

Playgrounds - A Perspective  
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- aka Poppie Pete, Maddog ....
- A Walk in the Park with my Grand Daughter
- Changing Playgrounds - Whose Playground is it?
- There are Playgrounds and then there are PLAYGROUNDS
- Rapid Review of Shadecloth structures
- Case Studies and Recent Research "Thermal Comfort"

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"Rainbow cup cakes"

As "Poppie Pete"  
A Walk to the Park  
Miss D's Coffee & Cup Cake Shop

- <-At home (left). A small park en-route (above)--> the larger park on the corner (right)
- Age related equipment "pretending" is very real. May have to tell about extinct species!
- Next stop is for a real Baby Chino & 3 marshmallows and a large latte for Poppie

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Proactive sun protection - hat and brolly in case of rain

Adjustable shade/mist protection prams  
Spaces for devices, takeaway coffee etc.

Pack into small volume for EV?

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New style of swings, see-saws, merry go rounds, slides, climbing nets, castles, noughts and crosses, filled in steps - oh boy these kids are lucky.

What! Soft ground to land on!

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You can probably get cup cakes at Maccas - certainly "kids" can use their imagination - and burn off energy in these indoor playgrounds

Source: Internet (Portarlinton left)

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What, all too happy and no takeaway coffee cups ... Probably texting the person next to them!

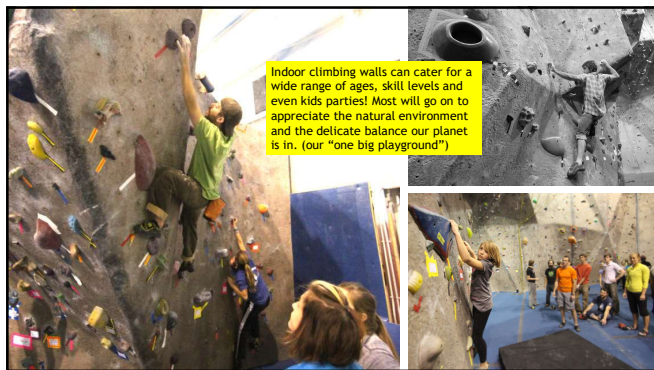
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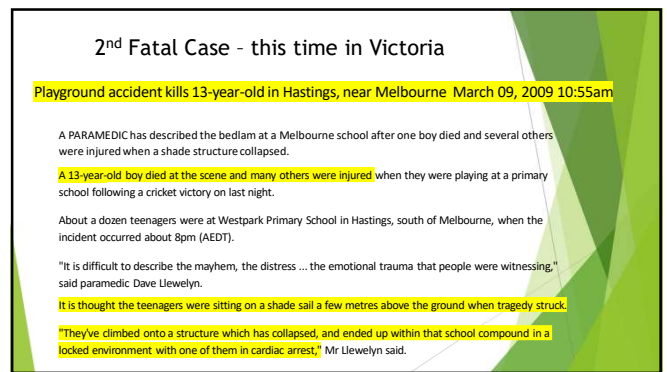
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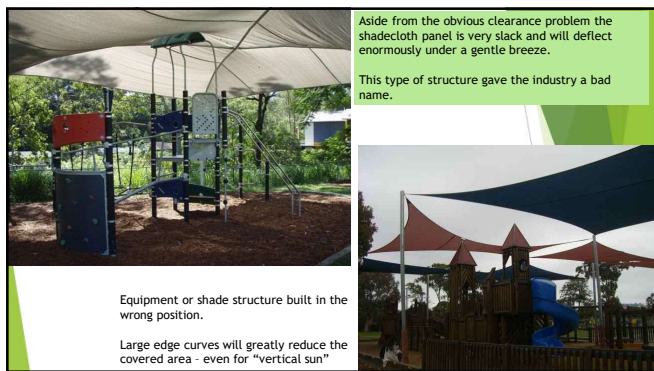
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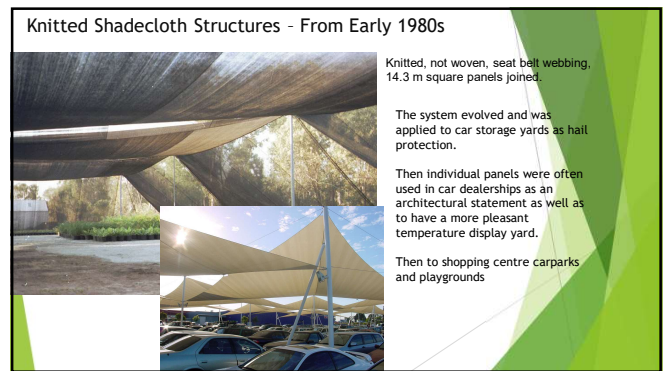
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How do we resolve some of the loads generated?

Many non-engineered supports used inadequate foundations to resist the horizontal loads applied well above ground level leading to failures



**Note:** For playground structures it is now unacceptable to use guyed external masts due to the possibility of people running into them.

