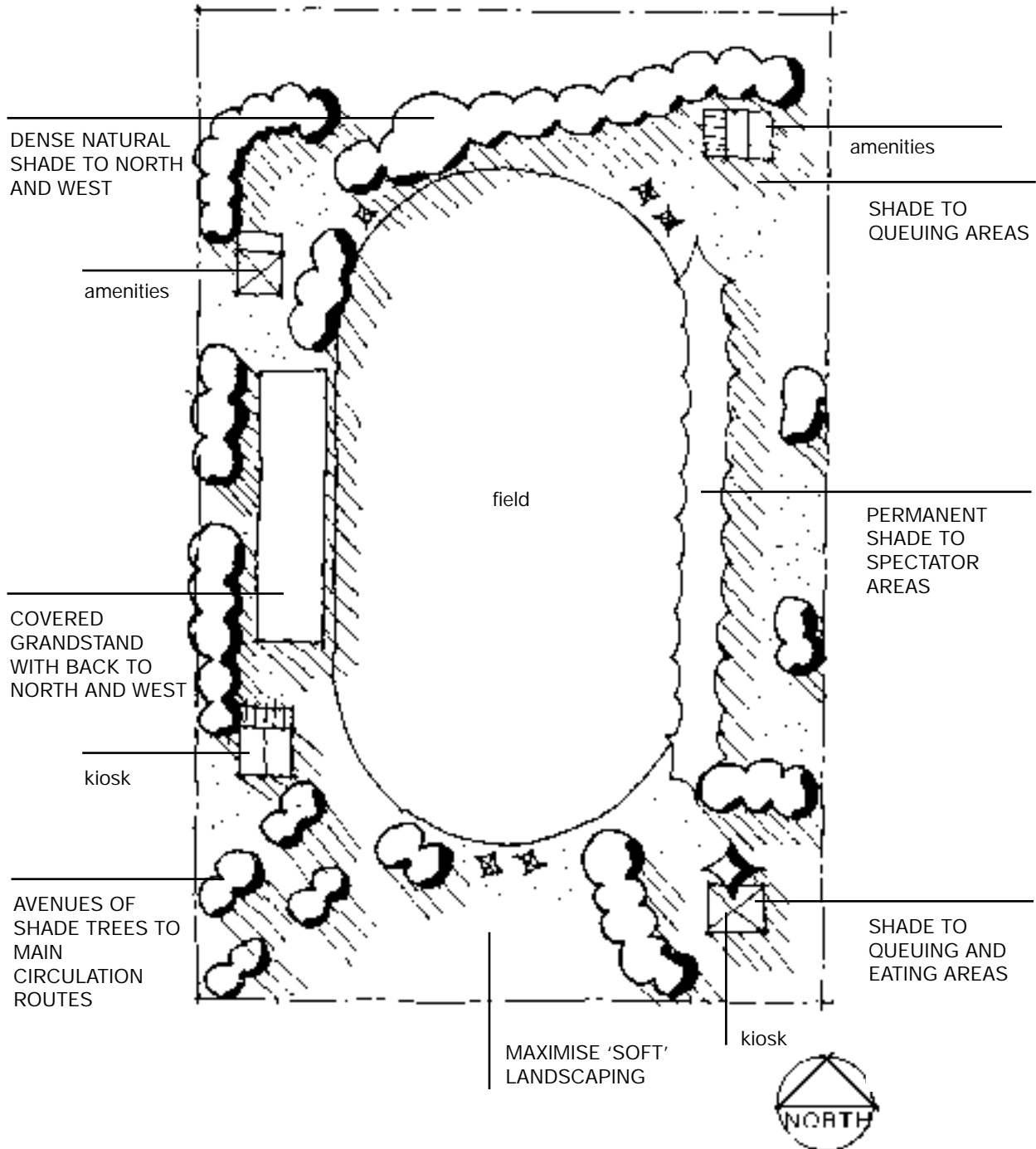
It should also be noted that in regard to employees and volunteers, eg groundspeople or sports officials, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade at a sporting field



planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for sports grounds and facilities.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered eg fixed seating could be relocated to a shaded area.

site usage patterns

It is important to take into account the usage patterns at the grounds/facility, particularly the time/s of day and year it is most in use. Sufficient shade should be available at the times of heaviest usage, particularly when UVR levels are at their peak.

For example, if games are usually played in the afternoon during summer, shade should be available at this time of day. To achieve this it may be necessary to supplement permanent shade with demountable structures.

Generally there are a number of areas of different use within a sports ground/facility including:

- spectator areas
- playing/competition areas
- refreshment areas
- entrance zones and pedestrian links.

While each area has its own shade requirements, they should be considered within the context of the whole site. Regardless of the scale of the facility, it is essential that shade is provided for players, officials and spectators.

major events

Providing shade is very important for major events, eg football grand finals, where people are often at the sports ground/facility all day. Demountable structures can be used to provide additional shade over spectator areas, as well as the sideline areas for participants and officials. Site management could offer the use of such structures as part of ground/facility hiring packages.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the sports ground/facility is situated, as well as any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions.

The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site.

Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting surfaces for the sports grounds/facilities. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. Generally, an approach which combines both built and natural shade is preferable.

approval

Local councils may require development approval for built shade structures.

natural shade

Natural shade should be a major element of shade provision for areas within sports grounds/facilities. Trees with dense foliage and wide spreading canopies provide the best protection.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots.

If natural shade is the long term favoured option for areas within the grounds/facility, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into play and circulation areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

sightlines

Shade structures should not obstruct spectators' or officials' views of the sports field/competition area.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

demountable structures

Demountable shade structures should only be used to supplement more permanent forms of shade or when it is likely to be several seasons before a shade project can be completed. Some demountable structures, eg umbrellas, offer limited protection. Umbrellas also provide limited group space underneath and may be unstable during windy conditions.

rain protection

It may be desirable to provide both UVR and rain protection over areas for spectators, players and officials.

vandalism

As sporting grounds/facilities are often accessible at all hours of the day and night, the risk of vandalism is an issue that needs to be considered.

existing services

The location of shade structures and planting should take account of existing structures, eg drainage, power lines, gas, water.

an additional resource

The Queensland Health publication Shade for sports fields is a useful additional resource. Full reference details can be found under further reading at the end of this section.

recommendations and considerations

The recommendations below are minimum shade guidelines for sports grounds and facilities.

It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

spectator areas

Shade is recommended over all seated spectator areas. Built shade is the most appropriate option. Rain protection is recommended.

Shade is recommended for general spectator areas, particularly the preferred viewing area/s, as this is where people will tend to congregate. A combination of natural and built shade is the most appropriate option. Ideally, all spectators should have the option to sit in the shade. Demountable structures can be used to supplement permanent shade.

Shade should be provided at different parts of the ground/facility as supporters of opposing teams usually prefer to congregate in distinct areas.

Shade should be provided close enough to the action, however structures should not be located so as to create a hazard for players or to obscure views of the playing field/competition area.

playing fields/ competition areas

Players' off-field areas, eg baseball dugouts, should be shaded and if possible, protected from the rain. Warm-up areas should also be shaded.

