

MPAVILION 2022 BY ALL(ZONE)

EDUCATION GUIDE

MPavilion is an annual initiative of the Naomi Milgrom Foundation that, since 2014, has brought leading architects from Australia and all over the world to Melbourne to design a temporary pavilion for the Queen Victoria Gardens. Each MPavilion hosts a diverse program of free talks, performances, workshops and educational activities and is open daily from November to March.

The ambition of MPavilion is to make architecture accessible as a field of design that is of central importance to the way we experience the world. The architects invited to design each MPavilion are chosen because they are both outstanding in their field and unique in their approach to architecture. This selection criteria has resulted in each new MPavilion being very different from the last in form, materials and building technologies used. At the close of the season each MPavilion is relocated to a new home. You can visit previous MPavilions at locations across Victoria, one is sited on a university campus and another is at the Melbourne Zoo!

How to use this resource

This resource introduces the MPavilion initiative and focuses upon the 2022 edition by Thai architecture firm all(zone), led by design director Rachaporn Choochuey. It is aimed at students in levels/years 3-10 and its content is aligned with Victorian and Australian curriculum descriptors. It is intended as a source of insight for educators to draw upon for use either in the classroom or to help structure an excursion to MPavilion. Each MPavilion has its own dedicated resource and it is recommended that students visit more than one MPavilion to appreciate the contrasts between the designs of different years.



About the architects: all(zone)

all(zone) is an internationally active Bangkok-based architecture, urbanism and design studio led by design director Rachaporn Choochuey, who co-founded the firm in 2009. Choochuey was born in Bangkok, Thailand, and has earned a Bachelor of Architecture from Chulalongkorn University, Bangkok, a Master of Science in Advanced Architectural Design from Columbia University, New York, USA, and Doctor of Philosophy (PhD) in Architecture History from The University of Tokyo, Japan.

The name all(zone) is a reference to the wide range of design projects that the studio undertakes, which includes research, exhibition design, place making, temporary installations and permanent buildings.

all(zone) has exhibited their work at major institutions and exhibitions including the Guggenheim Museum, New York; the Chicago Architecture Biennial, 2015; Vitra Design Museum, 2017; Triennale di Milano, 2018; and Echigo-Tsumori Triennale, 2018. In 2019 Domus magazine selected all(zone) as one of 100+ Best Architecture Firms.

Top: all(zone)

Bottom: Portrait of Rachaporn Choochuey, design director of all(zone).

What is architecture?

Put simply, architecture is the art and practice of designing buildings. A person who practises architecture is called an architect, and to become qualified they must have studied architecture at university. The field of architecture is diverse, including very practical buildings, like hospitals, and also highly creative and expressive ones, like art galleries. And very often, architectural buildings combine both practicality and creativity together.

What is a pavilion?

Generally, pavilions are defined by their use as venues for enjoyment or pleasure-related activities such as art exhibitions, music concerts, or as shelters at sporting events. Ordinarily, people don't live or work permanently in a pavilion and this is reflected in their designs - you are unlikely to ever find amenities such as a kitchen or bedroom in a pavilion. Because pavilions do not need to be functional for day-to-day work or habitation (living), they offer architects unique opportunities to take creative risks and to test experimental designs.

You might already have encountered some examples of pavilions in day to day life. For instance a bandstand in a park, a gazebo in a garden, or a grandstand at a football oval are all different types of modern pavilion. The word 'pavilion' is thought to have developed from the Latin word papilo, meaning tent, and the French word papillon, meaning butterfly. This is because very early examples of pavilions were large tents with extended fabric sections that were reminiscent of the spread wings of a butterfly. Some of the earliest known pavilions built from permanent materials were Chinese and date back millenia - to 1046-256 BCE!

Further exploration:

Investigate these historical and contemporary examples of pavilion design from Thailand and around the world.