Many failures where inadequate footings were provided to resist the horizontal loads on the columns - even just under prestress

Today we only have time to look into the "shade" issue.

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Back to the shade problem - or lack of. Is it fit for purpose? Is the supplier/contractor open to legal action from the client?

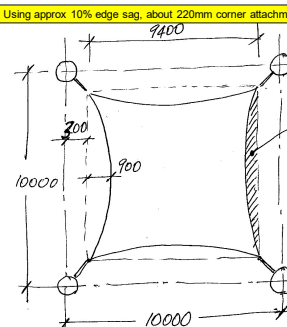


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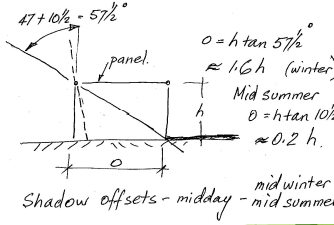
Using approx 10% edge sag, about 220mm corner attachments, 200 dia post → 65% cover !!!



$Area_1 = 10 \times 10 = 100m^2$   
 $Area_2 = 9.4 \times 9.4 = 88.4$   
 $Area = \frac{2}{3} \times 9.4 \times 0.9 = 5.64m^2$   
 Nett Area =  $88.4 - 4 \times 5.64 = 65.8m^2$   
 Hence 65% "covered" by vertical sun.

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Shadecloth has a range of "shade factors" but above 90% is a starting point.



$o = h \tan 57 \frac{1}{2} \approx 1.6h$  (winter)  
 Mid summer  $\theta = h \tan 10 \frac{1}{2} \approx 0.2h$ .  
 Shadow offsets - midday - mid summer

This at least suggests the "sunward" columns be lower than the others.

Joining of adjacent panels at mid-span can reduce the open areas dramatically something to consider instead of extra internal columns

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A sample playground - shading.



Question: would the shading be better with the low point being to the north?

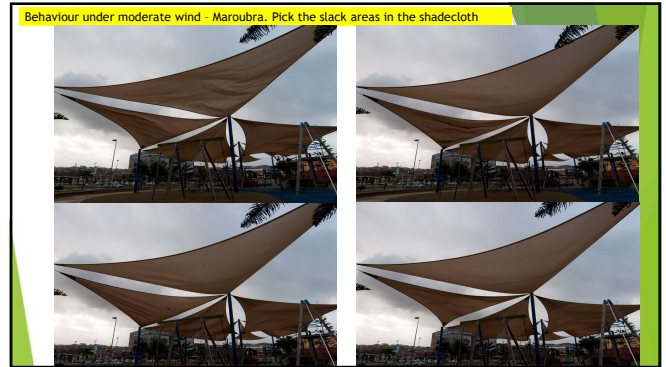
Otherwise good having the circular columns well outside the designated play area and with significant clearance above the "tower".

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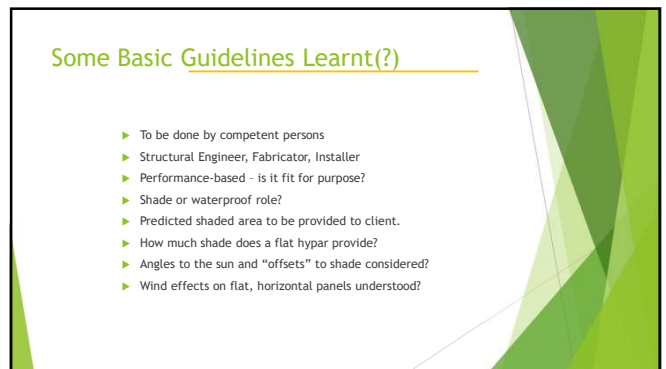
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What Shade - Let's look at 4 "Playground" Entries for the LSAA 2022 Design Awards. We are only looking at the shade and thermal comfort provided.

**Case Study 1 - Navigation Park, Victoria**



Included a stunning play structure, consisting of two towers joined by a tunnel slide.

Clad with brightly coloured steel verticals, the towers certainly catch the eye.

This installation gives the opportunity for plenty of imaginative and creative play, as well as physical activity.

More on the central structure later.

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The Bicycle wheel is a fantastic example of a lightweight structure but as illustrated above the shaded area can be well away from the central support.

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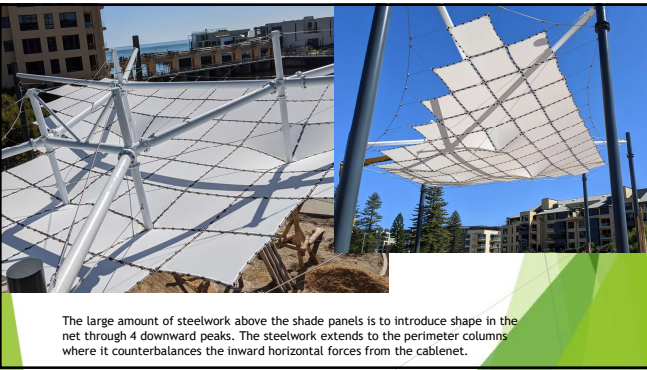
**Case Study 2 Wigley Reserve Playground Revamp**



There was an existing playground with a "pirate" theme and covered with larger shade cloth panels.