The area/s where officials are located, eg scoring boxes and umpires' chairs, should be shaded and if possible protected from the rain. In some circumstances personal devices, eg an adjustable umbrella, may be the only viable option.

playing fields/competition areas
continued

Where possible, the on-field areas should be shaded. For example, a tennis court could be covered with a large, clear span structure; each bowling green could be covered with a retractable shade canopy.

The safety of players and officials is an important consideration. Ensure that there is suitable clearance between the edge of the playing field and the support system of the shade structure.

refreshment areas

Shade is recommended for queuing areas at kiosks. Built shade, eg a broad awning, is the most appropriate option. Awnings should be of a sufficient size to cater for capacity crowds. Rain protection may also be a consideration when selecting awning materials.

Shade is recommended over picnic tables and BBQ areas, particularly during the middle period of the day.

Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.

**entrance zones and
pedestrian links**

Consider planting avenues of trees to provide shade over the entrance, main spectator areas and other activity zones.

Shaded seating could be provided at rendezvous points both inside and outside the grounds.

Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.

further reading

- Queensland Health and Department of Architecture, University of Queensland. *Shade for sports fields*. Brisbane, 1995.

Parks and reserves

Parks and reserves

Parks and reserves are used throughout the year by people of all ages, with heaviest usage often coinciding with the middle period of the day, when UVR levels are generally at their peak. Thus the need for shade at these venues is generally high.

It should also be noted that in regard to employees eg gardeners, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

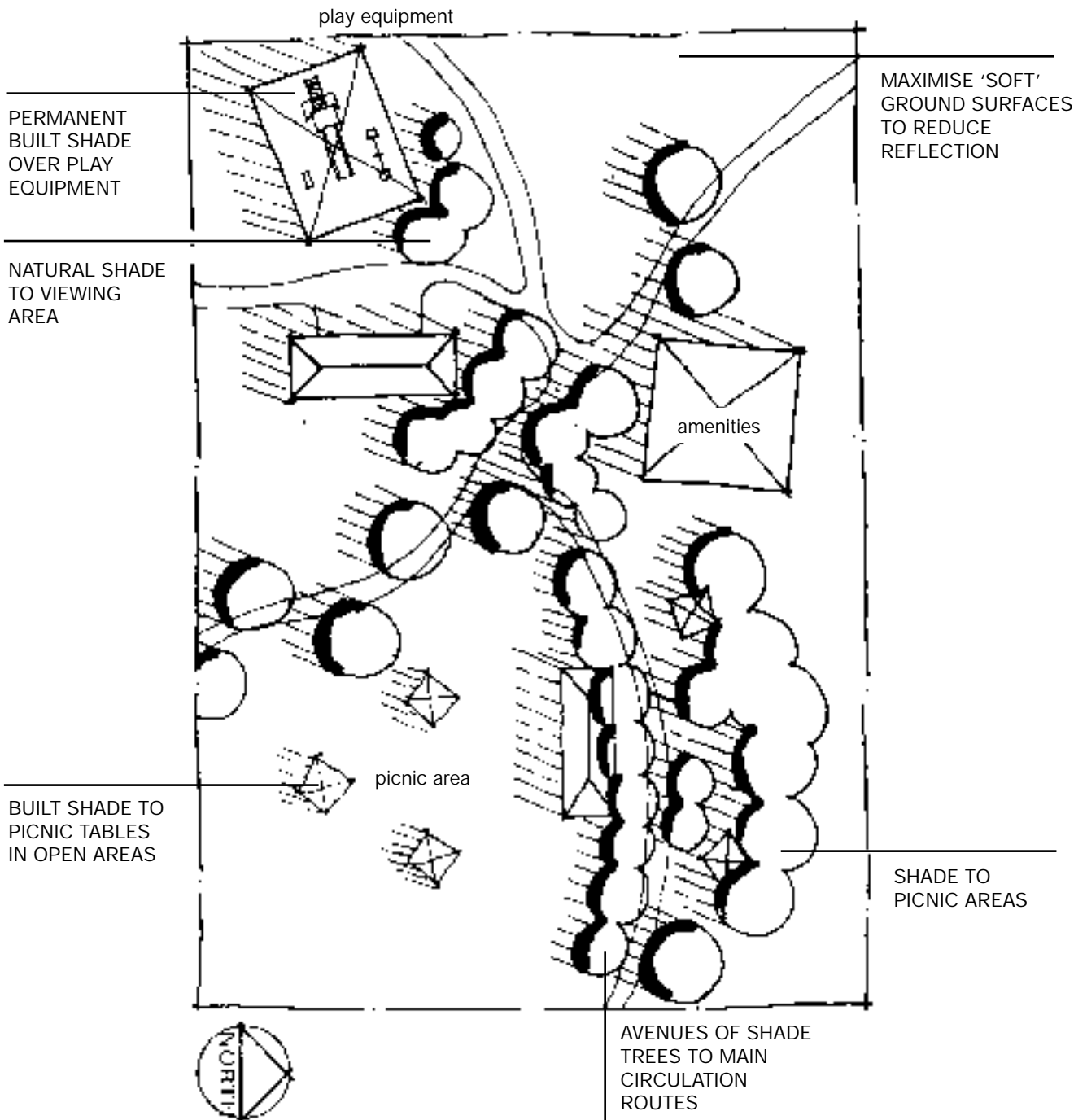
It should be noted however that as shade can never provide total UVR protection, the public should also be encouraged to adopt personal sun protection measures ie wearing sun protective clothing, hats, sunscreen and sunglasses. Signage reminding park users of these strategies, as well as the need to take particular care between 10am and 3pm, could be erected.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade at a park



planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for parks and reserves.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered, eg fixed seating could be relocated to a shaded area, low branches could be removed from trees to allow access.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the park/reserve is situated, as well as any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions.

The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

site usage patterns

It is important to take into account the usage patterns at the site, including the type of activities that occur, where they occur and when they occur. Sufficient shade should be available at the times of heaviest usage, particularly when UVR levels are at their peak.

Generally there are a number of areas of different use within a park/reserve including:

- open areas
- playgrounds
- picnic and BBQ areas
- playing fields.

While each area has its own shade requirements, they should be considered within the context of the whole site.

active vs passive use

The shade requirements for different areas within a park/reserve will vary according to the type of activities that occur there. For example, in areas where people are sitting in one spot, or where play is confined to a relatively small area, such as a playground, the need for permanent shade over a significant part of the area is high.

In areas where people are active and mobile, eg large grassed areas, it is more difficult to position shade so that it will be effective. Occasional scattered shade however should still be considered for these areas, so that park users have the opportunity to access shade.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for areas within a park/reserve. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. Generally, an approach which combines built and natural shade is preferable.

