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Scholarship 2024

Design and Visual Communication 93602

OUTSTANDING SCHOLARSHIP EXEMPLAR



PANGO PODS

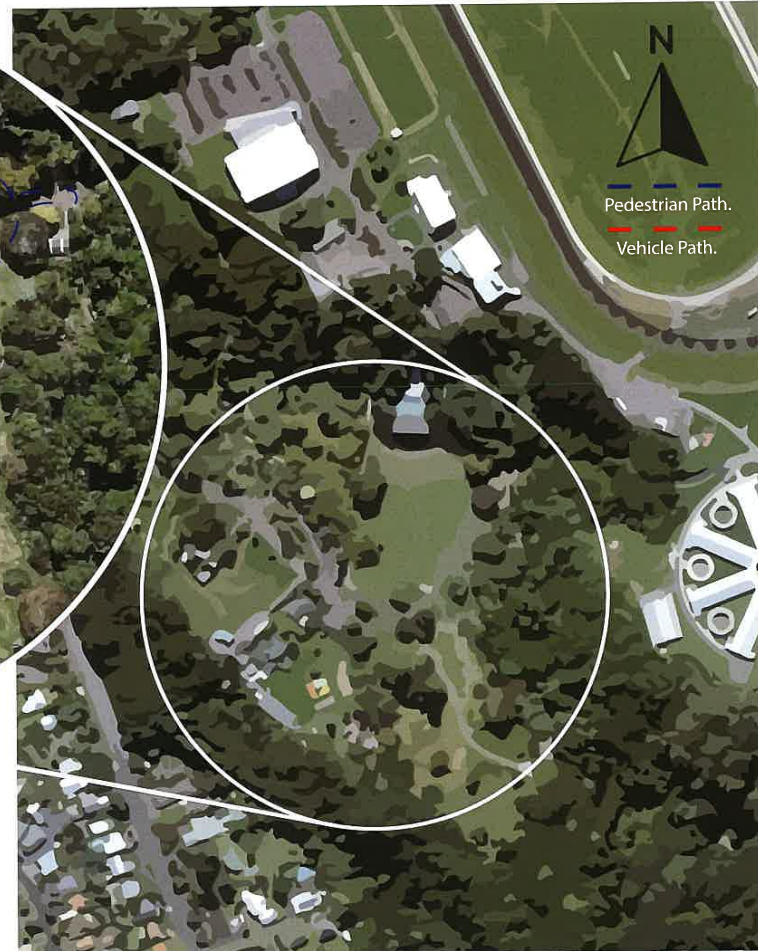
Te whakaruruhau unahi

2024 SPATIAL DESIGN PROJECT

BRIEF.

Pukekura Park, often described as the Jewel in New Plymouth's crown lies in the heart of the city, and is known for its gardens and beauty. Additionally, it is home to Taranaki's biggest and most iconic concert venue; The Bowl of Brooklands, built in a natural amphitheatre with a set stage in a lake. The Bowl of Brooklands and the surrounding area, hold numerous festivals throughout the year such as the well-received international arts festival, WOMAD. Pukekura Park, however, lacks adequate facilities for seating and shelter, particularly for all the varied terrains in the area. A solution to this would be some kind of portable, semi-temporary structure to be set up during these events and other more day-to-day use. Whether for eating food, relaxing, childcare, or taking shelter from unfortunate weather, these structures will provide a positive change to not only the festivities but also the general park experience. Additionally, the setup and removal of the current temporary shelters are often labour-intensive and time-consuming, limiting their practicality for short-term events. This is the main problem I aim to solve.

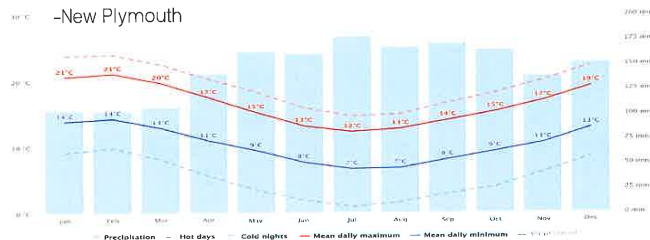
The solution is to design a compact portable shelter that is easily assembled anywhere within the park. The structure should be versatile enough to accommodate both a closed in shelter as well as a eating and seating area. The shelter will be lightweight, made from durable and sustainable materials, and designed to complement the natural and cultural environment of Pukekura Park. By offering a friendly and pleasing design, this shelter will enhance the experience of park visitors and festival-goers, providing them with a convenient and comfortable place to relax and socialise.



Pedestrian Path.
Vehicle Path.



Average temperatures and precipitation
-New Plymouth



Gazebo.

Easily set up
Can be relocated and is portable
No seating space
Flimsy and unprotected in windy conditions
Weak support
Only works on flat terrains



Bus shelter.

Solid walls provide shelter from winds
Stronger support
Seating space available
Is fixed in place so would be permanent
Cramped no tables
because it's permanent its bad looks outweigh its practicality



Standard Table/bench.

No shelter
Fixed in place but use throughout the whole year
Simple and cost-effective
Blends into environment
Vandalism and wear will require maintenance



Purpose.

The design's main function will be to allow for more shelter not only for use in Pukekura Park but also designed to be versatile in any location across the country. The shelter must accommodate seating for at least a few families with plenty of breathing space. When multiple are made and scattered throughout the site these shelters will add a much-needed to the environment, helping people to interact with the space.

Environment.

Pukekura Park thrives with flora and fauna, with the Bowl of Brooklands surrounded by the gardens at the top and all the bush wrapping around. This environment is highly looked after and its sustainability for the future is immensely important not only for the life of the bush but also for humans to visit this beautiful site well into the future. The shelter must take these factors of sustainability and regeneration as well as the environment setting into consideration.

Access.

The shelters could be booked out for use so that they aren't only restricted for use in more exclusive festivals but so their practicality can be utilised by the wider public when exploring the beauty of the park and its gardens. There is plenty of road access to the site making the set-up of these shelters less of an issue.

Opportunities

The site in the park could allow for many uses. The shelters could be designed to serve multiple purposes - such as seating, eating, relaxation, and childcare, which will cater for diverse needs, enhancing the site's functionality as both a park and a festival location.

Accidents often unfortunately occur every year at festivals so these shelters could allow for stationary points for the injured while they wait for medical service.

The site is mostly protected from New Plymouth's prevailing winds from the dense bush protecting the Bowl.

Ensuring the shelter is designed with relatively lightweight and easy to assemble will help with the practicality and efficiency of the set-up before festivals throughout the year.

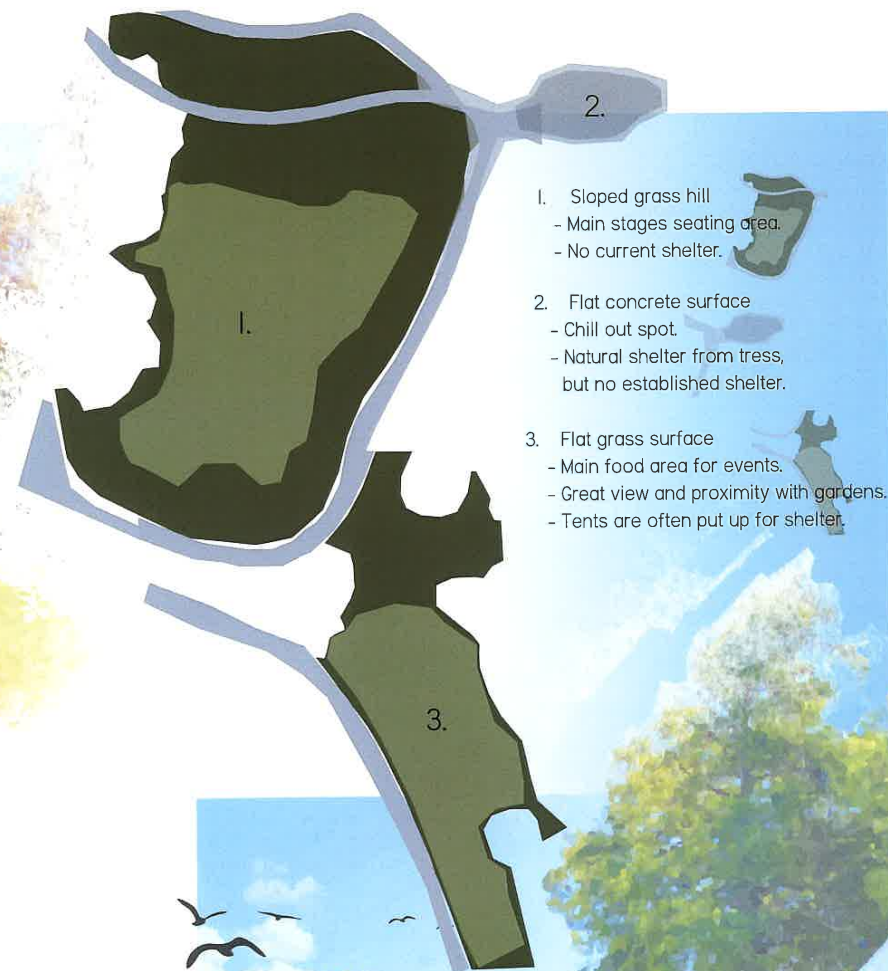
Constraints

Shelters will not be able to be permanent and so must be designed to be set up for use over a weekend or a couple of weeks before it is packed and stored away.

The site is filled with varying ground surfaces that will create challenges for the design's stability. The shelter, due to its temporary design must be able to provide its own foundation and materials that can handle excessive use that will be prevalent, especially with the large crowds of Womad.

The design must be able to withstand the weather conditions and create a dry space in New Plymouth's harsh winds and rainfall.

The set-up of the design must have a minimal effect and not disrupt the existing environment in the park.



1. Sloped grass hill
 - Main stages seating area.
 - No current shelter.
2. Flat concrete surface
 - Chill out spot.
 - Natural shelter from trees, but no established shelter.
3. Flat grass surface
 - Main food area for events.
 - Great view and proximity with gardens.
 - Tents are often put up for shelter.



Opportunities and Constraints

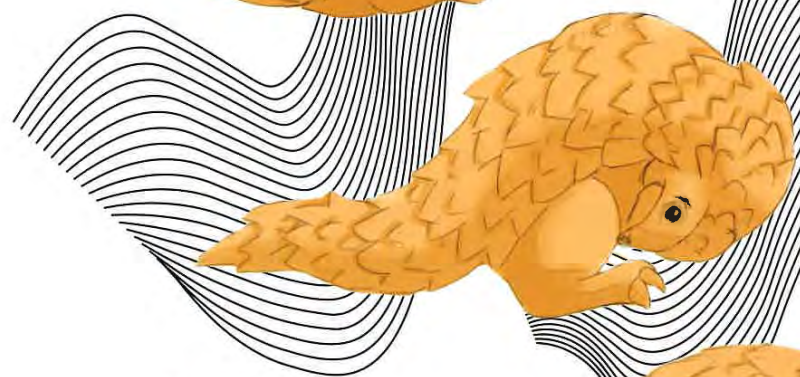
PANGOLIN



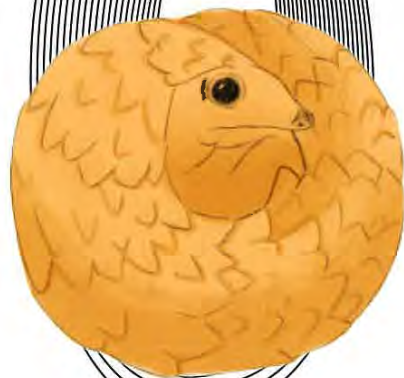
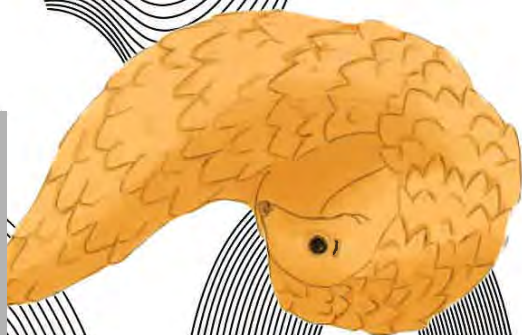
[pæŋgəlin] -Scaley Anteater - Pholidota

Pangolins are small scale covered mammals. If under threat a pangolin will immediately curl up into a tight ball and use their scales to protect themselves. Their scales are incredibly strong and protect them from even some of the most dangerous predators. I want my shelter to provide this same level of comfort, protection and security through my design.



