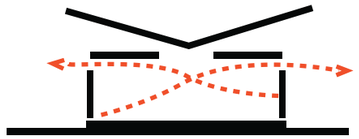
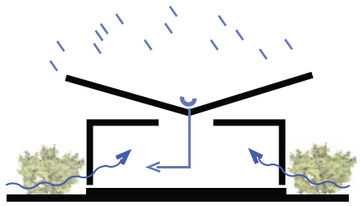
heat extraction



High level openings allow for heat extraction from the classroom

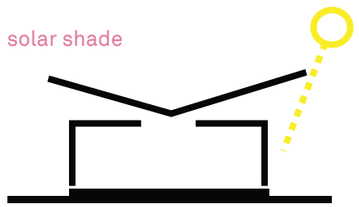
passive cooling + water management



Rain water collection allows maintenance of landscaping to the building perimeter.

Plants can provide additional shade whilst trapping cooler air at night, helping in moderating internal temperatures via internal ventilation.

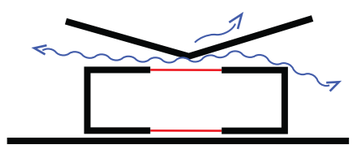
solar shade



The design of the upper roof minimise direct solar gain whilst providing sheltered external min areas.

Eaves to extend to 750mm to east, south and west elevations.

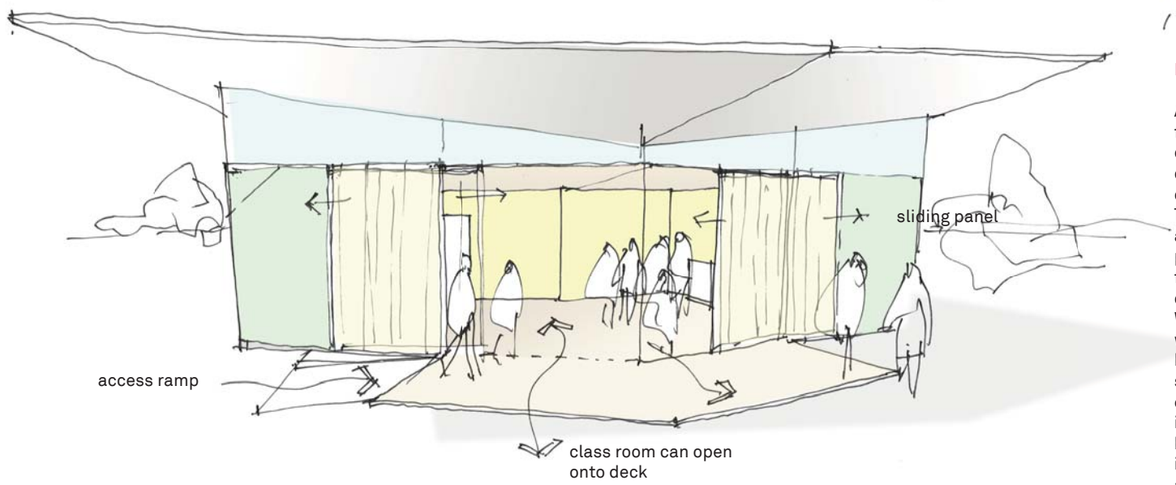
natural ventilation

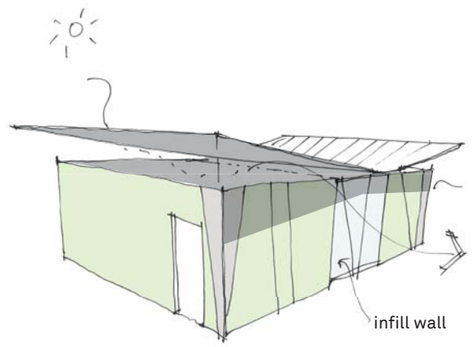


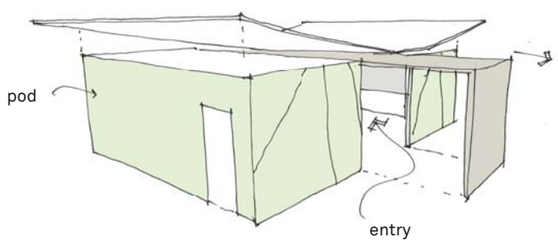
Natural ventilation between the roof structures helps maintain a moderate temperature and minimise solar gain to the classroom