People commonly visit parks and reserves to enjoy the 'great outdoors'. They will be less inclined to sit in the shade or even visit the park if structures are unattractive, poorly designed or unsympathetic to the surrounding environment.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into circulation and children's play areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

approval

Local councils may require development approval for built shade structures.

natural shade

Natural shade is a major element of shade provision at parks/reserves. Trees with dense foliage and wide spreading canopies provide the best protection.

Species should be selected to suit local soil and climatic conditions as well as the surrounding environment. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots.

If natural shade is the long term favoured option, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

rain protection

It may be desirable to incorporate built structures that offer both UVR and rain protection into the design.

vandalism

As parks and reserves are often accessible at all hours of the day and night, the risk of vandalism is an issue that needs to be considered.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

Parks and reserves

recommendations and considerations

The recommendations below are minimum shade guidelines for parks and reserves. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

open areas

Partial shade is recommended for open areas, especially over grass which needs some sun for growth. Natural shade is the most appropriate option.

Consider arranging planting in clusters so that groups of people can access shade.

Fixed seating should be placed in the shade.

playground

Partial shade is recommended for open areas, especially over grass which needs some sun for growth. Natural shade is the most appropriate option.

Shade throughout the year is recommended over children's play equipment. Generally, a permanent shade system is the most appropriate option. The need for winter warmth and light should be considered.

Seating should be placed in the shade and positioned to allow supervising adults a clear view of children at play.

fixed play equipment	<p>Safety is a major consideration for shade provision over fixed play equipment.</p> <p>Shade structures over fixed play equipment should not have footholds or grip surfaces which would allow for climbing.</p> <p>The roofline of the shade structure should extend at least 500 millimetres beyond the edge of the deck of the play equipment, to prevent child access on to the roof.</p> <p>The roof of the shade structure should allow for a minimum head clearance height of two metres above the deck of the play equipment.</p> <p>Tree trunks and the upright posts of shade structures should be located a minimum distance of two metres away from the most fully extended part of the play equipment, eg the side of a climbing platform or the end of an extended swing arc. This will ensure sufficient freefall zones.</p> <p>Any shade structure in the play area should be designed with reference to AS/NZS 4486.1:1997. See <i>further reading</i>.</p>
picnic and BBQ areas	<p>Shade is recommended over picnic tables and BBQ areas, particularly during the middle period of the day when UVR levels are generally at their peak.</p> <p>Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.</p> <p>Fire safety is an issue that needs to be considered in relation to BBQ areas, particularly when selecting materials for shade canopies and when planting trees.</p>
playing fields	<p>Refer to the section on <i>Sports grounds and facilities</i> in this chapter.</p>

further reading:

- AS/NZS 4422:1996 *Playground surfacing—Specifications, requirements and test methods*. Standards Australia and Standards New Zealand.
 - AS/NZS 4486.1:1997 *Playgrounds and playground equipment Part 1—Development, installation, inspection, maintenance and operation*. Standards Australia and Standards New Zealand.
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General streetscape

General streetscape

The 'general streetscape' includes footpaths and pedestrian thoroughfares, public transport points such as bus stops and taxi ranks and local shopping centres. These facilities are in daily use throughout the year.

The provision of sufficient UVR protective shade at these facilities is therefore vital in the development of a safe public environment. The increased comfort levels afforded by a well-designed shady environment are also likely to encourage patronage of local shopping facilities, as well as increase community satisfaction with these facilities.

It should be noted however that as shade can never provide total UVR protection, the public should also be encouraged to adopt personal sun protection measures, ie wearing sun protective clothing, hats, sunscreen and sunglasses. Signage reminding people of these strategies, as well as the need to take particular care between 10am and 3pm, could be erected.

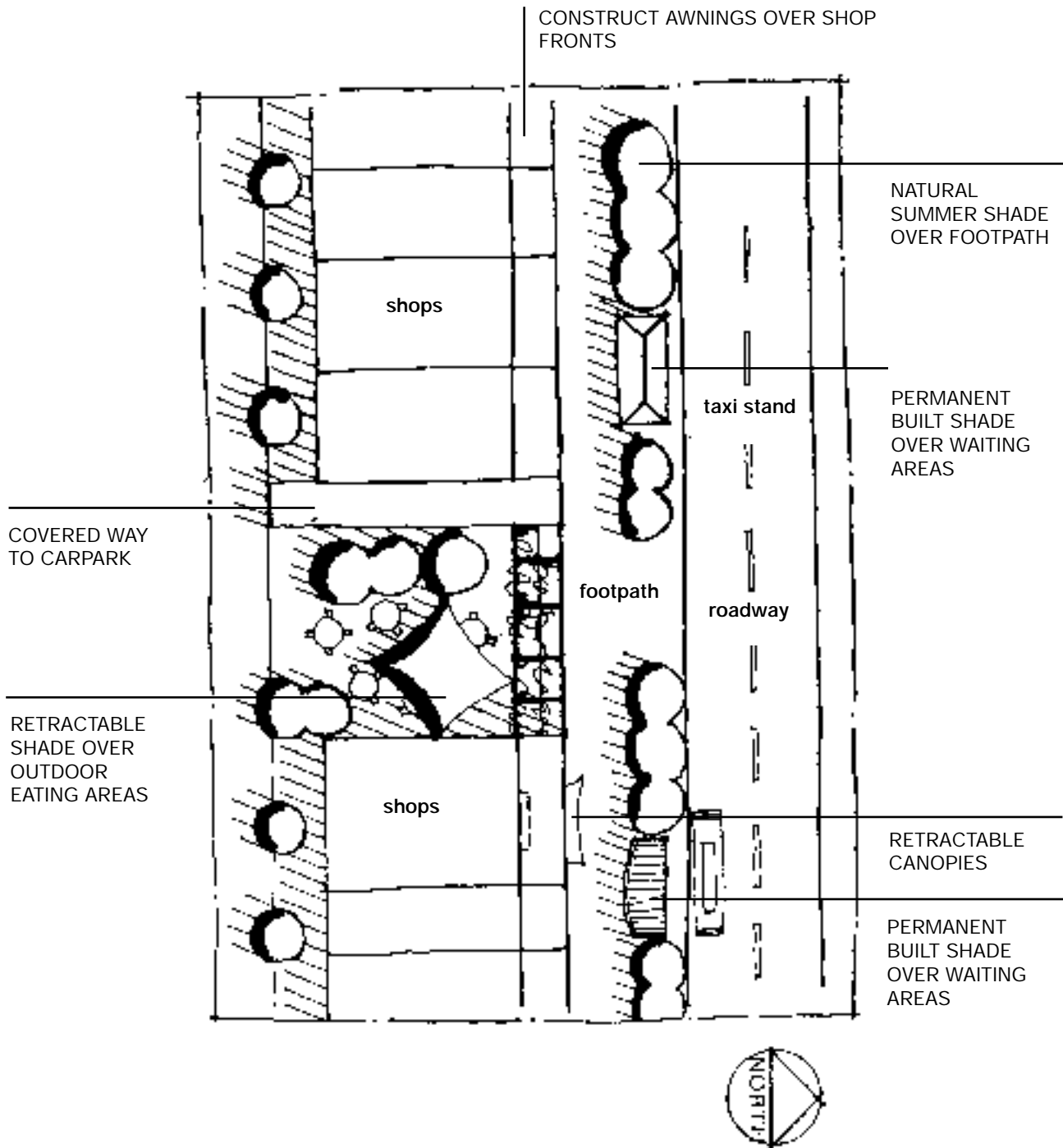
It should also be noted that in regard to employees, eg street cleaners, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade on a general street