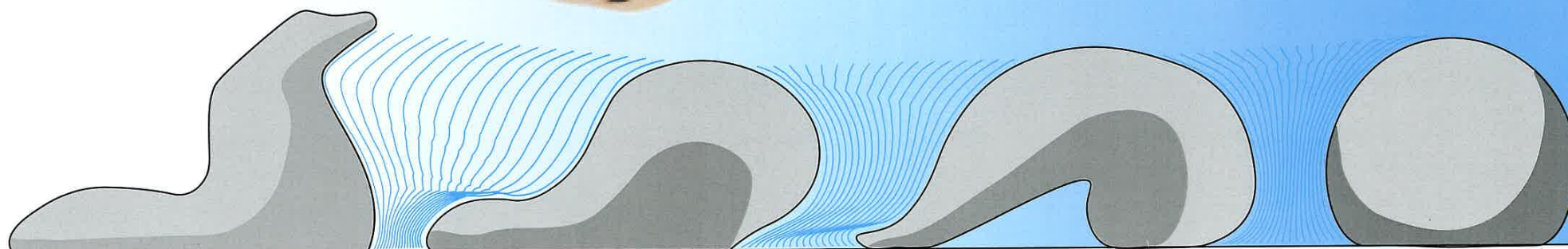


Exploring how the pangolin curls up.



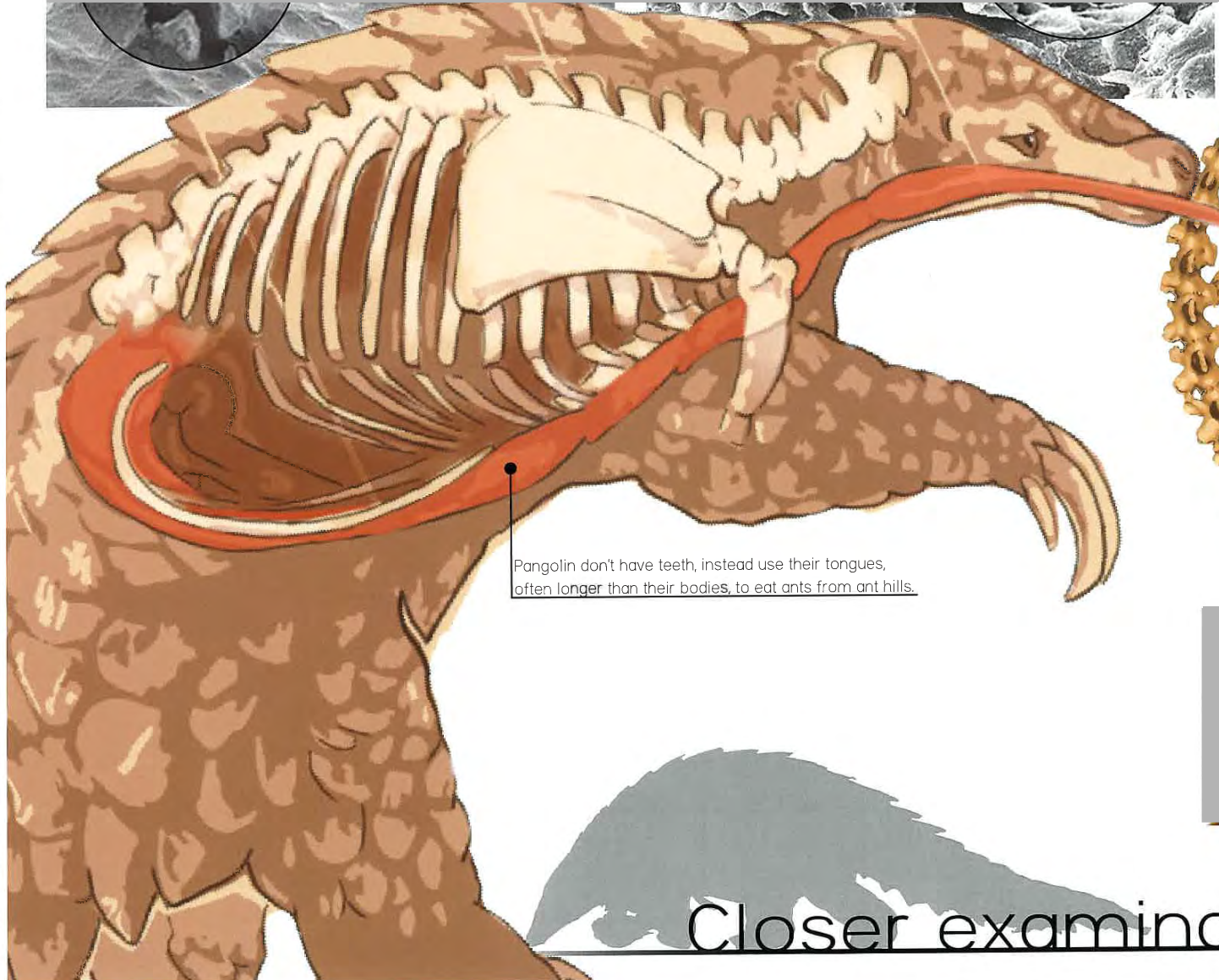
How do the scales overlap to form protection?





Simplified forms of the stages of a pangolin rolling up.

Exploring patterns formed through microscopic view of scales.



Pangolin don't have teeth, instead use their tongues, often longer than their bodies, to eat ants from ant hills.

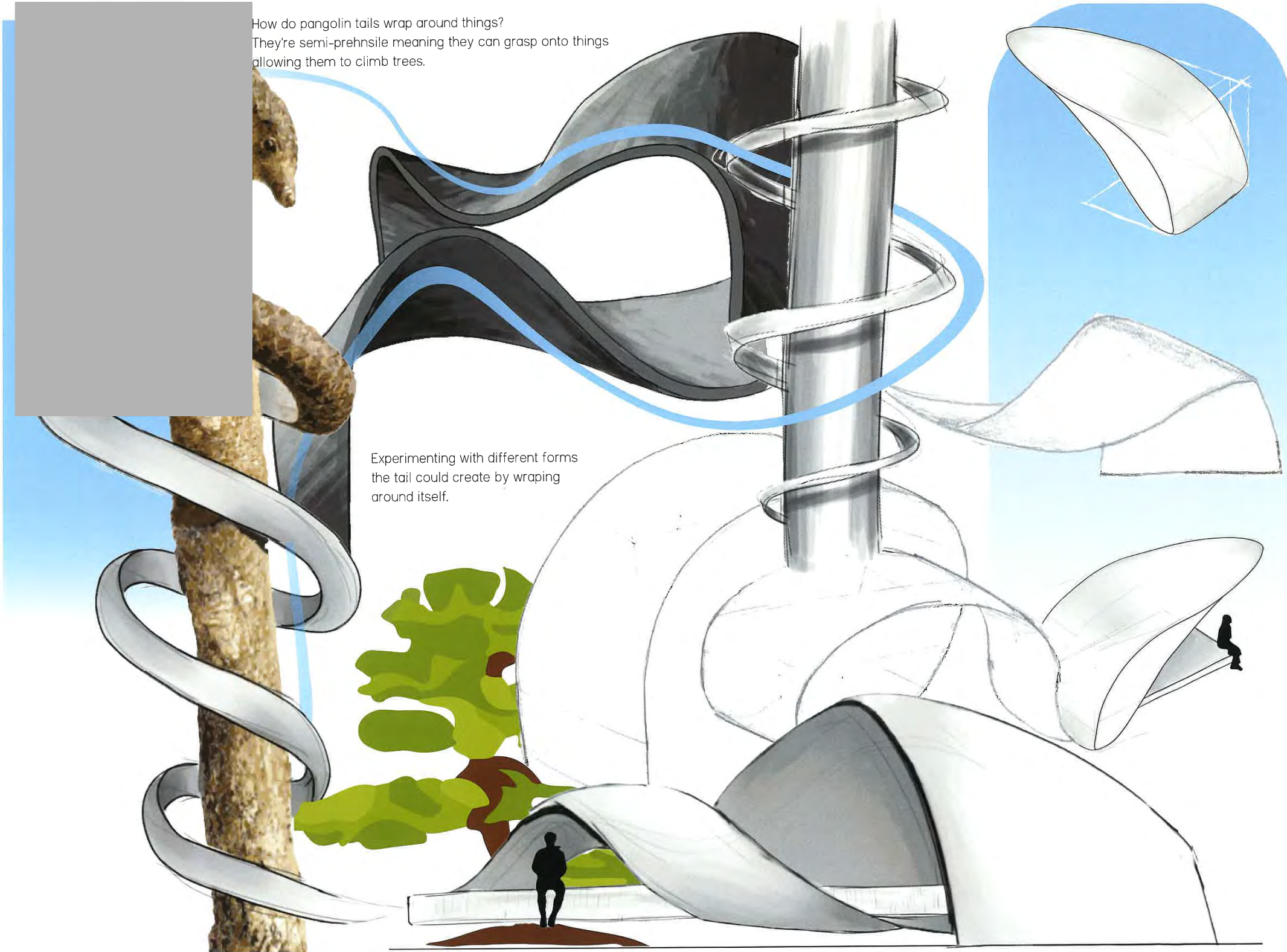
Pangolin bone structure.

They have very dense bones to protect from predators.

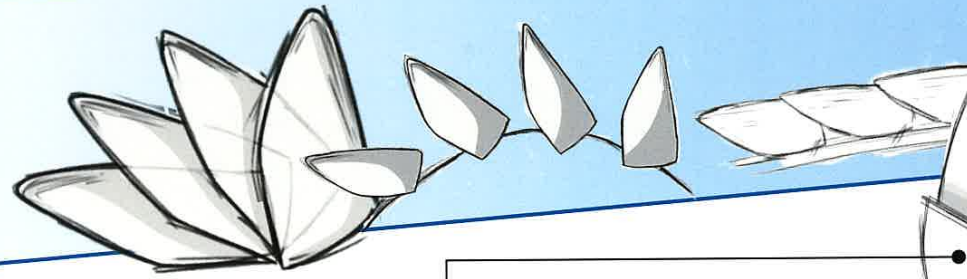
Closer examination

How do pangolin tails wrap around things?
They're semi-prehensile meaning they can grasp onto things
allowing them to climb trees.