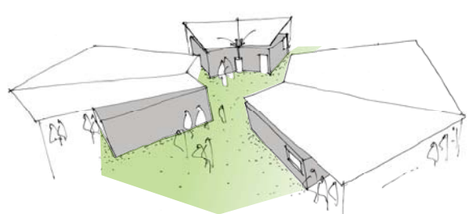
Operable windows to the classroom and high level air vents allow for user operated cross ventilation.

low impact, transportable teaching spaces







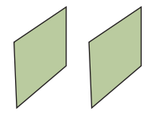


classrooms can be clustered to provide linked shared areas and ‘teaching hubs’

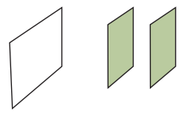
Passive Solar Design

A connectedness with the outdoors throughout the year is a feature of the classroom design and a key consideration in the design of the plan. The flexible infill element provides opportunity to open out onto the surrounding landscape or to create additional semi-outdoor teaching spaces.
The butterfly-roof form overhangs are configured to admit low angle winter sun and shade from summer sun. The concrete pods provide thermal mass. Small south-facing windows facilitate cross ventilation and the necessary “relief valve” to combat over-heating in summer.
Windows are generally awning type allowing for good sealing when closed and to act as large louvres when open. Fabric blinds are provided for additional thermal comfort and to secure warm ambient temperatures on cool nights. Our expectation is that the design will not require complicated intervention by the occupants to enjoy the passive solar benefits of the house. While energy self-sufficiency is an ideal, the classroom will require electricity and power as well as a reverse cycle air conditioner to provide both heating and cooling to supplement the proposed passive controls.

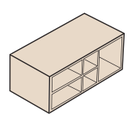
classroom equipment



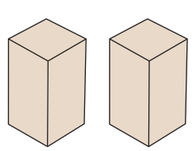
2x 3600mm pinboards



3000 x 1200 mm whiteboard + 1200 x 1200 mm pinboards either side



bench open shelving 3650 x 350 x 900 mm



2x cupboards 1000 x 500 x 2100mm

EchoTMPanel is highly recyclable and also features approximately 60% post consumer waste source from recycled PET bottles, it also acts as an acoustic dampener reducing reverberation within the teaching space.

Birch Multiply is a multi-layer panel manufactured from plantation grown Birch logs.

external cladding options

metal sheet

composite & painted timber weatherboard

fibre cement sheet

lexan polycarbonate (infill)

colorbond

pressed metal

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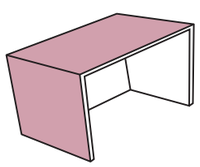
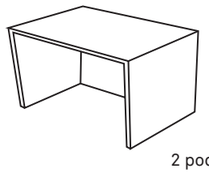
building blocks
prefabrication



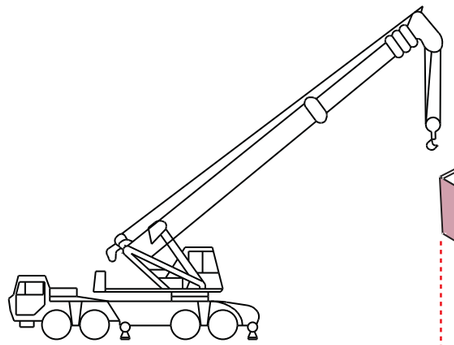


2 pods (6980 x 3480 mm)

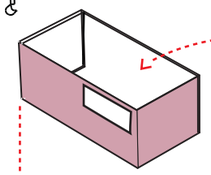
2 pre-cast concrete modules form the basic building structure and primary envelope to the classroom space.