General streetscape

planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for the general streetscape.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered, eg fixed seating could be relocated to a shaded area, low branches could be removed from trees to allow access.

site usage patterns

It is important to take into account the usage patterns of streetscape areas, including the type of activities that occur, where they occur and when they occur. Sufficient shade should be available at the times of heaviest usage, particularly when UVR levels are at their peak.

active vs passive use

Some locations within the classification 'streetscape' have usage patterns that involve prolonged exposure to UVR, eg areas where people congregate and linger in one spot, such as a courtyard in an outdoor shopping mall or waiting areas at bus stops and taxi ranks. The need for shade over a significant part of these areas is high and should be considered a priority.

In areas where people are active and moving, eg footpaths, it is more difficult to position shade so that it will be effective. Occasional scattered shade however should still be considered for these areas, so that people have the opportunity to access shade.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the streetscape areas are situated, as well as any local conditions eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions.

The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made at streetscape areas as they are in constant use throughout the year. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site.

Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light. The use of adjustable shade systems and/or deciduous vegetation may provide greater flexibility.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for streetscape areas. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. An approach which combines natural shade with well-designed, high quality shade structures will help to create aesthetically appealing streetscape areas (particularly local shopping centres) that will encourage patronage. One with unattractive, poorly designed structures or which excludes natural shade may have the reverse effect.

approval

Local councils may require development approval for built shade structures.

natural shade

Natural shade should be a major element of shade provision for streetscape areas. Trees with dense foliage and wide spreading canopies provide the best protection. A 2.4 metre head clearance from the ground to the mature tree canopy is recommended.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Root barriers and subsoil drainage will help to ensure that footpaths are not damaged by tree roots.

If natural shade is the long term favoured option for areas within the streetscape, eg a shopping mall, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

built shade safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into play and circulation areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

rain protection

It may be desirable to provide rain protection as well as UVR protection over some streetscape areas, eg bus stops.

vandalism

As streetscape areas are accessible at all hours of the day and night, the risk of vandalism is an issue that needs to be considered.

General streetscape

recommendations and considerations

The recommendations below are minimum shade guidelines for general streetscape areas. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

footpaths

Shade is recommended for footpaths with significant levels of regular pedestrian traffic (at least one side of the street). Shade trees planted at regular intervals are the most appropriate option for residential areas.

Shade is recommended for pedestrian thoroughfares linking areas such as carparks to shopping centres and schools to transport points. Consider using shade trees, planted at regular intervals. Built shade may be appropriate in some locations.

public transport points

Shade throughout the year is recommended for waiting areas at major public transport points, eg at local shopping centres. As rain protection is also desirable, built shade is the most appropriate option. Trees could be planted to supplement the shade for capacity crowd situations.

Shade should also be provided at minor public transport points, eg in residential streets. Consider using natural shade, although where possible built structures that offer both UVR and rain protection should be provided.

local shopping centres

General outdoor areas at local shopping centres require a mix of shade in summer and winter, as well as access to warmth and light in winter. Consider using natural shade as well as built shade for these areas. Shade throughout the year is recommended over specified outdoor eating areas. Refer to the section on *Outdoor cafes, restaurants and beer gardens* in this chapter.

Shade is recommended over areas where people congregate and linger, eg seating areas in shopping mall courtyards.

Business operators should be encouraged to build awnings off their premises. As well as contributing to a shaded walkway for shoppers, this may help to increase patronage, as people will be more inclined to linger in cool, shaded areas outside shop windows.

Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.

Resorts

Resorts are characterised by a mix of specific use areas eg swimming pools, beaches, outdoor sports facilities and outdoor restaurants/cafes as well as surrounding gardens and pathways. Guests will often spend significant amounts of time using these facilities, often during the middle period of the day when UVR levels are generally at their peak.

The provision of sufficient UVR protective shade at these facilities is an issue that must be considered by resort owners and managers. Apart from contributing to the health and safety of their guests, the increased comfort levels afforded by a well-designed shady environment are likely to increase customer satisfaction and even patronage.

It should be noted however that as shade can never provide total UVR protection, guests should also be encouraged to adopt personal sun protection measures, ie wearing sun protective clothing, hats, sunscreen and sunglasses. Signage reminding guests of these strategies, as well as the need to take particular care between 10am and 3pm, could be erected. Information could also be placed in the guests' rooms and sunscreen could be included in the 'mini bar'.

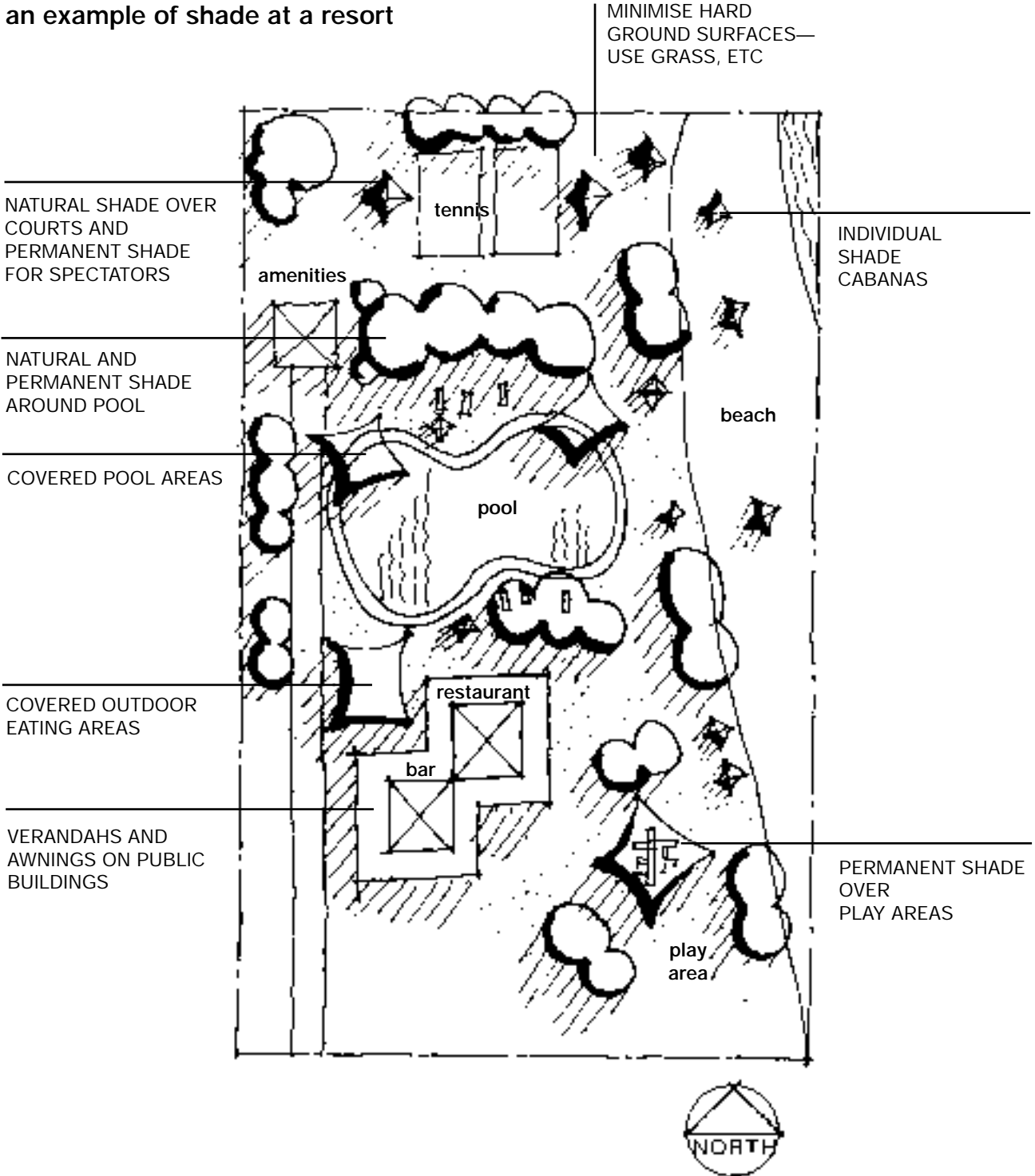
It should also be noted that in regard to employees, eg pool attendants, tennis and golf professionals and gardeners, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade at a resort



planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for resorts.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered, eg fixed seating could be relocated to a shaded area, low branches could be removed from trees to allow access.

site usage patterns

It is important to take into account the usage patterns at the site, including the type of activities that occur, where they occur and when they occur. Sufficient shade should be available at the times of heaviest usage, particularly when UVR levels are at their peak.

active vs passive use

Within a resort, the shade requirements for different areas will vary according to the type of activities that occur there. For example, in areas where people are sitting in one spot, eg outdoor eating areas, the need for permanent shade over a significant part of the area is high. In areas where people are active and mobile, eg large grassed areas, it is more difficult to position shade so that it will be effective. Occasional scattered shade however should still be considered for these areas, so that guests have the opportunity to access shade.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the resort is situated, as well as any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions. The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site.

Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light. The use of adjustable shade systems and/or deciduous vegetation may provide greater flexibility.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for outdoor resort areas. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. An approach which combines natural shade with well-designed, high quality shade structures will help to create an aesthetically appealing environment that will increase customer satisfaction and encourage patronage. One with unattractive, poorly designed structures or which excludes natural shade may have the reverse effect.

approval

Local councils may require development approval for built shade structures.

natural shade

Natural shade should be a major element of shade provision for outdoor areas within a resort. Trees with dense foliage and wide spreading canopies provide the best protection.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. They should also be salt-resistant if the resort is located on the coast. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots. If natural shade is the long term favoured option for areas within a resort, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges and/or padding. They should be placed so as to minimise intrusion into circulation and children's play areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

demountable structures

Demountable shade structures should only be used to supplement more permanent forms of shade. Some demountable shade structures, eg a single umbrella, offer limited protection. The placement of umbrellas in groups may be a more effective way of using these items for shade purposes.

rain protection

It may be advisable to provide rain protection as well as UVR protection over some outdoor areas within a resort, eg restaurants/cafes.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

Resorts

recommendations and considerations

The recommendations below are minimum shade guidelines for resorts. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

swimming pools

Shade throughout the year is recommended over toddler pools and the surrounding supervising area. A permanent shade system is the most appropriate option.

Where possible, shade should be provided over the areas of the pool where people most frequently spend their time while in the water. Consider using a demountable structure or an adjustable system, so that shade can be removed during winter.

Shade is recommended for areas adjacent to the pool, where people relax after a swim. A combination of natural and built shade is the most appropriate option. Sufficient shade should be available to allow most people to access shade. Demountable structures can be used to supplement permanent shade, particularly during summer.

Pool lounges and other seats should be placed in the shade, particularly during the middle period of the day.

Where possible, reduce the amount of smooth and/or hard surfaces around the pool by incorporating natural or synthetic grass.

beaches

Refer to the section on *Beaches* in this chapter.

outdoor dining areas	Shade throughout the year is necessary over outdoor dining areas at resorts. Refer to the section on <i>Outdoor restaurants, cafes and beer gardens</i> in this chapter.
sports facilities	<p>Shade is recommended for general spectator areas, particularly the preferred viewing area/s as this is where people will tend to congregate. Consider using a combination of natural and built shade.</p> <p>Where possible, on-court areas should be shaded, eg a tennis court could be covered with a large, clear span structure.</p> <p>Grass or synthetic grass are preferred ground surfaces as they reflect low levels of UVR.</p>
picnic and BBQ areas	<p>Shade is recommended over picnic tables and BBQ areas, particularly during the middle period of the day.</p> <p>Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.</p> <p>Fire safety is an issue that needs to be considered in relation to BBQ areas, particularly when selecting materials for shade canopies and when planting trees.</p>
pathways	<p>Pathways should be designed to allow people to pass from one facility to another with minimum sun exposure. Consider planting avenues of trees to provide shade over pathways between facilities. Built shade may be appropriate in some locations</p> <p>Shaded seating could be provided at rendezvous points within the resort's grounds.</p> <p>Where possible, ground surfaces should reflect minimal levels of UVR, heat and light.</p>
playgrounds	Refer to the section on <i>Parks and reserves</i> in this chapter.
child care facilities	Refer to the section on <i>Early childhood services</i> in this chapter.

Outdoor restaurants, cafes and beer gardens

Outdoor restaurants, cafes and beer gardens

Outdoor restaurants, cafes and beer gardens are becoming increasingly common and popular. These venues are often at their busiest during lunchtime, when UVR levels are generally at their daily peak. Furthermore, food and drinks can often be consumed over a lengthy lunch, resulting in an increased risk of excessive solar UVR exposure for the patrons of these venues.

The provision of sufficient UVR protective shade at these venues is an issue that must be considered by owners and managers. Apart from contributing to the health and safety of their customers, the increased comfort levels afforded by a well-designed shady environment are likely to increase customer satisfaction and even patronage.

It should also be noted that in regard to employees, eg waiters, employers are obliged under Occupational Health and Safety regulations to protect them from injury by the sun while at work. Under the regulations, employees must cooperate with the measures that their employer puts in place to protect them.