- The Flow Multipurpose Pavilion by Department of ARCHITECTURE, Chon Buri, Thailand
- Grid Lines Boundary Pavilion by SIM Studio, Khon Kaen, Thailand
- New York State Pavilion by Philip Johson and Richard Foster, New York, USA
- 80Hz Pavilion by Thomas Wing-Evans, Sydney, Australia

Key design: 2022 MPavilion by all(zone)

The 2022 MPavilion by all(zone) is an atypical (meaning unusual) structure because, unlike most architecturally-designed buildings, its primary building materials are flexible fabrics. Instead of bricks and concrete, it uses layers of netting, fabric waffle and STFE, a sophisticated plastic material that is durable, flexible, transparent and waterproof. The 2022 MPavilion is an example of tensile architecture, meaning it uses specialised fabrics stretched and tensioned in precise ways to create functional membranes that protect from sun, rain and wind. Everyday examples of tensile structures include tents and backyard shade sails. An umbrella is an example of an industrial design that uses the same principles as tensile architecture within an object.

A striking feature of the all(zone) MPavilion is that it has no walls. This might seem strange, or even impractical, until you understand the architect's intentions.

“We (had) just got out from the peak of Covid and lockdown. So what we wanted to do is (move away from a design) defined by rigid walls. ..We imagined that the pavilion will be a place where people can gather, meet, relax and enjoy (...) being outside again. It should be (a) light, soft, colourful, fun, and friendly space without walls... Melbourne (had) the longest lockdown in the world, so this should make perfect sense.”

—Rachaporn Choochuey, all(zone) design director, speaking at the Melbourne University School of Design



The quote on the previous page tells us that all(zone)'s MPavilion design was developed with special consideration for the city where it would be located. The team considered not only the physical environment, but also the emotional and psychological landscape of Melbourne's population. This is an example of how empathy can inform design. all(zone) used empathy to understand Melburnians, then applied that knowledge to design an MPavilion that would offer visitors an experience that was the opposite of lockdown - open, public and social. all(zone) also used vibrant colours, associated with positive emotions and energy, to create a sense of welcome and fun. Another reason for using these colours was to ensure the MPavilion stood out against the predominantly green surrounds of the Queen Victoria Gardens. Because all(zone)'s MPavilion is developed in response to its location, it is an example of site-specific design.

all(zone) and Rachaporn Choochuey researched Melbourne's weather and found out that Melbourne summers are unpredictable, with both hot sun and rain possible. Considering this complex environment, the team developed a design comprising three fabric layers, each of which has a distinct function. The top layer is coloured netting made from thin string. It allows light through, but also displays strong colour, which is an important aspect of all(zone)'s vision. The middle layer is a sophisticated new polymer material called STFE (which stands for Structure, Transparency, Fluorine and Envelope). It is transparent, strong and waterproof, so it allows light through but keeps rain out. The bottom layer is a fabric waffle made from strips of fabric sewn together in a way that resembles honeycomb to create alternating areas of shade and sun. This cuts the heat, but still allows some warmth and light to penetrate, resulting in a comfortable environment.

“The basic shelter (...) acts like a group of big trees which allow sunlight to pierce through the leaves. But the tree is rain proof. In short, it is to celebrate outdoor life in public.”

—Rachaporn Choochuey, all(zone) design director, speaking at the Melbourne University School of Design

This quote reveals that the concept for all(zone)'s design was to mimic the experience of being under a tree. Trees provide shade, but also allow dappled light, so sitting beneath one is neither too cold nor too dark, and explains why people naturally congregate under trees. Because the 2022 MPavilion uses technological and industrial design to adapt processes from the natural world, it is an example of biomimetic design. The word biomimetic has two parts – *bio* which means life and *mimetic* which means to imitate. One reason to choose biomimicry as a design approach is because, in a sense, nature has already solved the challenges that we, as a community of designers, are trying to solve. The 2022 MPavilion by all(zone) mimics a tree, but also improves on nature's design by being waterproof.



Image by John Gollings

“Rachaporn’s architectural approach to ‘the art of living lightly’ and creating spaces with people and the environment at the heart of her practice demonstrates how architecture and design can contribute to creating sustainable, equitable cities.”