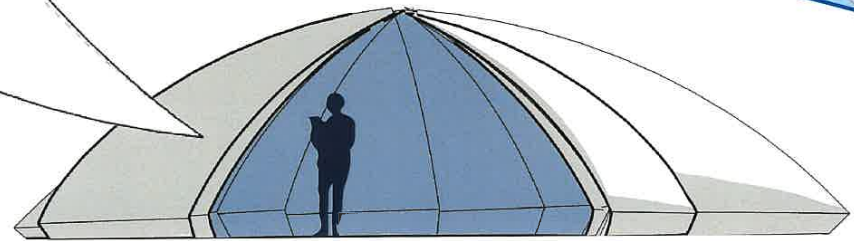
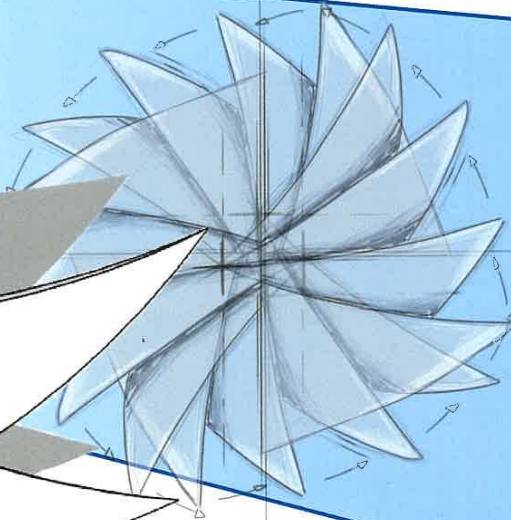
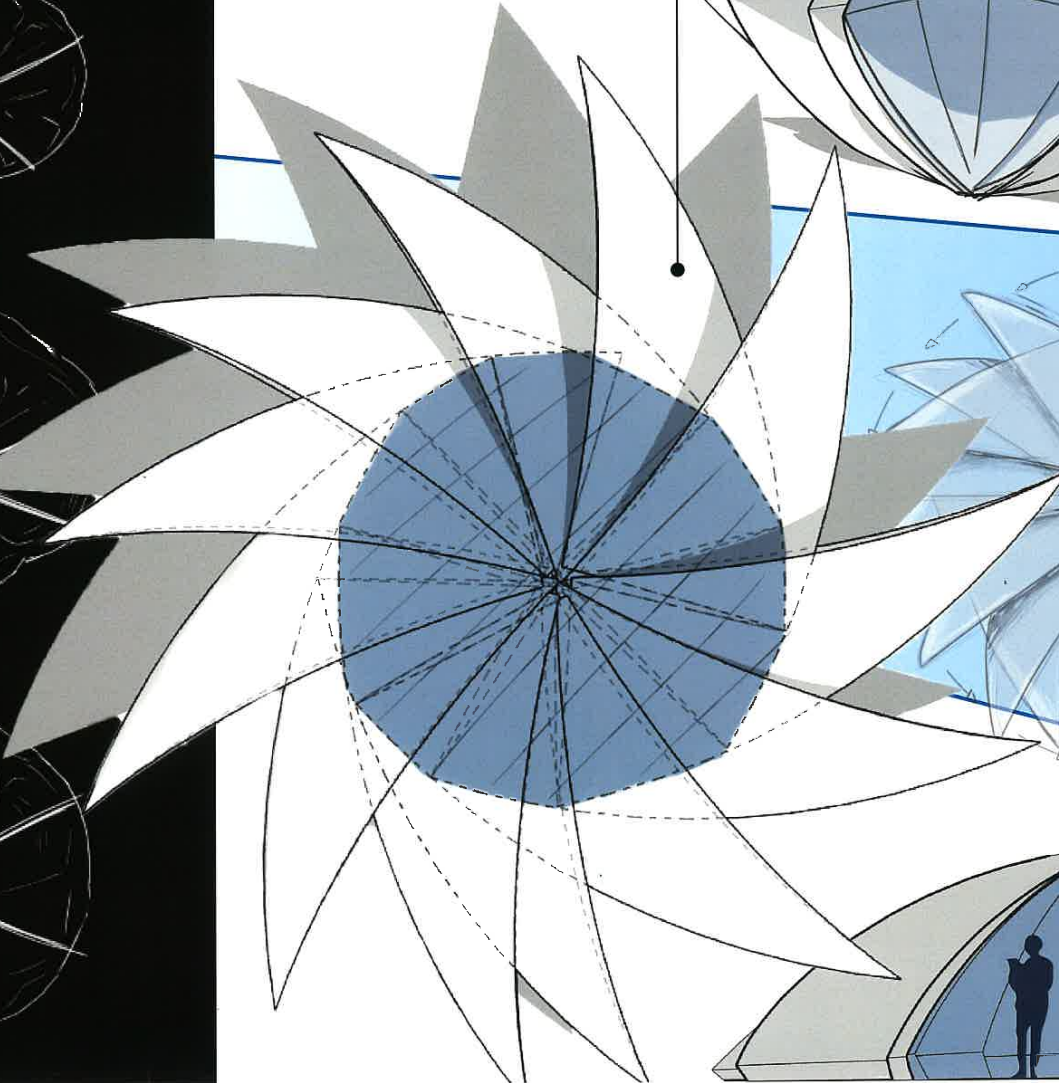
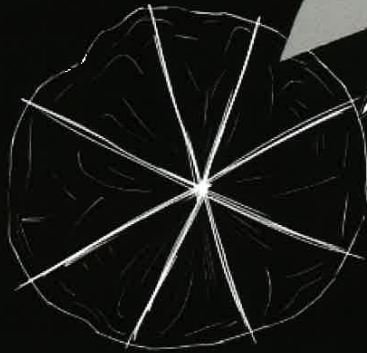
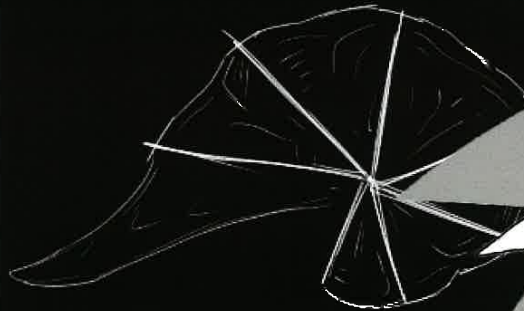
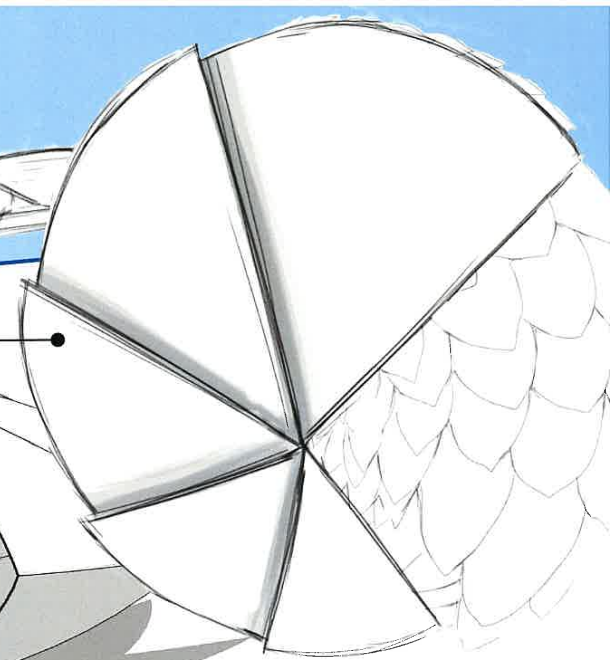
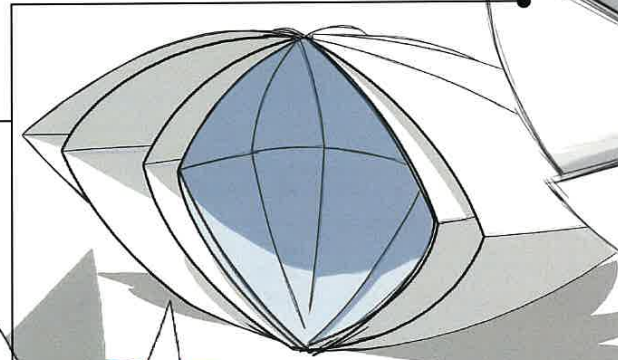
Experimenting with different forms
the tail could create by wrapping
around itself.