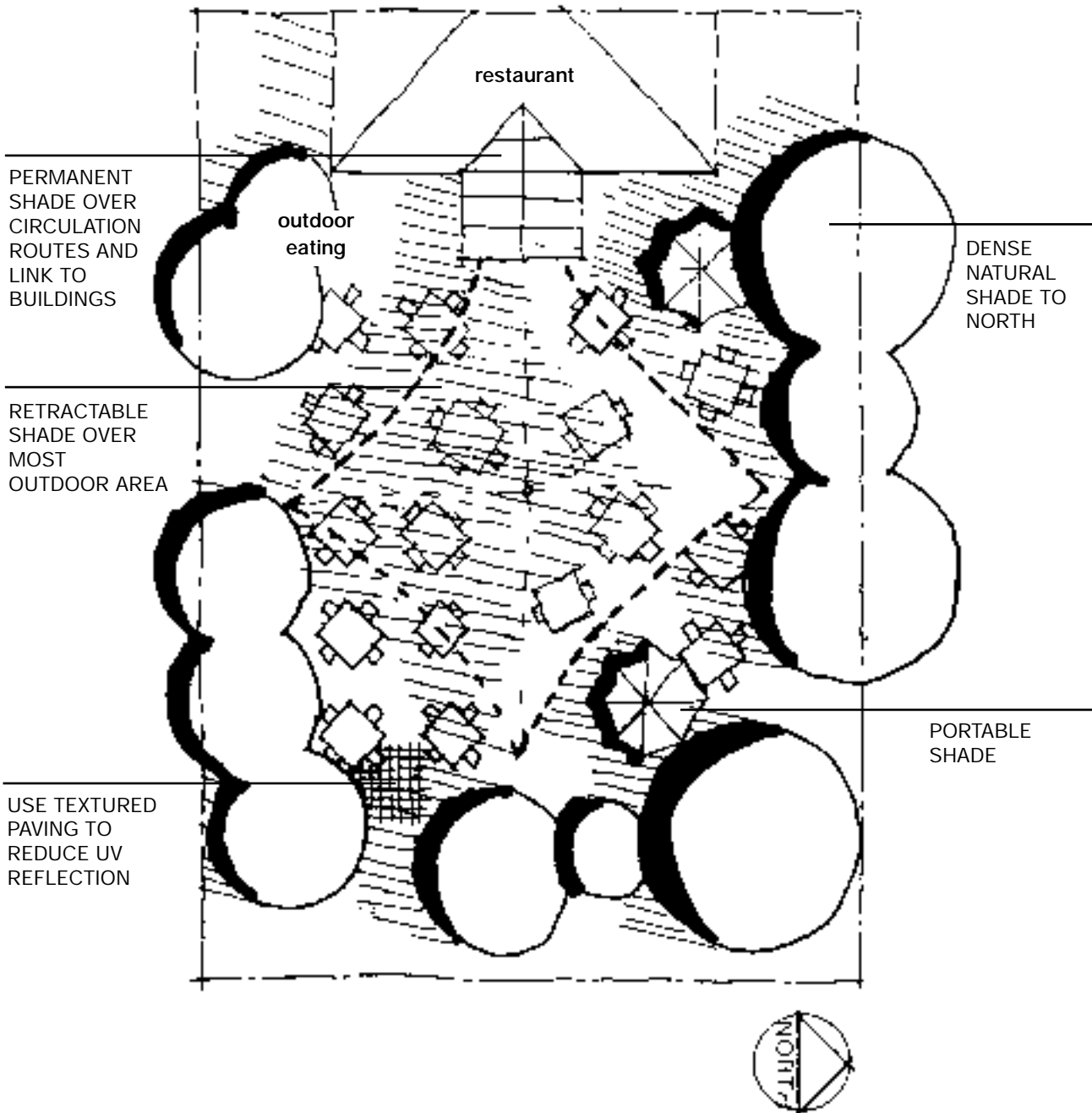
note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

Outdoor restaurants, cafes and beer gardens

an example of shade at an outdoor restaurant



Outdoor restaurants, cafes and beer gardens

planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for outdoor restaurants, cafes and beer gardens.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the outdoor restaurant/café or beer garden is situated, as well as any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions. The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made in most locations across NSW. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site. Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light. The use of adjustable shade systems and/or deciduous vegetation may provide greater flexibility.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for outdoor restaurants/cafes and beer gardens. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. An approach which combines natural shade with well-designed, high quality structures will help to create an aesthetically appealing venue that will encourage patronage. One with unattractive, poorly designed structures may have the reverse effect.

natural shade

Trees with dense foliage and wide spreading canopies provide the best protection. Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots.

If natural shade is the long term favoured option, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded

edges and/or padding. They should be placed so as to minimise intrusion into circulation areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

demountable structures

Demountable shade structures should only be used to supplement more permanent forms of shade. Some demountable shade structures, eg a single umbrella, offer limited protection. The placement of umbrellas in groups may be a more effective way of using these items for shade purposes.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However, unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

rain protection

Built systems that offer rain protection as well as UVR protection will ensure that the outdoor areas of restaurants/cafes and hotels can be used during wet weather.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas and water.

recommendations and considerations

The recommendations below are minimum guidelines for outdoor areas at restaurants/cafes and hotels. It is acknowledged that it may not be possible in the short term to implement all these recommendations due to funding constraints. However, medium term plans should include improvements to summer shade provision as a priority.

Shade throughout the year is necessary over outdoor areas at restaurants/cafes and hotels.

During summer all customers should be able to choose to sit in the shade.

Consider using a combination of natural and built shade, eg a trellis covered with a climbing vine, as it will enhance the visual appeal of the space.

An adjustable built system and/or deciduous vegetation may be preferential, as it will allow for heat and light penetration during the cooler months.

Built systems that offer rain protection should also be considered.

It may be necessary to supplement permanent shade with demountable structures, particularly during summer.

Where possible, smooth and/or hard ground surfaces should be avoided. Coarse surfaces, eg brick pavers, will reflect less UVR.

The home

The home

Many homes have outdoor areas such as backyards, courtyards, decks, swimming pools, play areas and sandpits.

The provision of sufficient UVR protective shade for outdoor areas within the home will contribute to the health and safety of family members (particularly children) and visitors. Well-designed shade will also enhance the aesthetic qualities of the home environment, resulting in outdoor spaces that are both visually appealing and comfortable to use.