—Naomi Milgrom, MPavilion commissioner, on why she selected all(zone) for the 2022 MPavilion

Naomi Milgrom invited all(zone) to design the 2022 MPavilion after hearing Rachaporn Choochuey give a presentation at the 2019 Living Cities Forum. Milgrom was struck by all(zone)’s goal of ‘living lightly’, and how this was reflected in their use of the minimum amount of materials in their designs. This approach marks all(zone) as a sustainability-minded practice, and their consideration of the environment and attention to the people who occupy their designs appealed to Milgrom as a positive and exciting direction for MPavilion.

Fascinating facts:

- In 2016 all(zone) designed Thailand’s first-ever contemporary art museum, MAIAM Contemporary Art Museum, in Chiang Mai.
- all(zone) is a family affair. Rachapun Choochuey, as well as being the managing director, is also Rachaporn Choochuey’s sister. Rachapun handles the business side of all(zone), while Rachaporn is responsible for steering the creative vision.
- When all(zone) were making initial inquiries about what colours they could order the netting for their MPavilion in, the manufacturer asked ‘Well, what kind of fish do you want to catch?’ It turns out, different coloured nets are used to catch different species of fish!



all(zone) MPavilion design process

1. all(zone)'s first step was to generate drawings and models of different design concepts for the MPavilion. These initial designs were small-scale and provisional (meaning for temporary and likely to change). The models used fabric, mesh, paper, bubble wrap, wire and bulldog clips, and the drawings were simple pen and marker sketches. These were presented to Naomi Milgrom, MPavilion commissioner, as options for her consideration.

“...(in) the first set of drawings we tried (to) communicate the ideas of how the form should be the most relaxed, without much tension, so it moves like a tree catches the wind. But (that idea) was too extreme, structurally.”

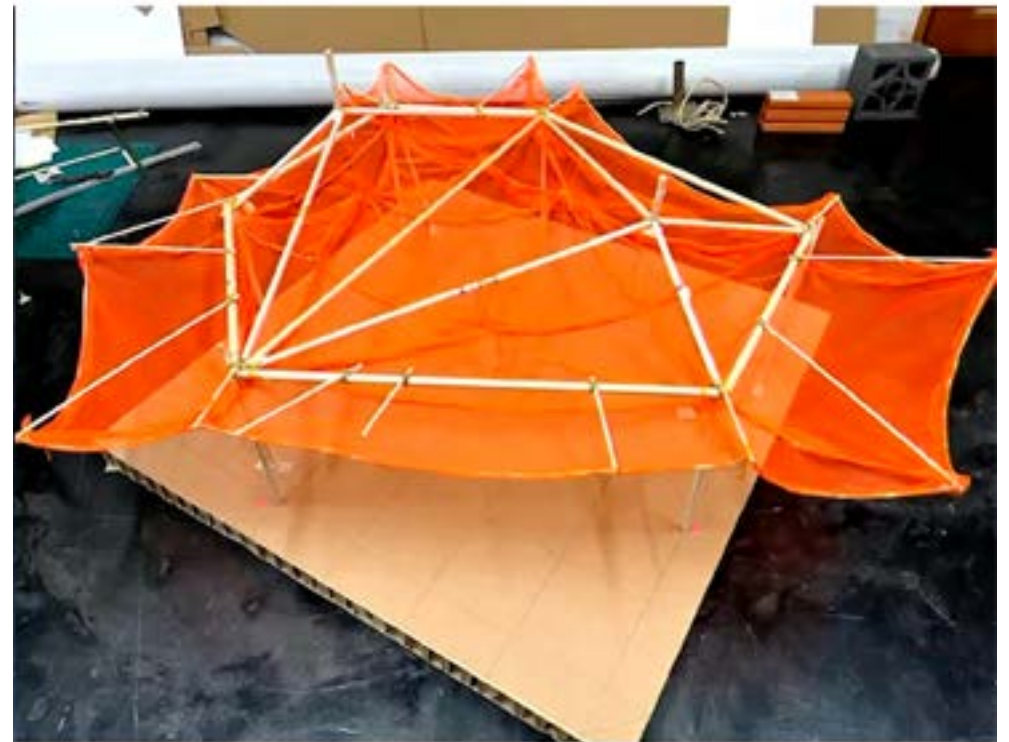
—Rachaporn Choochuey, all(zone) design director, speaking at the Melbourne University School of Design