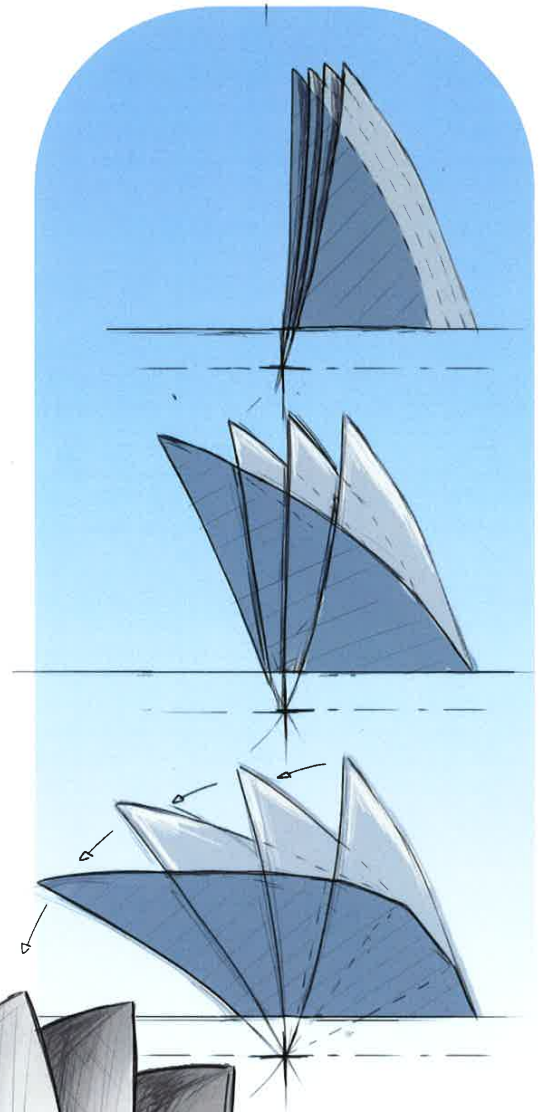
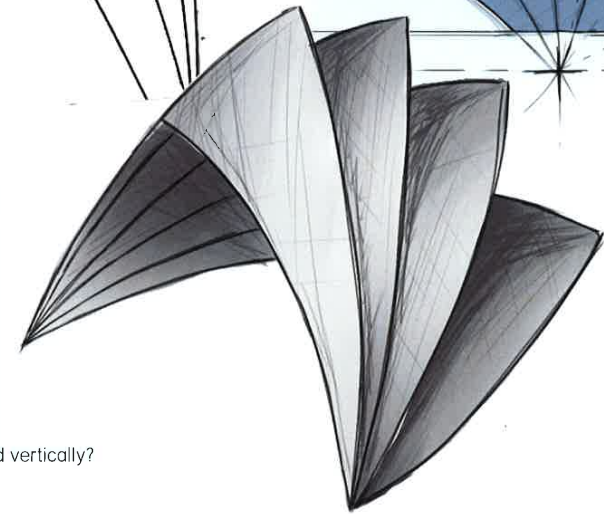
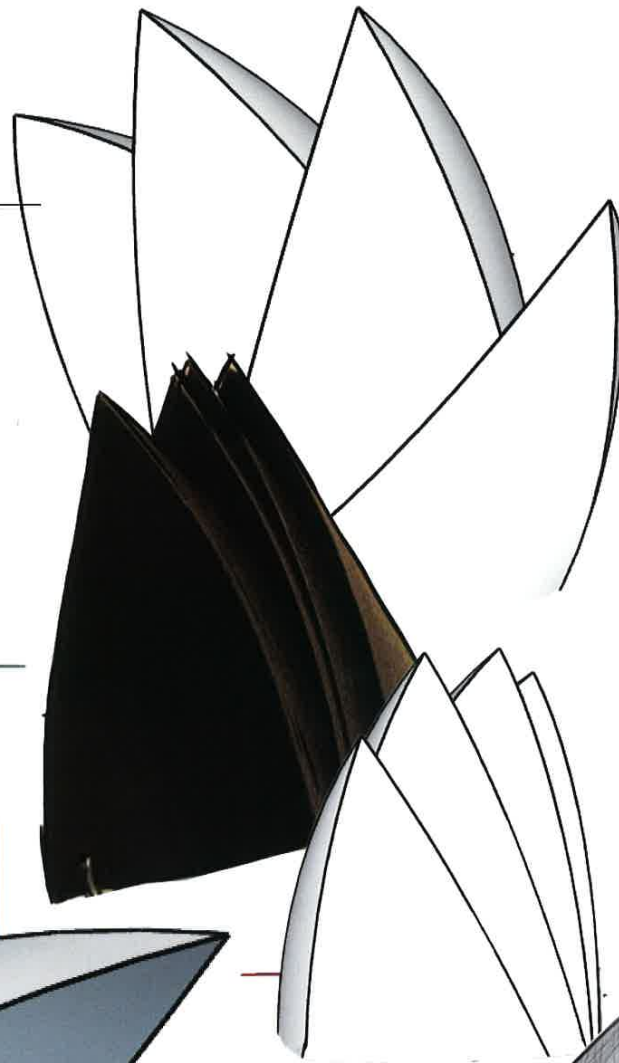
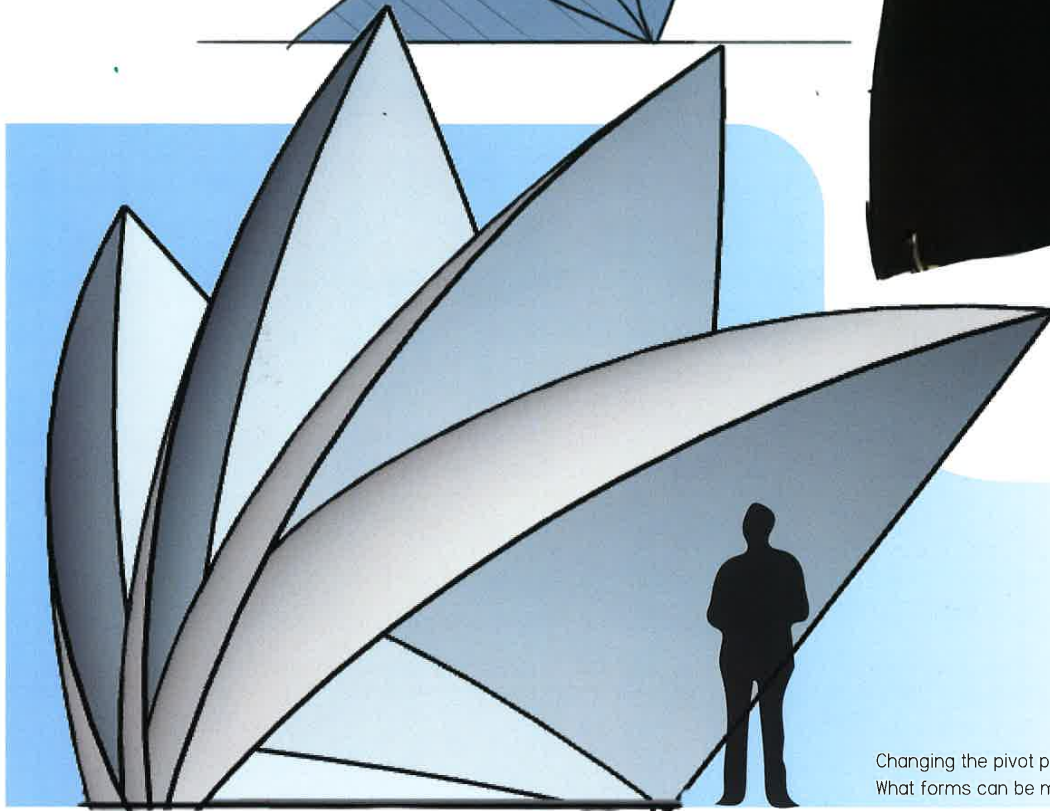
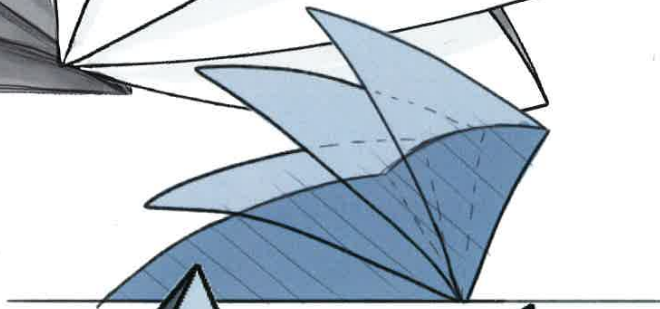
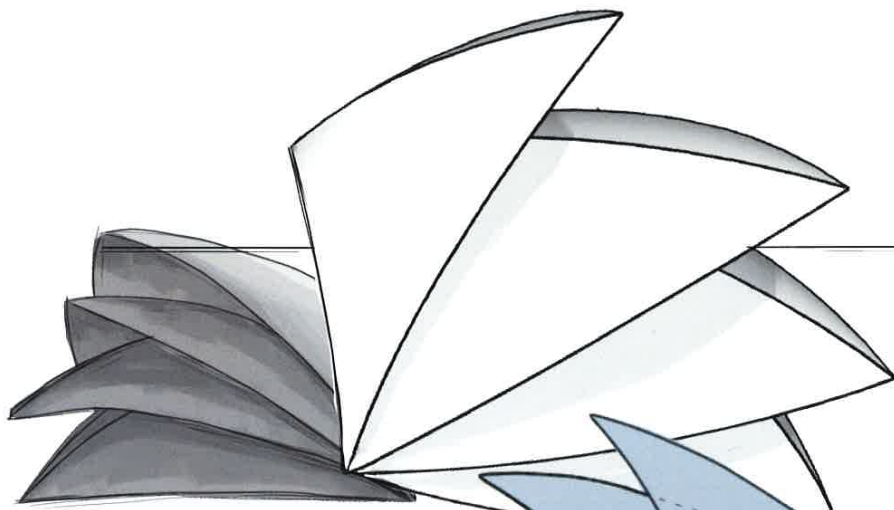


How do the scales overlap when curled up?

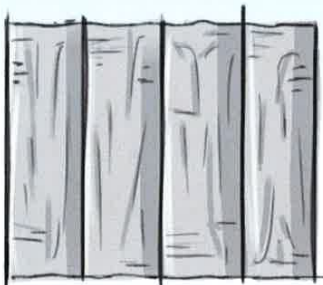
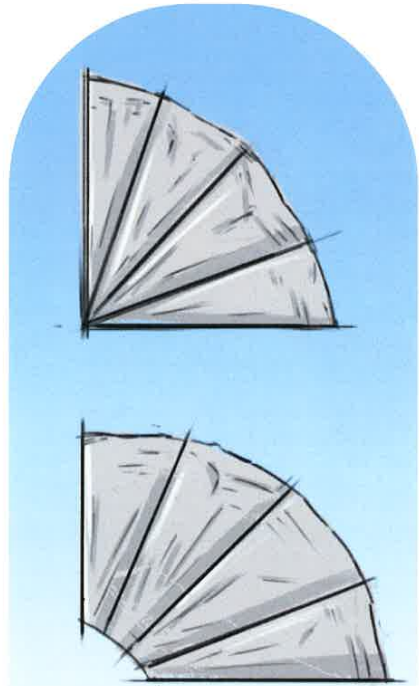


When curled up the pangolins form can be split into main segments.

