

Playground equipment and surfacing AS4685 - 2014

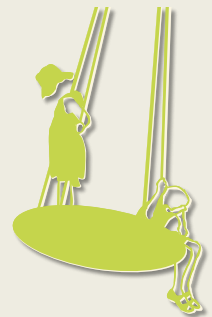
Part 0: Development, installation,
inspection, maintenance and operation
(Revision of AS/NZS 4486.1:1997)

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3 Application

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Application

All (non-residential) playgrounds including associated natural features, built landscape, manufactured equipment and surfacing.



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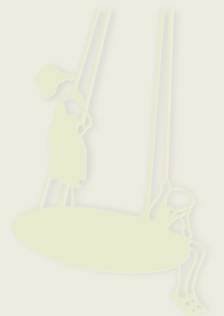


Excludes

- indoor play centres (see AS3533 4.2);
- equipment designed for domestic use;
- sporting facilities; and
- fitness equipment (unless these items are integrated into the playground along with other play equipment).



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Definitions

Shall

Indicates that a requirement is mandatory

Should

Indicates a recommendation

Informative

For guidance only, optional*

(*not defined in the text, this is my interpretation only)



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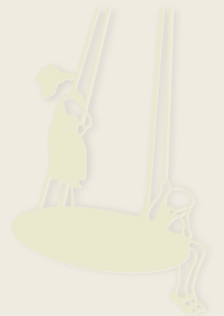
Planning and development considerations

When developing a playground, the design needs to take into account the purpose of the play space, the likely ages and abilities of users, the likely level of supervision, and the potential number of users at any given time. Access for people of all abilities to the playground and to play activities is an important consideration.

Other important factors include the types of other play experiences available locally, the demographic context, the physical, social and environmental site conditions, and the provision of regular maintenance.



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Site Selection

General considerations, including such things as maintenance access, passive supervision, hazards, adjacent residents;

Site conditions, including levels and gradients, trees and TPZs, drainage, easements;

Services, including water, garbage, underground utilities; and

Regulations and covenants, which may include structural engineering certification in some states.



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Purpose

“Every playground should be designed to meet the particular needs of its likely users, whether these are young children in a SECS, school students of various ages and abilities, or members of the general community using a public playground”

“The design should take into account -

- (a) the needs of the children or community;*
- (b) the likely age range, size and ability level of the users;*
- (c) the degree of crowding; and*
- (d) the level and type of supervision.”*



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Provision of amenities and facilities

“The design of public playgrounds needs to take into account the classification of the space and benchmarks and service levels established by any local authorities, where applicable. These typically take into account the site size, catchments and anticipated intensity of use.”

“These will in turn determine the types of amenities and facilities that will be required including paths and levels of accessibility; shade and shelter; toilets; barbeques; drinking fountains; fencing and gates; seating and tables; lighting; and litter bins.”



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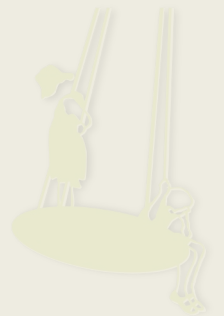


Design for access and inclusion

“Playgrounds should be designed so that people with disabilities and those using mobility aids can enter the playground, participate in a choice of play activities, and use the amenities and facilities on the site. Inclusive design makes it easier for all users including carers with prams, the elderly, children with wheeled toys, and staff and maintenance workers.”



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Selection of play elements (1/3)

Playgrounds should offer a diverse range of play activities, experiences and settings to users. They should offer internal variety and should also vary from site to site.

Playgrounds should offer varying degrees of challenge and usability, to enable children of varying ages and abilities to participate safely at their own level.



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Selection of play elements (2/3)

Playgrounds should ideally include:

- a variety of textures and materials, spatial characteristics and surfaces;
- opportunities for physical movement and challenge;
- for creative/sensory expression;
- for cognitive and imaginative play; and
- for social interaction, role-play, and fantasy.