2. all(zone)'s ambition was to make their MPavilion flexible and responsive to the wind, mimicking a tree. However, creating a pavilion with a high degree of movement proved too extreme to engineer safely. At this point the team changed their approach, retaining aspects of lightness, through the use of fabric as their primary building material, but adopting a steel framed structure that would provide stability and act as an anchor for the fabric.



Model

3. Once the best design was agreed on, all(zone) began road-testing how the fabric elements would work with the structure. To do this they created large architectural scale models. The reason for creating physical models was that the team found digital renders did not give an accurate idea of how fabric would hang and move, so they needed to work with physical materials.

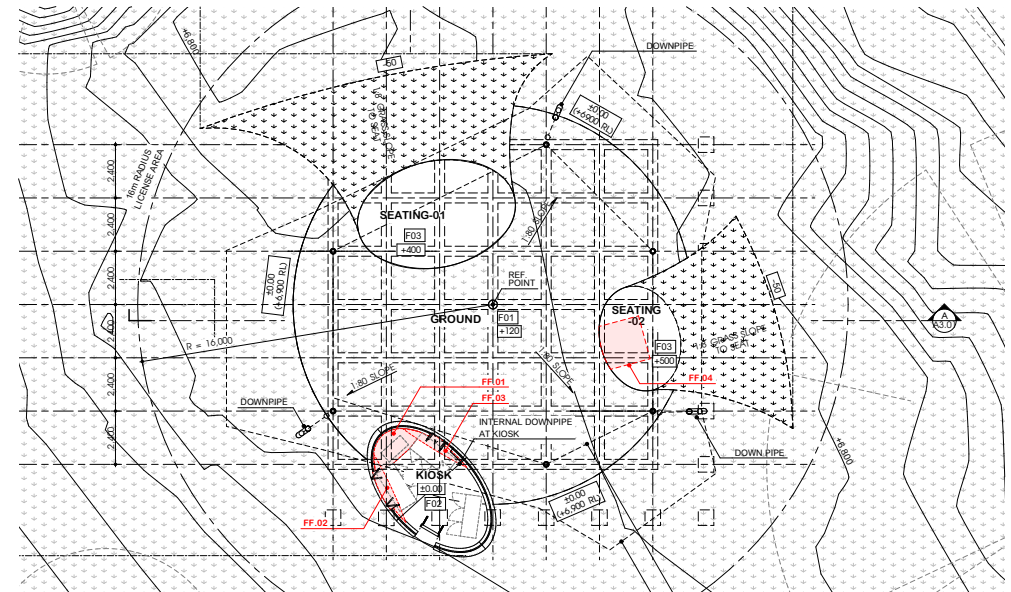


Digital models and renders

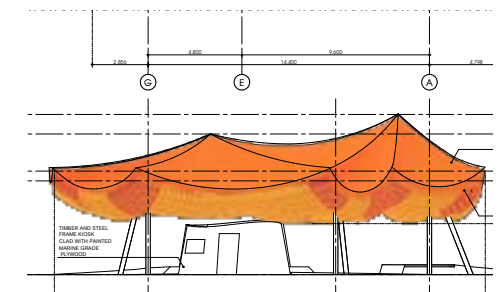
4. The initial plans were translated into high-definition digital renders, set within a digital recreation of the Queen Victoria Gardens. This was an important step because it helped convey how the all(zone) MPavilion would occupy its site. These renderings were also useful for promoting the 2022 MPavilion in the months before the final structure was erected.



