Designing for Risk & Challenges in Playspaces

Standards and Other Considerations

Current Playgrounds Standards

- AS 4685, Part 0 (2017)
  Playground equipment and surfacing: Development, installation, inspection, maintenance & operation.
- AS 4685, Parts 1-6 (2021) & 11 (2014) / NZS 5828 (2015)
  Playground equipment: Safety requirements and test methods.
- AS 4422 (2016)
  Playground surfacing - specifications, requirements and test method.
- AS 3533.4.2 (2013)
  Contained Play Facilities (i.e. enclosed units within commercial premises)
- AS16630 (2021) not covered in this presentation, but includes many of the principles of AS4685
  Permanently installed outdoor fitness equipment – Safety requirements and test methods.
- AS EN 16899 (2020) not covered in this presentation, but includes many of the principles of AS4685
  Parkour equipment – Safety requirements and test methods.
- AS EN 14974 (2021) not covered in this presentation
  Skateparks – Safety requirements and test methods.

Not legislated so no legal requirement to conform to AS but playgrounds should conform to at least the "Safety Requirements". If an issue falls into a grey area of AS but has been deemed acceptable then put reason in writing, usually based on a risk/benefit assessment.

Scope of AS4685.1

- To specify safety requirements for playgrounds.
- It has been prepared with full recognition of the need for supervision of young children and of less able or less competent children.
- To ensure a proper level of safety in, on or around playground equipment, and at the same time to promote activities and features known to benefit children because they provide valuable experiences that will enable them to cope with situations outside the playground.
- To protect the child from hazards that they may be unable to foresee when using equipment as intended, or in manner that could be reasonably anticipated.

Risk and AS4685

Notes relating to risk listed in the Introduction of AS4685.1

- Risk-taking is an essential feature of play provision.
- Play provision aims to offer children the chance to encounter acceptable risk.
- Exposure to some degree of risk may be of benefit because it satisfies a basic human need and gives children the chance to learn about risk and consequences in a controlled environment.
- Children need to learn to cope with risk and this may lead to bumps and bruises and even occasionally a broken limb.

Other notes on risk

- Play should be as safe as necessary not as safe as possible.
  (Royal Society for the Prevention of Accidents)
- Play opportunities should not be limited by an over-emphasis on the provision of a 'safe' playspace.

Risk and AS4685.0

Forward

- The management of risk in a playground is the responsibility of all involved in the provision of play, including designers, manufacturer and operators. (No mention of auditors!)

Clause 8.2 - Risk Benefit Assessment

- When assessing the risk associated with any particular playground, the operator(s) shall also take into account the context of the playground, its purpose and likely users, and the need for benefit assessment procedures instead of standard risk removal.

Clause 8.5.2 – Comprehensive Post-Installation Inspection

- A playground may be opened if it contains non-conformances that do not present unacceptable risk to the users.

Risk Statement

Given children's appetite for risk-taking, one of the factors that should be considered is the likelihood that children will seek out risks elsewhere, in environments that are not controlled or designed for them, if play provision is not challenging enough. Another factor is the learning that can take place when children are exposed to, and have to learn to deal with, environmental hazards. Play provision is uniquely placed to offer children the chance to learn about risk in an environment designed for that purpose, and thus to help children equip themselves to deal with similar hazards in the wider world.

(Ball, Gill and Spiegal (2008), *Managing Risk in Play Provision: Implementation Guide*, Play England)

Kids Will Take Risks Anywhere

Standards and Landscaped Play

The application of Standards to play design certainly does not inhibit the creation of challenging playspaces, including natural and landscaped elements.

Two important statements in AS4685.1 to consider:

- For falls less than 600mm from non-moving equipment the impact area (fall zone) may be less than 1.5m.
- For this equipment it is not necessary to provide an impact attenuating surfacing beneath or surrounding it.

This allows for the creation of elements such as stepping routes, balance walks, rock embankments, dry creek beds.