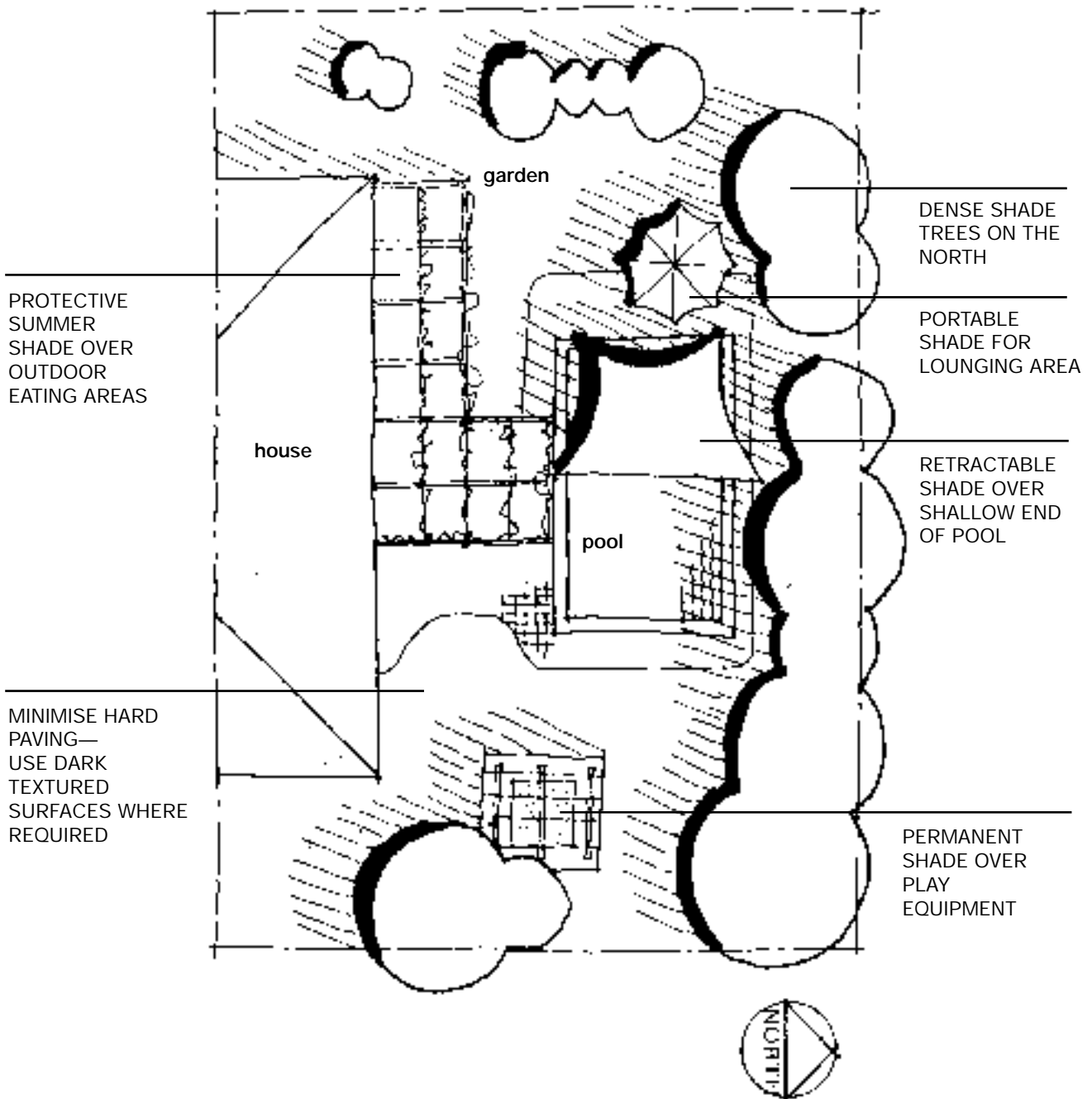
It should be noted however, that shade will not provide total UVR protection. The use of personal protection measures, ie sun protective clothing, hats, sunscreen and sunglasses is recommended. Care should also be taken to stay out of the sun between 11am and 3pm daylight saving time (10am and 2pm eastern standard time), when daily UVR levels are generally at their peak.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

an example of shade at home



planning and design issues

Many of the following considerations refer to concepts discussed in more detail in other parts of this publication. For this reason it is recommended that readers familiarise themselves with the content of Chapters 1 to 5 as well as Appendix C, before considering the specific issues for the home environment.

existing shade

Plans should be made to optimise the use of existing shade before additional shade is considered, eg outdoor seating or play equipment could be relocated to a shaded area, low branches could be removed from trees to allow access.

climatic conditions

It is important to take into account the overall characteristics of the particular climate zone in which the home is situated, as well as any local conditions, eg strong wind. When these are understood it is possible to use design strategies to modify adverse conditions. The effects of local conditions, particularly salt (in relation to corrosion) and wind, also need to be considered in the selection and design of shade structures as well as the selection of tree species.

seasonal considerations

Although summer protection is a priority, provision for winter shade should also be made in most locations across NSW. Care needs to be taken to ensure that new shade initiatives do not intensify winter conditions at the site.

Summer shade provision should minimise UVR levels as well as reduce heat and light. Winter shade provision should minimise UVR levels, while allowing for transmission of sufficient levels of heat and light. The use of adjustable shade systems and/or deciduous vegetation may provide greater flexibility.

indirect UVR

Indirect UVR is an important factor to consider when designing built shade structures and selecting ground surfaces for outdoor areas within the home. Coarse and/or soft surfaces, eg brick pavers or grass, will reflect less UVR than hard and/or smooth surfaces, eg trowelled concrete. Existing surfaces can be modified if they reflect high levels of UVR.

aesthetics

Shade design should aim to be aesthetically pleasing as well as practical. Generally, an approach which combines both built and natural shade is preferable.

approval

Local councils may require development approval for built shade structures.

natural shade

Natural shade should be a major element of shade provision for outdoor areas around the home. Trees with dense foliage and wide spreading canopies provide the best protection.

Species should be selected to suit local soil and climatic conditions as well as the character of the surrounding environment. Root barriers and subsoil drainage will help to ensure that pavements are not damaged by tree roots.

If natural shade is the long term favoured option for outdoor areas around the home, 'short life' built structures, ie with a lifespan of 6 to 10 years, can be used until trees planted for shade purposes mature.

built shade safety

It is important to ensure that shade structures do not create safety hazards. Support systems, eg upright posts, should be clearly visible and ideally have rounded edges. They should be placed so as to minimise intrusion into circulation areas and children's play areas. Where possible guy ropes should be avoided, as they may be a trip hazard.

off-the-shelf structures

In the appropriate situation, off-the-shelf structures can provide a readily available, cost-effective shade solution. However unless a Shade Audit has been conducted, it is difficult to tell if they will meet the site's shade requirements. If the decision is made to purchase an off-the-shelf structure, the issues outlined in Chapter 4 of this publication should be considered.

demountable structures

Demountable shade structures should only be used to supplement more permanent forms of shade. It should be noted that some demountable shade structures, eg a single umbrella, offer limited protection because of indirect UVR.

rain protection

It may be desirable to provide rain protection as well as UVR protection over some outdoor areas around the home, eg decks.

existing services

The location of shade structures and planting should take account of existing services, eg drainage, power lines, gas, water.

thermal control

It is important to consider the year round implications of such components on the thermal performance of a house. For example, within temperate climate zones of South Australia the design intent should be to minimise solar access into the dwelling during the warmer months, and to allow solar access during cooler months. This will require consideration of the size, angle, location and type of external component with regard to windows, glass doors and clerestories, particularly those with a northerly orientation.