Ground Plan



Site Plan



North Elevation

Construction drawings

5. The design was sent to a team of engineers in Australia who made calculations, measurements and notes specifying what materials were to be used and where. This was a complex collaborative task that required frequent meetings between the architect and the engineers.

Fabrication

6. Throughout the process of working with the engineers, all(zone) continued to experiment with fabric. They found that their best strategy was to sew forty-eight segments of fabric waffle that could be inter-connected to create one, continuous plane.



“I always wonder why, if it’s sustainable, it has to be brown. We live in a world where material scientists are doing incredible things with colour, and yet for some reason, sustainable projects always look like they’re made from cardboard with their dull tones and touch of bamboo.”

—Rachaporn Choochuey, all(zone) design director, in an interview with Australian Design Review

Colour was a very important element in the design process. To achieve the vibrant effect they were after, all(zone) worked with netting fabricators, who usually make nets for commercial fishing, who were able to provide netting in the colours that fit the all(zone) concept.

Construction

7. Concrete foundations were cast onsite and then large steel limbs were erected to form the frame of the pavilion. The steel elements were produced in several parts to allow them to be transported from the factory in Tullamarine, on the outskirts of Melbourne, where they were made. The individual parts, like giant steel ribs, were then bolted together onsite. Next, the custom STFE membrane was affixed to the steel frame, using tension to keep the membrane taut.





8. At this stage specialist lighting company Bluebottle installed banks of LEDs (Light Emitting Diodes) that can be controlled remotely to illuminate the MPavilion from inside the fabric layers. This aspect of the design allows the pavilion to remain highly visible and colourful after dark, and for specific coloured environments to be tailored to suit different nighttime performances.



9. The top netting layer was then added, and finally the forty-eight pieces of bottom waffle layer were hung together to form a single, unified layer.

Image by John Gollings

MPavilion commissions

Each year MPavilion commissions designers to produce items of furniture, clothing and packaging to accompany the new MPavilion. In 2022 the commissions include a uniform, a chair and a beer can label.

2022 MPavilion uniform design

Each year a new uniform is commissioned for MPavilion staff to wear. This year's uniform was designed by Safa El Samad, a Melbourne-based artist who has a background in fashion design and is currently studying architecture. El Samad had contributed to the 2019 MPavilion program, and her innovative design is an apron that can convert into a tote bag. It features one of all(zone)'s early design drawings embroidered on the front, and the cornflower blue fabric was chosen to be a complementary colour to the orange of the MPavilion.

“I think of fashion design as architecture for the body.”

—Safa El Samad



2022 MPavilion chair design

Each year an open competition is announced and the winner is commissioned to produce a chair for the new MPavilion. The competition is open to Australian and international designers and this year's winning chair was selected from more than 40 entries. It is named Re-pete and has been designed by Canberra Design Lab, a collaborative team comprising Sam Tomkins, Iain [Max] Maxwell and Ben Ennis-Butler. The name Re-pete is a play on the name of the material it's made from (rPET - Recyclable Polyethylene Terephthalate) and the fact that it is recyclable – should you wish to, you could re-melt the plastic and use it again to print something else! The chair is zero-waste and is produced using robotic printing technology.

“The design tries to do many things, but the one thing we really hope people enjoy is how the stool plays with light as they interact with it.”

—Dr Ben Ennis-Butler



2022 MPavilion pale ale label design

In 2022 for the first time MPavilion commissioned a specially brewed beer for visitors to purchase. This created an opportunity for a new design commission, and Melbourne-based graphic designer Anita Shao was invited to create the wrap-around label. The beer was brewed by local Melbourne company Tallboy and Moose, and they describe it as ‘..summery (...) with tropical fruit flavours.’

“I always research before I start designing anything. all(zone)’s MPavilion is quite triangular and geometric, so I wanted to lean into the structural vibe of it. I also wanted to make sure that it feels summery. (...) colour is a great way to represent a feeling and I thought the use of the gradients would facilitate the mood and vibe of summer. The circles represent the sun and also community. The gradient adds movement to represent performances and the fluidity and energy of the MPavilion events.”