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Landscaped Play

Step Route / Balance Walks - Play DMC Recommendations:

- **If significant balance skills not required and less than 600mm high then any surfacing can be used, and items can be clustered.**
- **If significant balance skills required then arrange items in a linear or curvilinear fashion so possible to fall to either side of the direction of travel. Surfacing with some impact attenuation is recommended for items over 300mm high.**
- **Impact attenuating surfacing must be provided for items equal to or greater than 600mm high.**
- **Horizontal gaps between elements should be 150-600mm.**
- **Vertical steps between elements should be less than 400mm, preferably less than 250mm high in most cases.**

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Landscaped Play

Rock Slopes and Mounds - Play DMC Recommendations:

- Mounds and slopes have no free height of fall but it is recommended that slopes >1:2 (~27°) steep have surfacing with some impact attenuation on the slope and at the base.
- Rocks slopes shall have rock step heights <600mm.
- It is also recommended that the height of a rock be less than the step width of the rock at the base of it. (i.e. max. slope angle=1:1 / 45°)

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Embankment Slides - Side Impact Area

- Unfortunately Standards do not clearly indicate what impact area (if any) is required to the sides of an embankment slide that is less than 600mm above the slope, and many instances of rocks and other hard elements have been observed adjacent to slides both in Australia and in Europe.
- Play DMC reckons that to strictly comply with the Standards there should be an impact area to the sides of slide (for at least the free space).
- However on the basis of risk assessment it may be acceptable to have no formal impact area, and certainly this is becoming more common and accepted by Councils in Australia. This can be based on:
  - Slide sides are designed to contain the user, hence children should not fall out.
  - Children can walk or run up a slide, but should be capable of assessing the risk associated with this; and the risk would not be significantly greater than for a child walking/running/climbing up a terraced rock embankment or rubber slope.
  - An alternative of having a rubber slope has its own risk in that it could become slippery when wet or covered with sand. This is especially a concern of older carers / supervisors. Using a terraced embankment could be easier for some people.

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Landscaped Play Examples

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Risk Matrix used by Play DMC

This is based on the International Standard for Risk Management: ISO31000
Organisations may have their own matrix with slightly different risk levels

For each hazard and defect identified in a playground a risk assessment should be undertaken to assist with prioritising works. The following needs to be determined:

- The likelihood of an accident occurring (ie. no chance to highly probable).
- The expected consequences of the accident (eg. minor to permanent injury).

This is then used to determine the **Level of Risk** of the hazard using the matrix shown below.

Likelihood \ Injury Type		Little/None 1	Minor 2	Moderate 3	Serious 4	Permanent 5
Highly unlikely	E (1)	Very Low (1)	Very Low (2)	Low (3)	Low (4)	Moderate (5)
Unlikely	D (2)	Very Low (2)	Low (4)	Moderate (6)	Moderate (8)	High (10)
Possible	C (3)	Low (3)	Moderate (6)	Moderate (9)	High (12)	High (15)
Likely	B (4)	Low (4)	Moderate (8)	High (12)	High (16)	Extreme (20)
Very likely	A (5)	Moderate (5)	High (10)	High (15)	Extreme (20)	Extreme (25)

As assessments of likelihood and consequence are subjective and likely to differ over time and between individuals.

Expected Injury Type Examples:

1 (Little/None) - scratches, pinching, minor bruising
2 (Minor) - surface cuts, major bruising
3 (Moderate) - deep cuts (stitches), hairline fracture
4 (Serious) - full fracture, digital amputation/crush
5 (Permanent) - amputation/crush (non-digital), spinal damage, brain damage, death

Remember: Many risks may be deemed acceptable subject to benefits of play assessment.
Also, in AS4685.0 (2017) there is a statement in Cl.8.5.2 that "A playground may be opened if it contains non-conformances that do not present unacceptable risk to users". This would be subject to risk / benefits assessment.

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