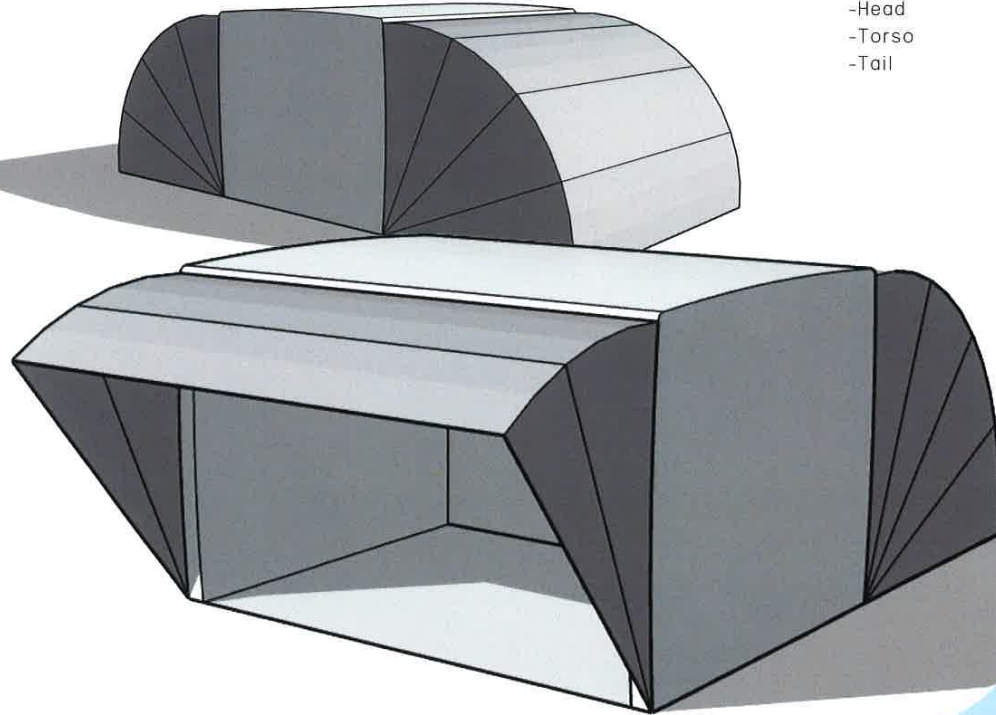




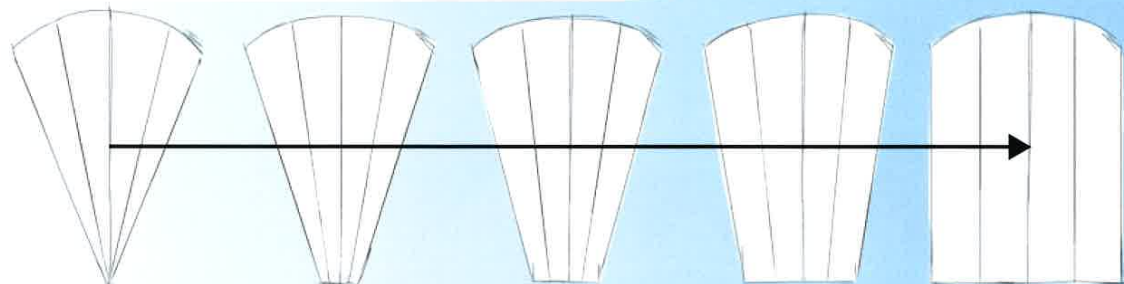
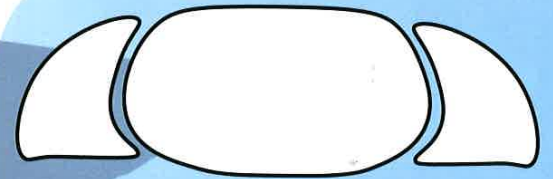
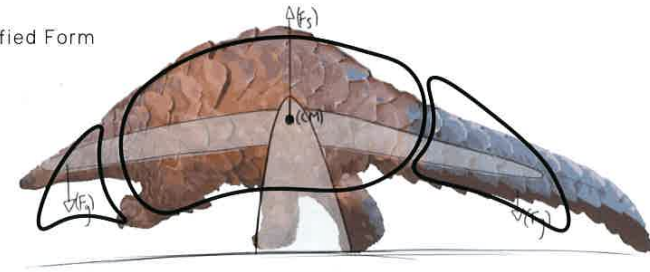
Changing the pivot point.
What forms can be made when scales fold vertically?



Exploring how sections fold



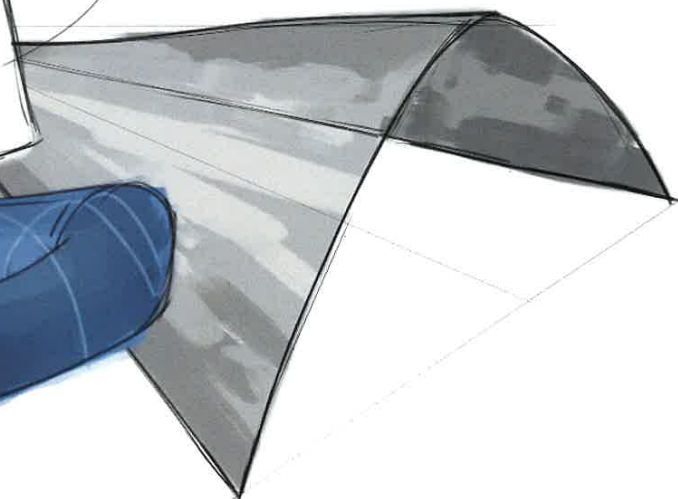
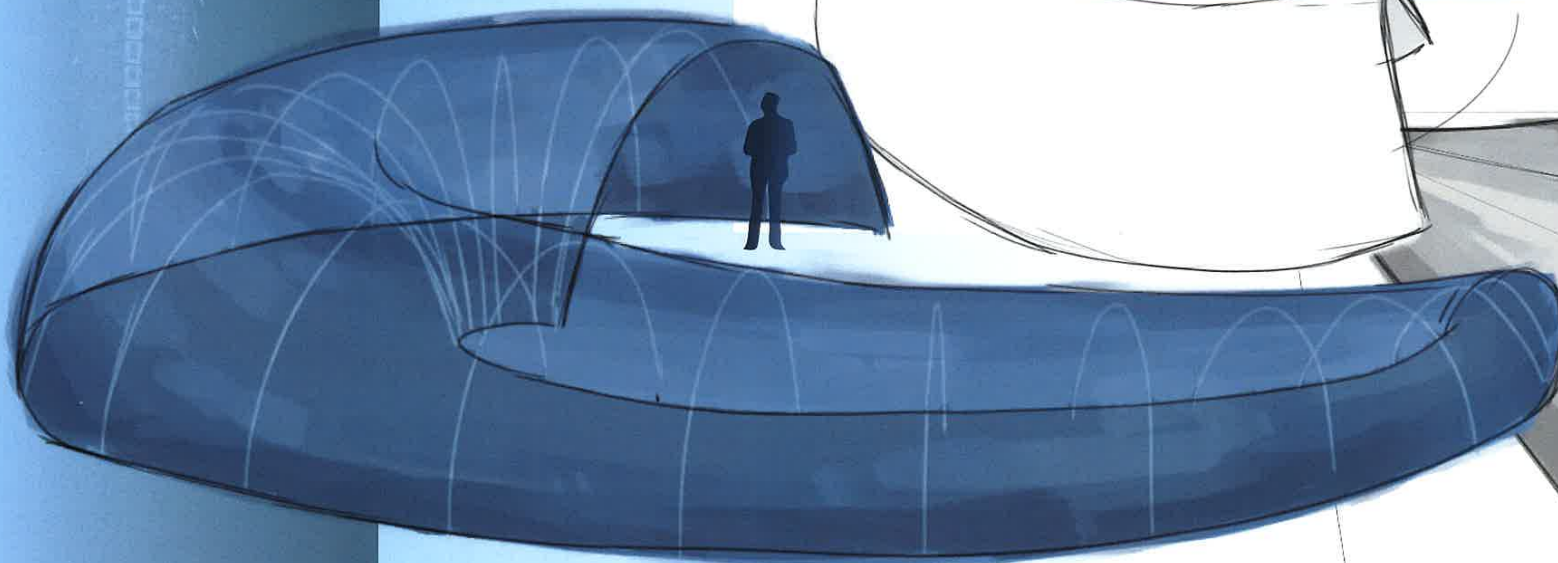
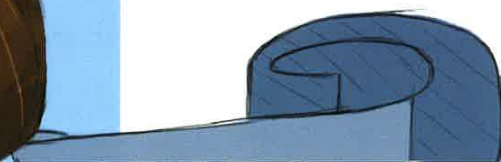
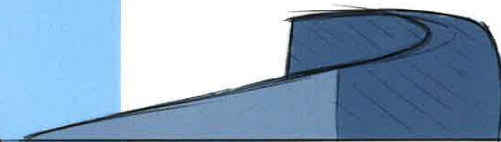
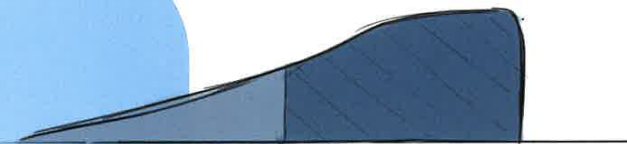
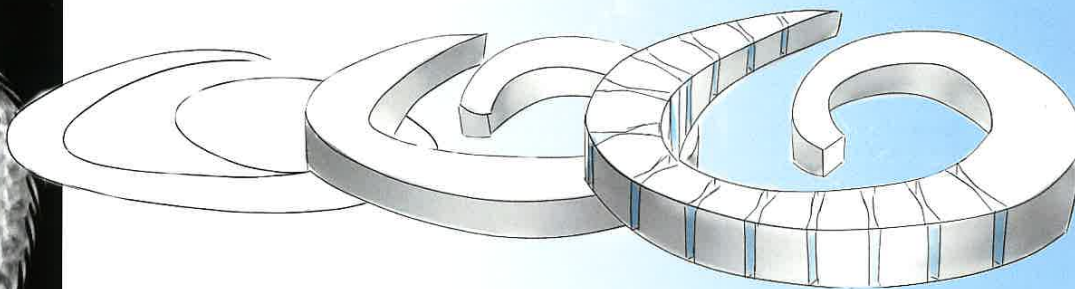
Overall Simplified Form
-Head
-Torso
-Tail

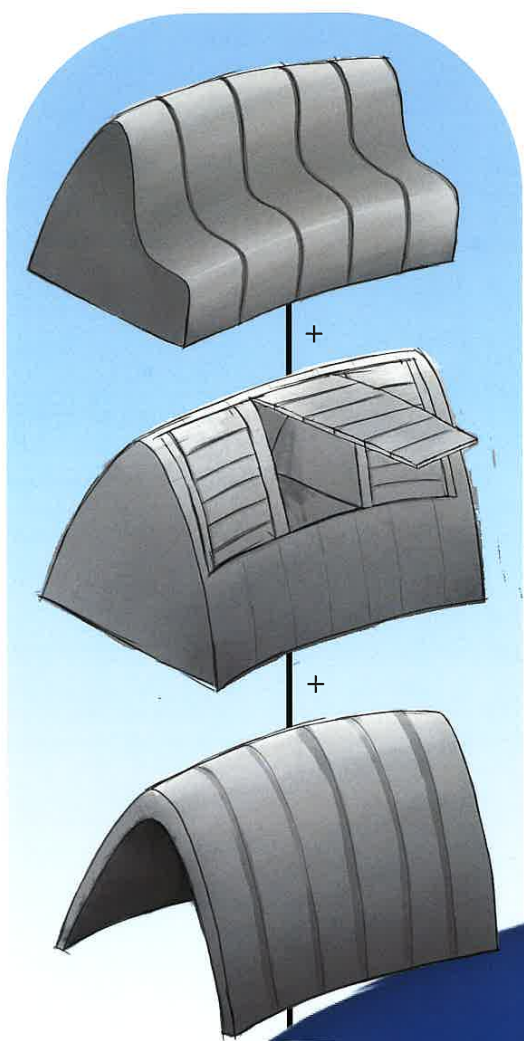


Evolving from pivot point to a concertina.