—Anita Shao on her design process and rationale



2022 MPavilion food truck design

For the first time MPavilion served food from its own food truck. This was an opportunity to introduce another design element to the MPavilion site. Melbourne-based graphic design firm Studio Ongarato were invited to design wrap-around graphics that would create unity with the bright colours of the pavilion and the design identity of the MPavilion initiative. Studio Ongarato developed the MPavilion design identity, including its logo, and so they were well placed to extend the visual language to a new context. The food truck's graphic design uses coral, which is the signature colour of the MPavilion brand, and the actual material is magnetised, allowing it to be attached to the truck temporarily. This was necessary because the vehicle was only hired for the MPavilion season. The 2022 MPavilion food truck came about after discussions with Rachaporn Choochuey, design director of all(zone). Choochuey wanted the all(zone) MPavilion to be a place for people to come together and gather, and she recognised that food naturally brings people together and wanted to incorporate the experience of eating into the 2022 MPavilion.



“Our long-standing partnership with the Naomi Milgrom Foundation has seen the studio develop the project since inception. We had the great privilege of creating the identity for MPavilion’s inaugural launch in 2014, creating a series of brand images along with a custom typeface to communicate the concept of ‘a receptacle of many things’: ideas, people, events, collaborations.”

—Fabio Ongarato, Studio Ongarato co-founder and creative director

Relocation

At the close of each season the current MPavilion is gifted to a Victorian organisation, this is to make space for the next MPavilion. Interested organisations apply to 'adopt' each MPavilion and the most appropriate site is chosen. Recipients of MPavilions include the University of Melbourne, Melbourne Zoo and the Hellenic Museum. This strategy means that each previous MPavilion remains available to visit, and Melbourne has also gained access to a diverse collection of architecture by leading architects.

The new location for 2022 MPavilion is yet to be confirmed - please see mpavilion.org for the upcoming announcement of the MAP studio MPavilion's new home.



Image by Casey Horsfield

Inquiry questions:

1. What do the colours of the netting on the MPavilion remind you of?
Do the bright colours make you feel anything?

2. Have you ever been in another building that was made out of fabric?
Why do you think all(zone) designed her MPavilion to use fabric instead of traditional materials?

3. If you could design the next MPavilion, what two colours would you choose and why? What would your colours make visitors feel or think about?

Activity:

all(zone) have designed a pavilion that uses biomimicry to recreate the experience of gathering under a tree - cool, with dappled light and some movement with the wind. Your task is to design your own biomimetic pavilion that adopts the form of a place or thing from the natural world. Consider where people gather in nature, on land or sea, and choose one of these situations to convert into a building. This can be very imaginative, don't get stuck on practical considerations. You could create a pavilion based on the beach, or an iceberg, a coral reef, or a wombat's burrow. Annotate your drawing to show what materials you would use. Make sure you note if your drawing is to scale so viewers understand the size of your design relative to the real world. Include people in your drawing to show how you intend for them to interact with your pavilion.

Excursion tool kit:

- Coloured pencils
- Paper or visual diary
- Hats, sunscreen and water bottles

Inquiry questions:

1. all(zone)'s inspiration for their MPavilion was the experience of gathering under a tree. Looking at the 2022 MPavilion, can you find relationships between it and the form of a tree?

2. The 2022 MPavilion is a site-specific design because all(zone) considered the Queen Victoria Gardens and its audience very carefully before producing their design. How do its materials relate to the gardens? Do you detect harmony or disharmony? And how has colour been used to emphasise the MPavilion within its surroundings?

3. One of the primary aims of the 2022 MPavilion is to create a relaxing space where people can congregate freely. For example, the MPavilion has no walls so it can be entered from any point. This is quite different from conventional buildings that tend to dictate where and how people enter or leave. What are the pros of this choice? What are the cons? Observe visitors, do they interact with the MPavilion in the way the architects intended?