Landscaping and natural features of a site offer valuable potential play opportunities and the availability of some loose materials for play is important.



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Selection of play elements (3/3)

“The playground should be laid out to avoid conflicts between active areas involving movement and areas for quieter, sedentary activities.”

“The design of the playground should encourage active supervision by adults, through inclusive design and the provision of accessible seating close to the play activities.”



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Nature play (1/3)

AS4685 - 2014 applies to natural play elements, however the standard acknowledges that some requirements may not be practical or desirable to place (eg barriers on a rock).



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Nature play (2/3)

The following requirements should still be addressed:

- Impact attenuating surfacing should be provided for the relevant FHOF and be free of obstacles that could cause injury;
- Entrapments should be avoided; and
- Consideration should be given to preventing easy access to hazardous situations.

NOTE: The use of a risk benefit assessment does not allow designers to simply replace manufactured items with natural elements in an effort to avoid the requirements of the Standards.



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Nature play (3/3)

Playing with branches, pebbles and other loose items offers significant benefit to children, and school and park managers should consider strategies to manage such activities rather than deny them.



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Placement of moving equipment to minimize injury

“Equipment with components that swing or move vigorously, (such as swings, some overhead rocking/spinning equipment, rotating digging equipment, and cableways), offer important and beneficial play experiences to users but can pose a serious hazard to others (especially young children) crossing their path.

These items shall be located out of the main paths of travel within a playground, and shall be located where they do not conflict with more sedentary activities or users. This is particularly important in confined spaces and in SECS.”



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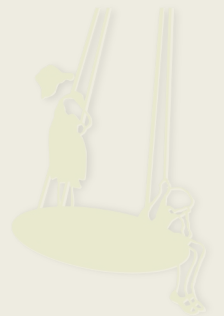


Maintenance access

“From the earliest stages of the design process, the design of a playground should take into account the need for maintenance access to the site and to equipment, surfacing, areas of lawn, vegetation and other features.”



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Plant selection

“Plants are valuable design elements in playgrounds and should be selected for their potential to provide for play as well for their visual amenity; sensory properties; potential for shade; and potential to withstand compaction, extremes of climate and the impact of users.”

“Avoid plants with allergenic properties, sharp thorns, leaves or spikes; poisonous species, or those with foliage, flowers and seeds that cause choking hazards.”

“Avoid species notorious for limb dropping.”



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Shade and sun protection

“Playgrounds should be designed with areas of effective summer shade from either trees or built elements, or both. The design should take into account the reflective index of various surfaces and materials to minimize UV exposure.”

“The availability of some unfiltered outdoor sun all year round is desirable.”

“NOTE: More detailed information on shade and sun protection is provided in Appendix A.”



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Signs

Should include:

- name of the playground;
- the address of the playground;
- a telephone number to contact maintenance;
- guidance for carers on the use of the equipment; and
- anything else relevant.

“Where information relates to the use of the equipment, it should be positive in nature. The use of pictograms is preferable so the message is understandable to all users.”



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Playground surfacing

Avoid:

- *trip hazards* (particularly along paths and circulation routes);
- *protrusion hazards* (including playground edging);
- *toxicity hazards* (eg woodchips treated with hazardous chemicals);
- *eye hazards* (mainly refers to loose fill organic mulch); and
- *inhalation hazard* (including sawdust, clays or fine rubber dust).



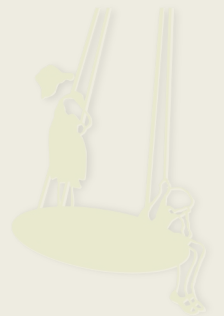
Playground surfacing

Reinforces the requirements of AS4685 - 2014 clauses that:

- No impact attenuation is required below 600mm if there is no forced movement.
- Impact attenuation is required for fall heights greater than 600mm or with forced movement.