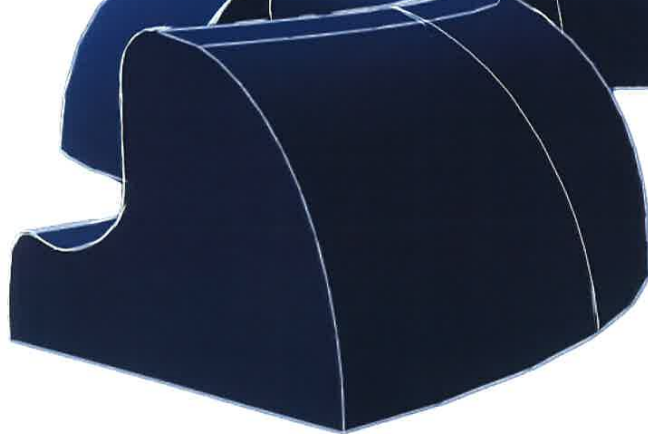
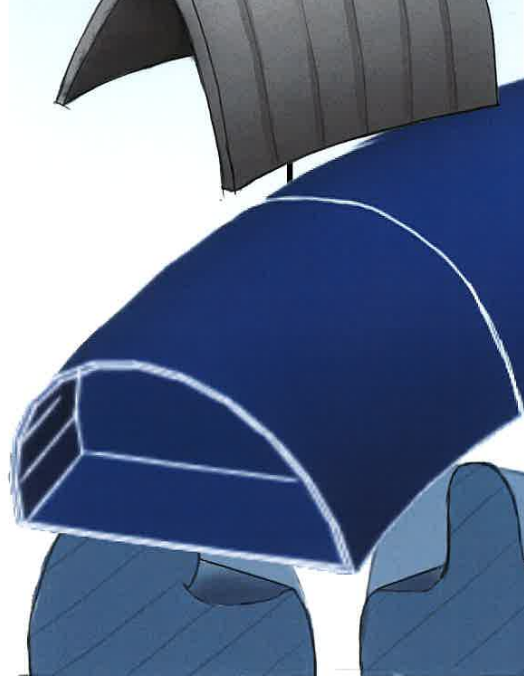
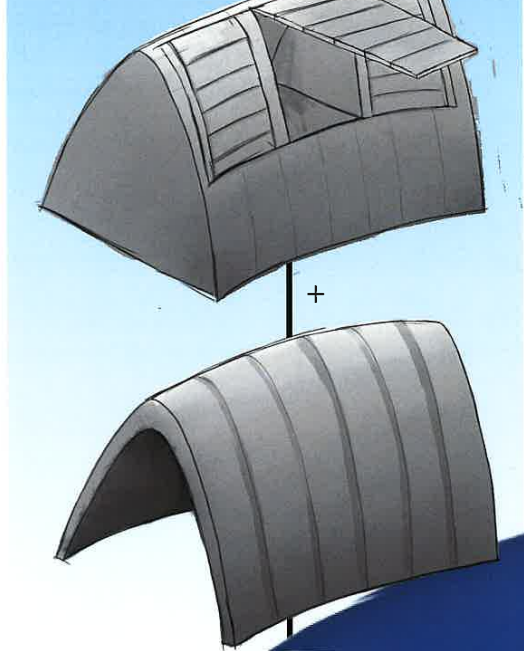


Curling Form of Pangolin





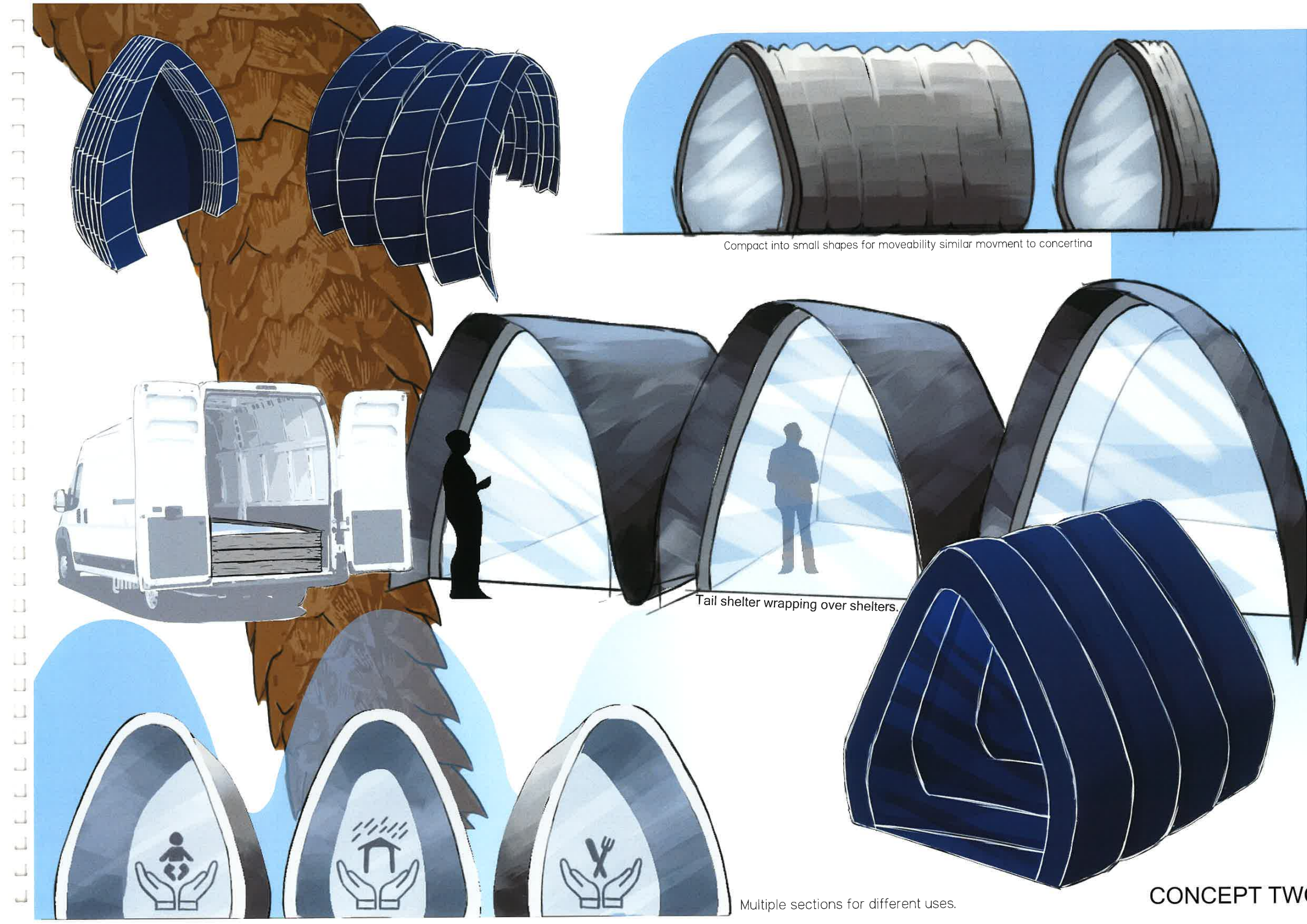
Modular sections to create a variety of shapes.



Possible tapering?

Seat Profiles.

CONCEPT ON



Compact into small shapes for moveability similar movment to concertina

Tail shelter wrapping over shelters.

Multiple sections for different uses.

CONCEPT TWO

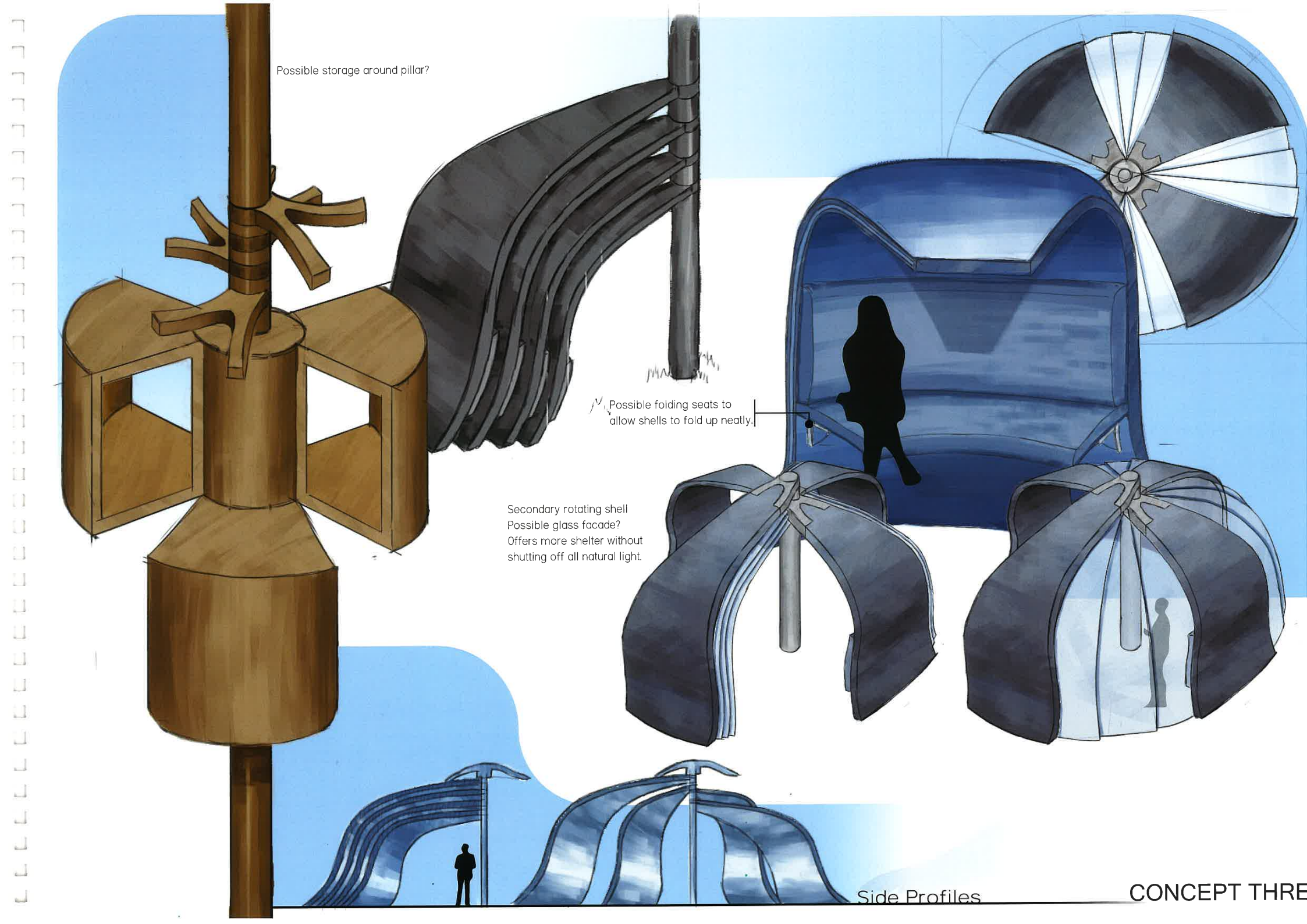
Possible storage around pillar?

Possible folding seats to
allow shells to fold up neatly.

Secondary rotating shell
Possible glass facade?
Offers more shelter without
shutting off all natural light.

Side Profiles

CONCEPT THREE





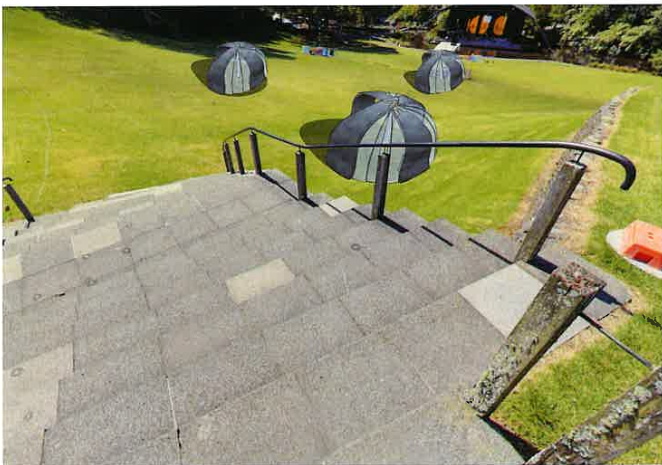
Concept one, main idea: **MODULARITY.**

This modular design allows for massive customisation allowing it to fit in most places around the Bowl of Brooklands. The Idea of the tapering makes the design significantly better, but I struggle to see a way in which the tapered tail wont compromise the ability to rearrange sections. It will also pose a lot of challenges on the slopes of the Bowl as for the standardised sections to be arranged in whatever order they must all have a floor completely level. Each section is reasonably bulky so isn't so practical for the movement of of seating which it must be able to do as the shelter cannot be permanent.