This means that building work on site can be significantly reduced as the modules are delivered to site and then craned into position.

low impact, transportable teaching spaces

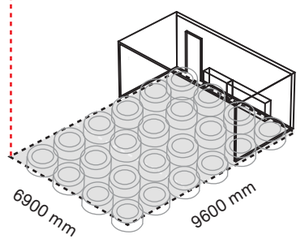


reduced construction time on site
means minimum disruption to the school



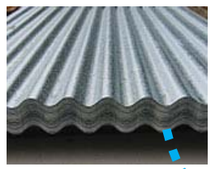
Each module is cast to include window & door openings

Pre-installed servicing and electrical conduits can be installed within the thickness of the concrete walls ready for connection



orientation
careful placement of the classroom to ensure maximum natural light and cross ventilation of teaching space to aid natural cooling

Roofing
The prefabricated pod incorporates a concrete roof which is covered with a series of simple galvanized roof trusses with colorbond roof sheeting.
The air space between the colorbond and pod roof serves to naturally cool the classroom by drawing through shaded air.
Rainwater can be harvested if required by connection of a water tank.



Flooring
Particle board

Particle board flooring provides major cost savings through its economy and through lighter construction allowing reduced foundation cost. Installation times are reduced since dry trades only are involved. Particle board floors offer better wearing characteristics than some other flooring materials because of the dense surface layer.

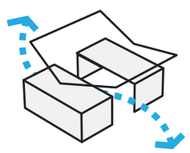
Dalsouple rubber

DalNatural rubber flooring contains over 90% natural ingredients with all the rubber content being pure rubber. Rubber trees qesuester CO2 from the atmosphere. We believe it is the most environmentally-friendly and sustainable resilient floorcovering in the world.

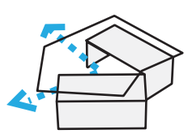
Sub floor
Particle board can be installed over timber or metal joists.

Footing / foundations
Conventional concrete pods/footingsor Low impact alternative using rammed car tyres.

Ram-filled tyres can be placed around the footprint of the building in a continuous line. They are laid directly onto the subsoil, or trench. Once all the tyres are in place, the floor is then laid on top.



option a

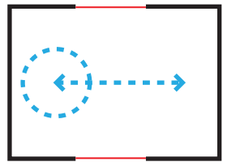


option b

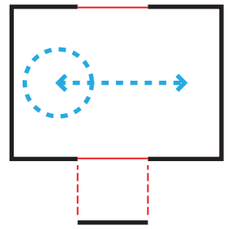
Overview
The primary inspiration for our design is the concept of prefabrication, strongly informed by an indigenous response to the land and climate; an acknowledgement that upward of 40,000 years of occupation of the land resulted in little or no impact on the environment. The idea of touching the ground lightly, of respecting the land whilst providing much needed space for teaching and amenity space for the school. Through prefabrication of the structure and space the design addresses wider issues relating to flexibility, relocation and recyclability.

Construction
The primary structure is made from two concrete precast ‘pods’ which are made ‘off-site’
and delivered to site. These pod units may also include recycled aggregates within the casting process.
The pods are then craned into position onto either a poured floor slab or metal deck which is supported on either concrete pad bearers or preferably rammed car tyre foundations.
The space between the pods is then in filled using semi translucent lexan panels or more conventional stud walls. The building can then be wrapped with a number of different façade options such as painted fibre-cement sheet or painted weatherboarding. Internally the building will not require lining as the concrete pods provide a durable and aesthetic interior finish which can then be painted as required.
Above the pods a secondary corrugated metal roof canopy is supported on lightweight pre-formed trusses.

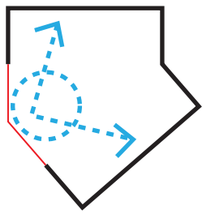
teaching space configurations



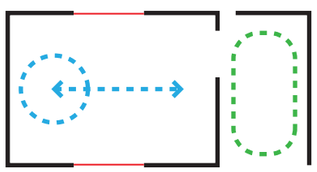
teaching space - conventional space



extending infill wall outward to create an entry space / shade/ wet area



pods rotated to create amphitheatre style teaching space



3 pods combined to form semi-outdoor space

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