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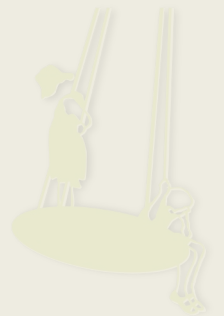
Unitary surfacing (such as artificial grass, wet-pour rubber and tiles)

Artificial grass can be used if installed over an appropriate shockpad.

All surfaces should be swept clean regularly.



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Loose-fill material (such as sand and organic mulch)

Requires maintenance such as regular topping up, raking, de-compaction and the removal of litter, sticks, syringes or other potential hazards.

“De-compaction may not always required for organic loose-fill. Research has shown that the impact attenuating performance of organic loose-fill may not decrease as it decomposes.”

Installed to a depth of at least 300 mm and never allowed to drop below 200 mm.

May be supplemented by unitary surfacing in high traffic areas, avoid edges that may catch feet.



Safety management system

Operation of playgrounds shall include the establishment of a safety management system

The safety management system shall comprise:

- systematic documentation and record-keeping processes;
- the establishment of risk assessment and reporting procedures;
- the training of relevant staff;
- incident and emergency procedures; and
- the carrying out of timely inspections, maintenance and repairs.



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Risk benefit assessments

Operators should consider risk benefit assessment instead of standard risk removal when assessing play elements.

“NOTE: The importance of risk-taking behaviour in childhood has been outlined in AS 4685.1, as well as in the Foreword of this document.”

As SECS playgrounds are constantly supervised operators have more leeway in allowing particular risks. Operators shall consult senior educators before intervening or modifying a playground due to safety concerns.



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Inspections

- (a) *Comprehensive post-installation inspection* – undertaken by a competent person to verify compliance with AS4685 - 2014 and AS4422. May include a risk benefit assessment;**
- (b) *Routine inspection* – a regular visual inspection for wear and tear, vandalism or weathering;**
- (c) *Operational inspection* – monthly or quarterly check for excessive wear and tear, corrosion, edges and protrusions, failing foundations, loose bolts and fasteners, and surrounding assets such as fencing, gates and unsafe tree branches; and**
- (d) *Comprehensive annual inspection* – full compliance check against AS4685 - 2014.**



Regular testing of unitary surfacing

Required before opening the playground to the general public and at least every three years thereafter.

Loose-fill surfaces do not need to be impact-attenuation tested.



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Maintenance

The owner or operator shall ensure that an appropriate maintenance schedule is established, implemented and maintained.

This shall take into account local conditions and the manufacturer's instructions relating to the necessary inspection frequency.

The schedule should list the components to be maintained and should also give procedures for dealing with breakdowns.



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Modifications to equipment

Should generally only be carried out after consultation with the manufacturer or a competent person.

“NOTE: In some circumstances, the person altering existing equipment takes over or shares the legal responsibilities of a manufacturer for the purposes of this standard. It is recommended that advice be sought regarding possible impact on warranties and supplier responsibilities.”



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Equipment not meeting current playground Standards

Equipment installed prior to current Australian playground

Standards shall be risk-assessed by a competent person and unacceptable risks addressed.



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Appendix A

Sun/shade protection

Factors to consider:

- **Built vs natural shade;**
- **Usage patterns;**
- **Local climate;**
- **Seasons;**
- **Indirect UV exposure;**
- **Burn risks from undersurfacing; and**
- **Safe shade structure design.**



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Appendix B

Playground safety checklist

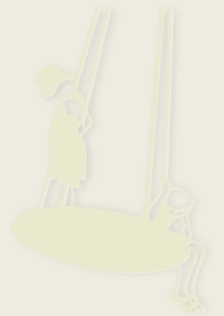
Primarily relates to *comprehensive inspections* –

- standards compliance (eg entrapments);
- wear and tear (mechanical); and
- surfacing (including verifying adequate free space and falling space).