Activity:

Naomi Milgrom commissioned all(zone) to design the 2022 MPavilion because of their ambition to 'live lightly' by creating sustainable designs. One way that all(zone) achieve sustainability is by using the minimum amount of materials in order to have a low impact on the environment. Your task is to create a sustainable MPavilion design. Express this as an annotated drawing or plan. Consider: the origins of your materials and if they are renewable; the lifespan of your building materials; and the energy that would be consumed by your design. For example, a design that does not require air conditioning would be more sustainable than one that does. Also consider the utilities for your pavilion, will it use solar power? Will it catch rain and collect it in a tank? Research how other pavilions in different parts of the world have used material and design solutions to achieve sustainability, experiment with adopting these strategies. Pay attention to the climate of each researched example as this will impact its appropriateness for the Australian climate.

Extension: Working at school, develop your drawing as an architectural scale model.

Excursion tool kit:

- Pens and pencils
- Loose leaf paper, digital device and/or visual diary
- Hats, sunscreen and water bottles

Primary school

Australian curriculum links:

Design and Technologies / Processes and Production Skills:
([ACTDEP015](#); [ACTDEP025](#))

Generate, develop and communicate design ideas and processes for audiences using appropriate technical terms and graphical representation techniques.

Victorian curriculum links:

Design and Technologies Technologies Contexts / Materials and technologies specialisations

Design Technologies / Technologies and Society:
([VCDSTS023](#); [VCDSTS033](#))

Investigate the suitability of materials, systems, components, tools and equipment for a range of purposes; examine the materials and systems used in a public use system that affect the way people live.

Extension materials

- [all\(zone\) website](#)
- [Rachaporn Choochuey of all\(zone\) speaking at Melbourne School of Design](#)

Secondary school

Australian curriculum links:

Design and Technologies Processes and Production Skills / Design and Technologies Knowledge and Understanding:
([ACTDEK034](#); [ACTDEP035](#))

Analyse ways to produce designed solutions through selecting and combining characteristics and properties of materials, systems, components, tools and equipment; Critique needs or opportunities for designing, and investigate, analyse and select from a range of materials, components, tools, equipment and processes to develop design ideas.

Victorian curriculum links:

Design and Technologies / Creating Designed Solutions / Evaluating:
([VCDSTS044](#); [VCDSCD054](#))

Investigate the ways in which designed solutions evolve locally, nationally, regionally and globally through the creativity, innovation and enterprise of individuals and groups; Critically analyse factors, including social, ethical and sustainability considerations, that impact on designed solutions for global preferred futures and the complex design and production processes involved.

Planning your visit

Though the MPavilions change each year, the location remains the same. You can find MPavilion located in the Queen Victoria Gardens, directly opposite the The Arts Centre, on St Kilda Road. MPavilion is open twenty-four hours a day and diverse free programs run back-to-back throughout the season. You can plan your visit to coincide with education-centred events for students and teachers by checking [here](#).

The full-to-bursting program of free events for the general public can also be accessed [here](#).

Next steps

All of the previous MPavilions either have been, or are soon to be, relocated to new locations within Melbourne, and most are available to visit at no cost.

2021 MPavilion by MPavilion by MAP studio is soon to be relocated – watch this space.

2019 MPavilion by Australian architect Glenn Murcutt has been gifted to the **University of Melbourne**. Admission free.

2018 MPavilion by Spanish architect Carme Pinós is soon to be relocated to **Monash University, Frankston campus**. Admission free.

2017 MPavilion by Dutch architects Rem Koolhaas and David Gianotten of OMA can be visited at **Monash University, Clayton campus**. Admission free.

2016 MPavilion by Indian architect Bijoy Jain for Studio Mumbai can be visited at the **Melbourne Zoo**. Ticketed admission.

2015 MPavilion by British architect Amanda Levete for AL_A can be visited at **Docklands Park**. Admission free.

2014 MPavilion by Australian architect Sean Godsell can be visited at the **Hellenic Museum**. Ticketed admission.

Acknowledgements

This resource was devised and written by Andrew Atchison for MPavilion, December 2022.

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