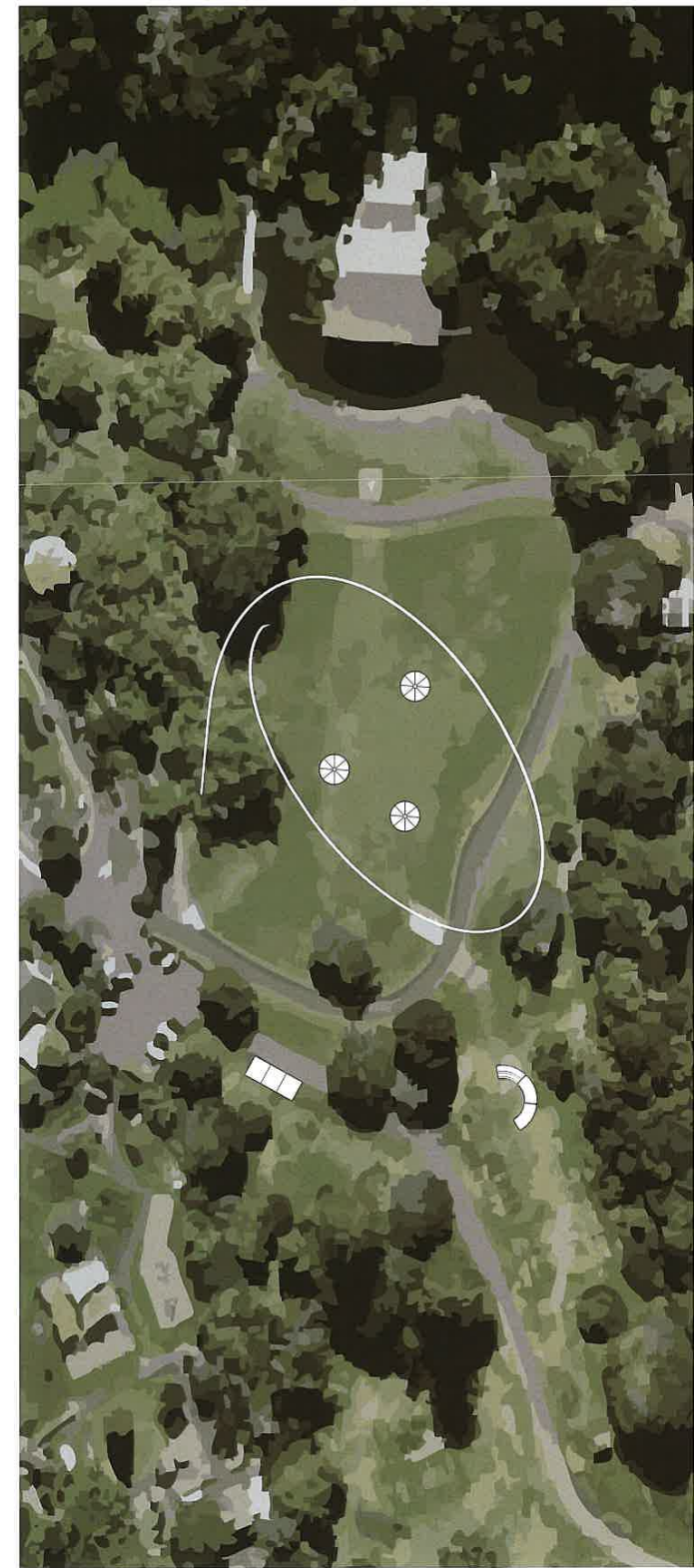
Concept two, main idea: **COMPACTIBILITY.**

This concept is designed for its ease in compacting down for transportation allowing it to be moved in and out for events without needing much set up. With this design a problem arises as this concertina-esc will be hard to strengthen while still being able to fold down. This designs form doesn't appeal to me very much, but I do like the idea of having some level of compactibility. The pods themselves are separate to help with this compactibility, however, they're also joined together by the overlapping tail. I think these pods act to similarly to the already existing tent type of shelter that is often set up in the Bowl at events.



Concept three, main idea: **REPLICATION.**

This concept stems from this central pole which has potential to be used on even the hills of the park which the other two do not. The scale shells because they're a bit smaller can easily be mass produced and offer shelter throughout the entire venue. Each piece is replicated and pivoted around this central pole and so segments can be rotated to users liking allowing for views out to the beauty of the park as well as shelter from all directions no matter the conditions. This concept is made up of different parts that although aren't as simple as concept one can still easily be taken apart and transported away. This allows for a mixture of concept one's set up and concept two's transportability.





Making sure there is enough headspace both when seated and standing.

underseat storage unit?

Floating from center pillar.

Possible back seat?

Straight vs rounded edges

Find solution.
Segments can't fold up
when seats are in line.

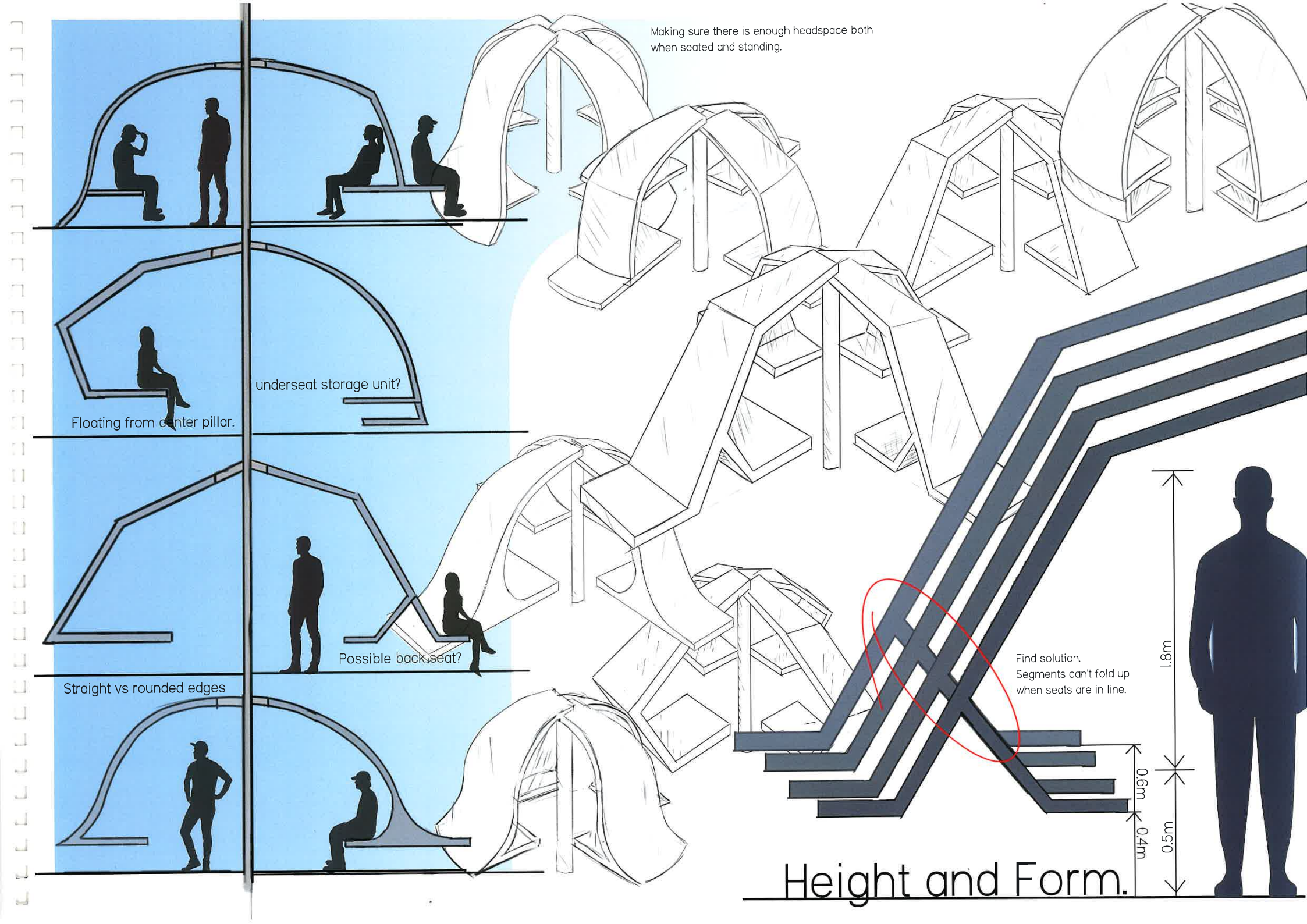
Height and Form.

1.8m

0.6m

0.5m

0.4m



Finding the solution.

In order for each segment to fold into the other, each seat must be staggered forward so that the frame and interior seat can slide flushly past one another. Because of both interior and exterior seats there will still be a problem folding.

To solve this either the interior or exterior seat must fold up to allow the frame to slide past. I have chosen the exterior seat due to its less frequent use and the interior one already sits within the overall shape, minimising the space it takes up.

Decision between indented or overlapping folding seats. Folded seats mimic the overlapping of pangolin scales. However, indented back seats allow for a nicer and more flush finish.

Added secondary 'scale' folding from exterior seat as a support.

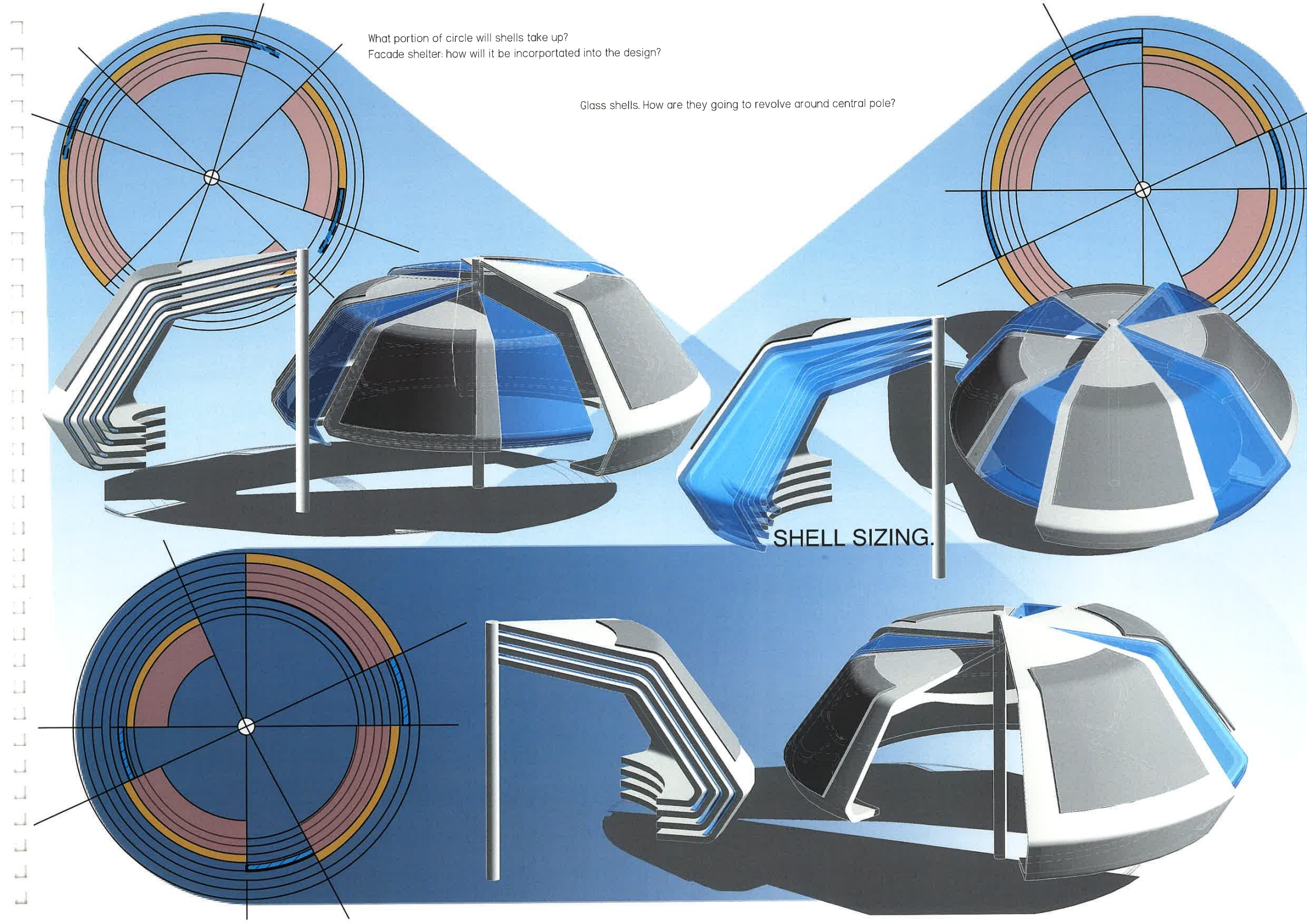
To fix this problem one way could be shift the pivot point higher up the back of the scale so that when it unfolds the seat will be at level with the interior seat.