NOTE: Inspections are dealt with more fully in the main body of the standard and have been discussed earlier.



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Appendix C

Risk assessment

5	L	M	H	H	U
4	L	M	M	H	H
3	L	L	M	M	H
2	L	L	L	M	M
1	L	L	L	L	L
	1	2	3	4	5

LIKELIHOOD

CONSEQUENCE

LEGEND:

- L** - Low (1-7)
- M** - Medium (8-12)
- H** - High (13-20)
- U** - Unacceptable (>20)

FIGURE C1 EXAMPLE OF A RISK SEVERITY MATRIX



Appendix D

Examples of Organic Impact-Attenuating Surfacing and Guidance on Pass/Fail Selection





Figure D1 - uniform particle size, few sharps

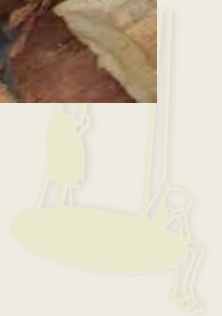




Figure D10 - large pencil-like pieces and sharp points with potential for splintering and puncture injuries



Figure D2 - uniform particle size, few sharps

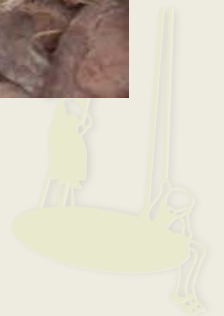




Figure D11 – large pencil-like pieces and sharp points with potential for splintering and puncture injuries

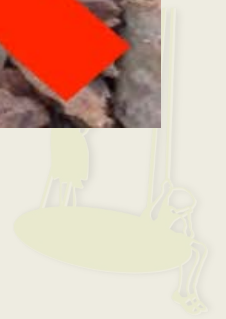
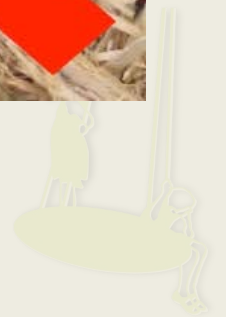




Figure D4 - uniform particle size, few sharps



Figure D9 – many needle-like slender sharps with potential for splintering and puncture injuries