Concept Design Drawing, completed structure on left

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The large amount of steelwork above the shade panels is to introduce shape in the net through 4 downward peaks. The steelwork extends to the perimeter columns where it counterbalances the inward horizontal forces from the cabinet.

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Nice looking structure using tension and compression elements. Solved the deflections and access issues but did it provide enough effective shade or an improved thermal condition for kids, parents and temperatures of the equipment?

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### Case Study 3 - M6 Recreation Facility Rockdale

Some newish materials such as laser cut Aluminium sheets and heavy framing to support the playful shade discs. Probably provides a reasonable thermal environment.

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### Case Study 4 - Wellington Square - Inner Perth Park

Situated in East Perth, Wellington Square is one of the largest parks within the City of Perth.

The star attraction is the 3000m2 intergenerational playground Koolangka Waabiny, one of the biggest playgrounds in greater Perth consisting of nature play, a skate park, parkour activities, a flying fox, embankment slides, a pump track, waterplay and climbing towers, as well as basketball courts.

Large areas of the playground are covered by 3 large bespoke shade cable mesh structures with external cantilevered steel posts.

Decorative aluminium and perspex discs attached to the mesh with bespoke clips to provide the shading effect in tribute to our indigenous peoples.

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A large area enables different activities for a wider range of age groups.

The simple playground is becoming an adventure park.

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### Guide to Climate-Smart Playgrounds - Research Findings and Application 2021

- Outdoor play is vital for positive socialisation and development of children including cognitive, psychological, and physiological benefits.
- Playing outdoors increases attention, creative thought processes and problem-solving skills as well as combating obesity, mental health problems and improving social skills of children.
- Encouraging and supporting outdoor play is particularly important today, where the daily time interval children are engaging in physical activity is contracting.
- However, the lack of shade and hot playground equipment make it unsafe for children to enjoy playgrounds in summer.
- This situation is particularly problematic in times where summer heat is increasing as result of climate change, which already limits the time for safe outdoor play.
- Now more than ever is it necessary to start building climate-smart playgrounds.

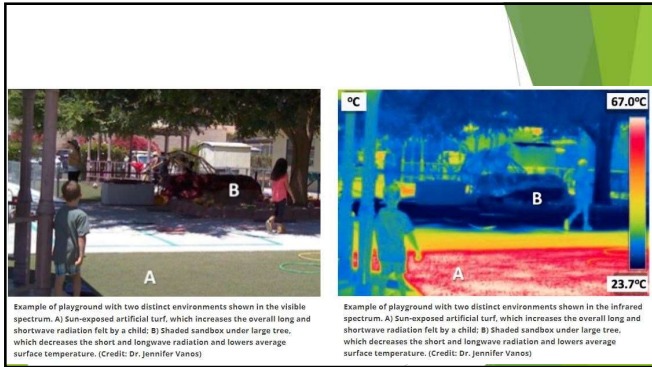
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- This report has two parts. Part 1 establishes the facts around heat in playgrounds. We document surface, air and feels like temperatures in public playgrounds across the Cumberland Local Government Area.
- All playgrounds were visited repeatedly during warm and hot conditions in the summer of 2019/20 and 2020/21. Part 1 also provides systematic analyses of surface temperatures of SBR, EPDM, TPO, synthetic turf and real grass.
- In Part 2 we describe the process, outputs and outcomes of a playground transformation at Memorial Park in Merrylands. The playground is in the Local Government Area of Cumberland City Council in the geographic centre of Sydney.

With support from the NSW Government, Cumberland City Council, industry partners and inputs from a range of stakeholders, we created Australia's first dedicated UV-smart Cool Playground.

Since October 2020, the playground is enjoyed by the local community. Research data showing the avoided heat, improved thermal comfort and reduced exposure to UV-A and UV-B are provided and demonstrate the functionality of the playground.

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### Closure

- ▶ Mental development is important for toddlers who have boundless imagination.
- ▶ There is a vast amount of off-the-shelf components to build interesting playgrounds for young kids.
- ▶ Providing adequate shade cover has been lacking in many playgrounds.
- ▶ More recent criteria for "Thermal Comfort" includes temperatures of ground cover surfaces, the equipment and areas for carers.
- ▶ Very distinct lack of facilities for active people - skateboarders, mountain bikes, physical fitness stations etc.
- ▶ Other "playgrounds" for different needs - all contribute to mental health and wellbeing.
- ▶ Playgrounds including stadiums may have a shorter life - eg The Gabba, Sydney etc.
- ▶ We reviewed shadecloth applications as well as some recent playground structures.

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### Question time - or not.

Several of the images used were from entries into the current LSAA Design Awards to be presented tonight.

Thanks

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