The home

recommendations and considerations

The recommendations below are minimum shade guidelines for homes. It is acknowledged that it may not be possible in the short term to implement all these recommendations. However, medium term home improvement plans should include summer shade provision as a priority.

general outdoor areas

Partial shade is recommended for general outdoor areas, especially over grass which needs some sun for growth. Natural shade is the most appropriate option.

If sufficient shade is available at all times of the day, it will allow greater flexibility for children's play.

Planting on the northern, north-eastern and north-western aspects of the site is recommended.

outdoor eating areas, decks and patios

Shade is recommended over outdoor eating and similar areas eg decks and patios. Consider using a combination of natural and built shade, eg a trellis covered with a climbing vine, as it will enhance the visual appeal of the space.

An adjustable built system and/or deciduous vegetation will allow for heat and light penetration during the cooler months.

sandpits and play equipment

Shade throughout the year is recommended over sandpits. Built shade is the most appropriate option. Pull-down screens at the side of the structure will help protect against indirect UVR.

Partial shade is recommended for the area which contains fixed play equipment. Natural shade is the most appropriate option.

The ability to supervise children is an important issue. Inappropriately located trees and shrubs and shade structures with solid and/or opaque sides may obstruct views of children playing.

pool areas

Shade throughout the year is recommended over the relaxation area adjacent to the pool. Consider using built shade, as tree leaves may create ongoing pool maintenance problems.

Pool lounges and other seats should be placed in the shade, particularly during the middle period of the day.

verandahs

Verandahs will provide permanent shade as well as rain protection.

The angle of the roof and the extent of overhang should be designed to maximise shade for the major part of the day, especially during summer.

The width of the verandah should allow sufficient space for activities such as outdoor eating or children's play to occur.

Vertical pull-down blinds at the side of a verandah can provide additional protection from UVR when the sun is low in the sky.

further reading

- Ballinger JA, Prasad DK, Rudder D. *Energy efficient Australian housing*. Canberra: Australian Government Printing Service, 1992.
- Commonwealth Department of Housing and Regional Development. *AMCORD—A national resource document for residential development*. Canberra: Australian Government Printing Service, 1995.
- Planning SA. *Good Residential Design SA: A resource for planning, designing and developing neighbourhoods and homes*. Adelaide, 1999.
- Energy Information Centre. *Building an Energy Saving Home: A guide to Lower Energy Costs and Comfort*. Adelaide, 1995.
- National Office of Local Government. *Australia's Guide to Good Residential Design*. Canberra

The workplace

The workplace

Exposure to solar UVR represents a significant occupational hazard for people who work outdoors. In SA, the Occupational Health, Safety and Welfare Act 1986 obliges employers to protect the health and safety of their employees (as well as others in the workplace). Under the Act, employees must cooperate with the measures that their employer puts in place to protect them.

This means that employees who work outside must be protected against the effects of excessive solar UVR exposure through the introduction of a range of measures including the provision of shade.

It is worth noting that employers who provide an adequately shaded and comfortable work environment are more likely to experience benefits related to increased productivity and enhanced industrial relations, than employers who do not provide such an environment. Furthermore, in most instances, capital expenditure on shade protective equipment for use in the workplace is tax deductible.

General issues

The issues involved in planning solar UVR protection within workplaces are complex, as the places of work and the type of work carried out vary widely. Clearly, outdoor workers are most at risk of over-exposure to solar UVR, however over-exposure can also be experienced indoors, if workers are located near windows and other openings for long periods.

Protection against solar UVR in the workplace should focus primarily on reducing or eliminating the hazard at its source. This is more effective than attempting to equip the individual to combat the hazard.

In accordance with hazard management principles, employers should plan solar UVR protection using a hierarchy of controls:

- firstly, engineering controls to eliminate or reduce risk
- secondly, administrative controls to reduce personal exposure to risk
- thirdly, personal protection equipment when risk cannot be further reduced or exposure avoided.

Consultation and cooperation between employers, employees and employee representatives and the free exchange of information pertaining to health and safety, are essential to the effective implementation of solar protection.

note

It is essential that an assessment of existing shade be made before the planning and design of additional shade commences.

Chapter 5 contains a step-by-step approach to conducting a Shade Audit, as well as advice on managing a shade project.

recommendations and considerations

engineering controls

The National Standard for Plant [NOHSC:1010 (1994)] requires designers, manufacturers and suppliers of plant as well as employers, to identify, assess and control risks associated with plant and equipment. Where the operation of plant or machinery exposes the operator to excessive doses of solar UVR, appropriate protection should be provided in compliance with the Standard. This Standard is currently being incorporated into occupational health and safety laws in the various States and the Australian Capital Territory.

Where a job involves the use of large-scale, mechanical equipment, protective shade should be provided, for example:

- tractors, cranes, road-making equipment and the like should be fitted with transparent anti-glare UVR protective material surrounding the cabins
- trucks should be fitted with shade annexes to provide shaded work and rest areas
- boats should be fitted with shade canopies and awnings.

Demountable shade structures should be provided where work cannot be undertaken in a location protected from solar UVR. Structures can range from an adjustable umbrella, to a simple awning, through to a demountable structure covering an area under construction. In many cases, these structures may need to be designed to cater for the individual requirements of work activities. Some structures may offer commercial benefits by permitting work to continue during periods of wet weather.

If complete shade protection is not possible for a given job, as many tasks as possible should be undertaken within the shade.

Adequate shade should be provided over outdoor lunch/tea break areas and meeting places, especially at times when UVR levels are high, ie during the middle period of the day.

In remote areas or on building sites, a caravan with a shade annex should be considered for shade provision during work breaks.

In many situations, the necessary skills required to construct suitable shade structures may be available within the existing work force.

This will increase the accessibility of shade and reduce its cost.

The workplace

administrative controls

Where possible, work should be rescheduled to minimise exposure between 11am and 3pm daylight saving time (10am to 2pm eastern standard time), when daily UVR levels are generally at their peak. Alternatively, workers could be rotated or work shared so that the same people are not always out in the sun.

It may be possible to change where a job is undertaken, eg it could be moved inside or to a shaded location outside. Alternatively, it may be possible to undertake part of a task at a protected location, with only the final stage/s, eg installation, being performed in the sun. Even then, installation could be scheduled outside the period of peak daily UVR.

Where possible, projects should be planned to minimise solar UVR exposure. For example, a builder could adopt different techniques of construction and programming to allow early erection of the roof.

As well as providing shade, this strategy will also provide rain protection, thus avoiding delays caused by wet weather.

personal protection

Outdoor workers should wear clothing, hats and sunglasses that are designed to protect from UVR. Broad spectrum and water resistant sunscreen with a sun protection factor (SPF) of 30+ should be applied to exposed skin and reapplied at least every two hours.

Refer to the documents *Skin cancer and outdoor workers: a guide for workers* and *Sun safety at work* under *further reading* for more information on personal protection equipment.

further reading

- National Health and Medical Research Council. *Occupational standard for exposure to UVR*. Canberra: Australian Government Printing Service, 1989.
 - National Occupational Health and Safety Commission. *The National Standard for Plant* (NOHSC:1010). Sydney, 1994.
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