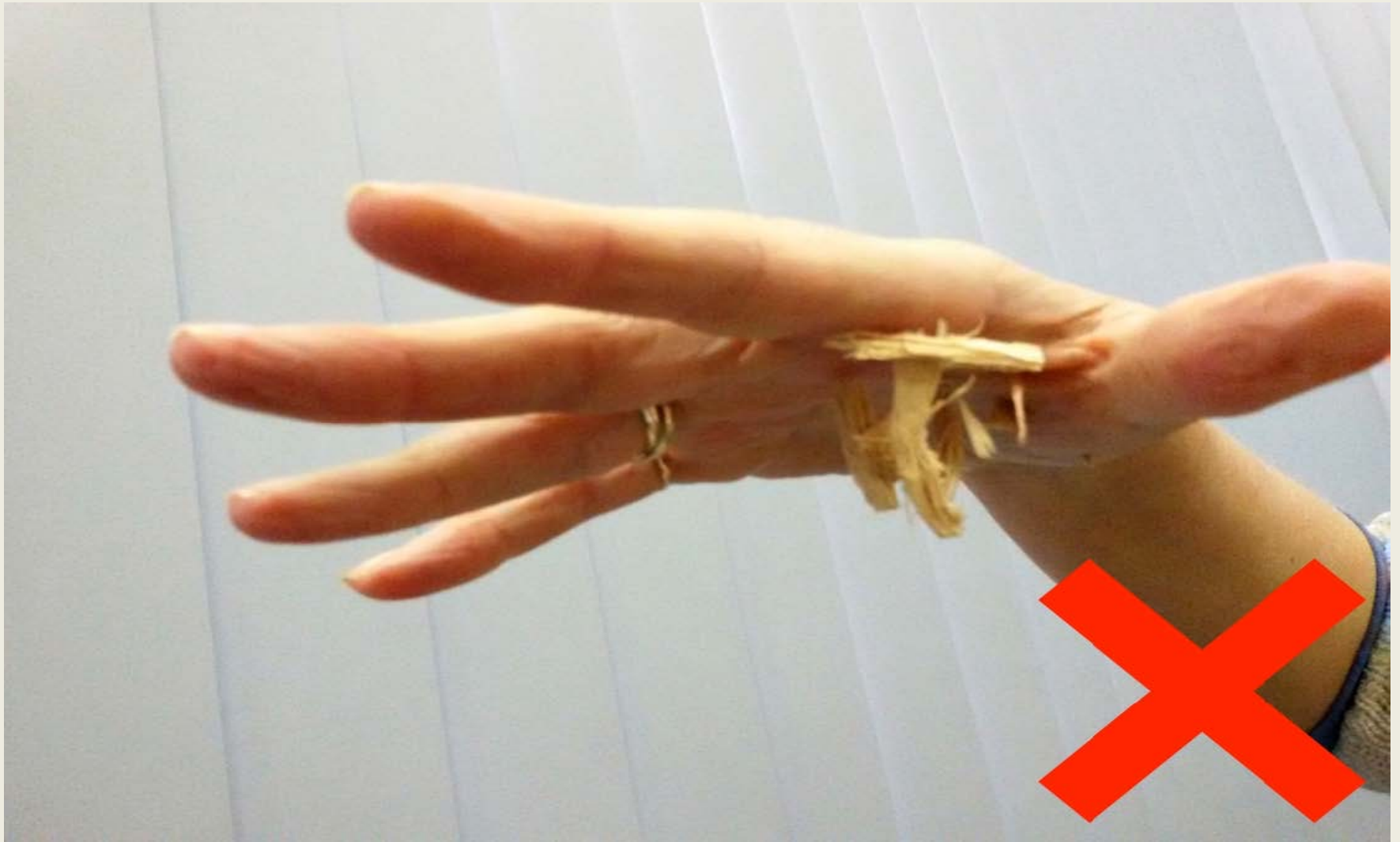


Figure D12 – depicts an example of a unacceptable manufactured wood chip with sharp particles.



Table 4 — Examples of commonly used impact attenuating materials, depths and corresponding critical fall heights

Material ^a	Description	Minimum depth ^b	Critical fall height
	mm	mm	mm
Turf/topsoil			≤ 1 000 ^d
Bark	20 to 80 grain size	200	≤ 2 000
		300	≤ 3 000
Woodchip	5 to 30 grain size	200	≤ 2 000
		300	≤ 3 000
Sand ^c	0,2 to 2 grain size	200	≤ 2 000
		300	≤ 3 000
Gravel ^c	2 to 8 grain size	200	≤ 2 000
		300	≤ 3 000
Other materials and other depths	As tested to HIC (see EN 1177)		Critical fall height as tested
^a Materials properly prepared for use in children's playgrounds ^b For loose particulate material, add 100 mm to the minimum depth to compensate for displacement (see 4.2.8.5.1) ^c No silty or clay particles. Grain size can be identified by use of a sieve test, such as EN 933 ^d See NOTE 1 in 4.2.8.5.2			

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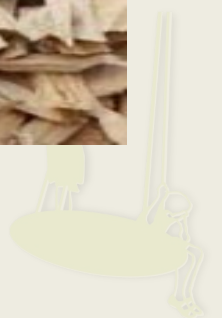




Commercial product 1

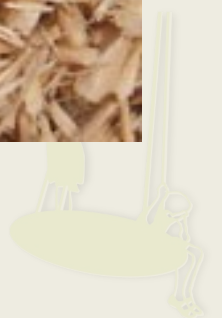


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Commercial product 2





Commercial product 3



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