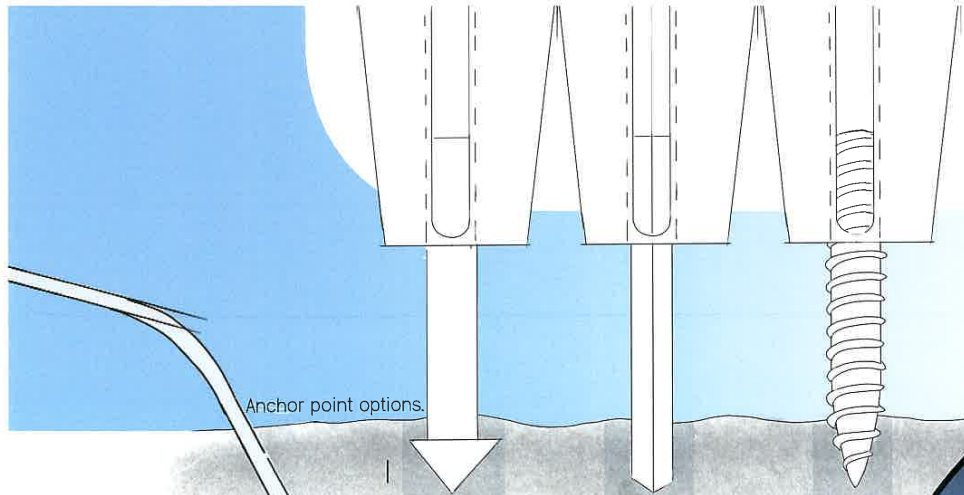
When hinge is situated at end point, in order for it to fold up flush with the main scale the length must be long enough so that the two curves line up. However, this creates a new problem as when it fully unfolds the length will be too long and extend into where the ground will be.

What portion of circle will shells take up?
Facade shelter: how will it be incorporated into the design?

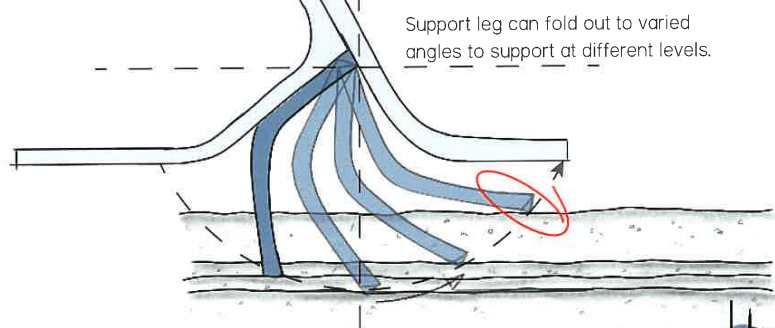
Glass shells. How are they going to revolve around central pole?

SHELL SIZING.

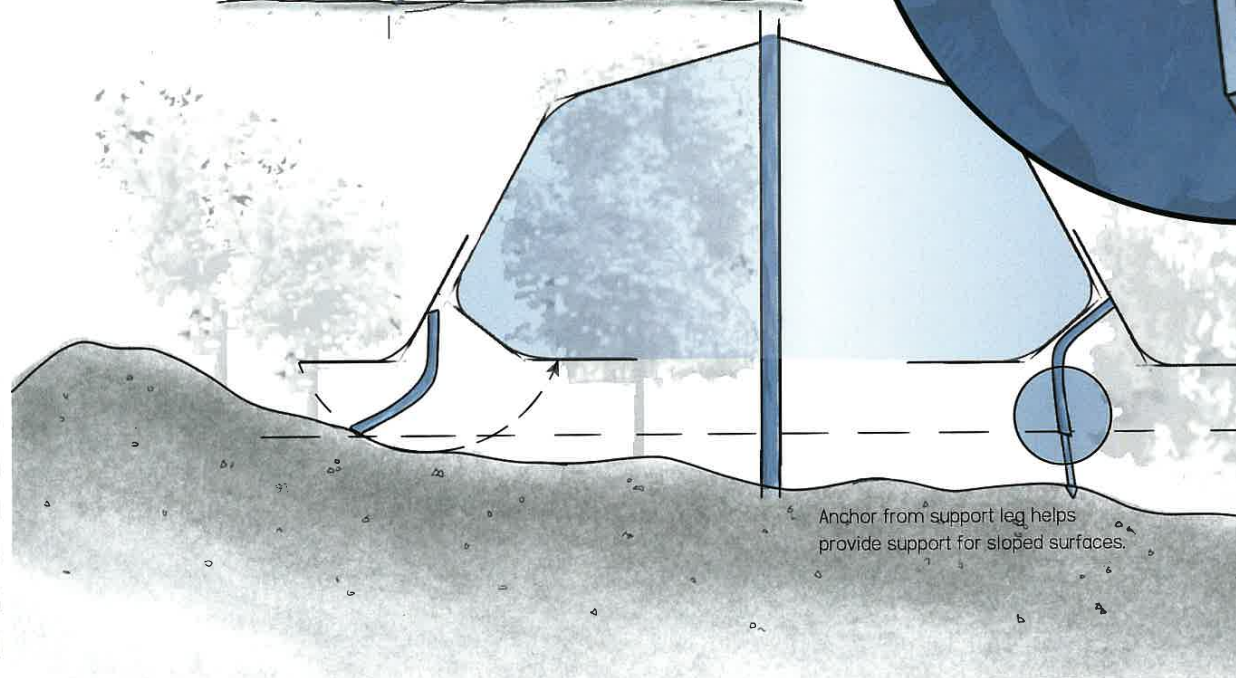




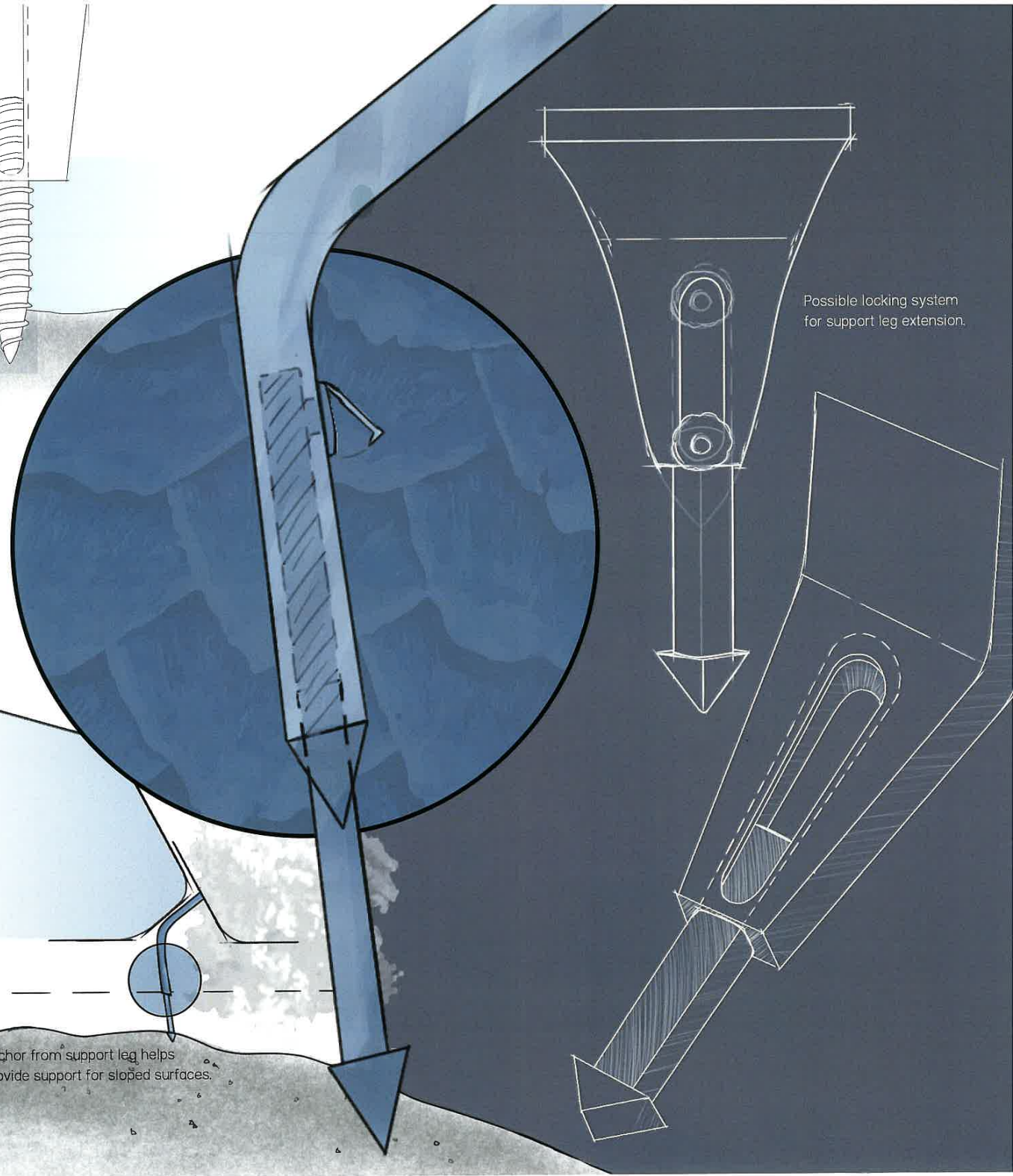
Anchor point options.



Support leg can fold out to varied angles to support at different levels.



Anchor from support leg helps provide support for sloped surfaces.



Possible locking system for support leg extension.

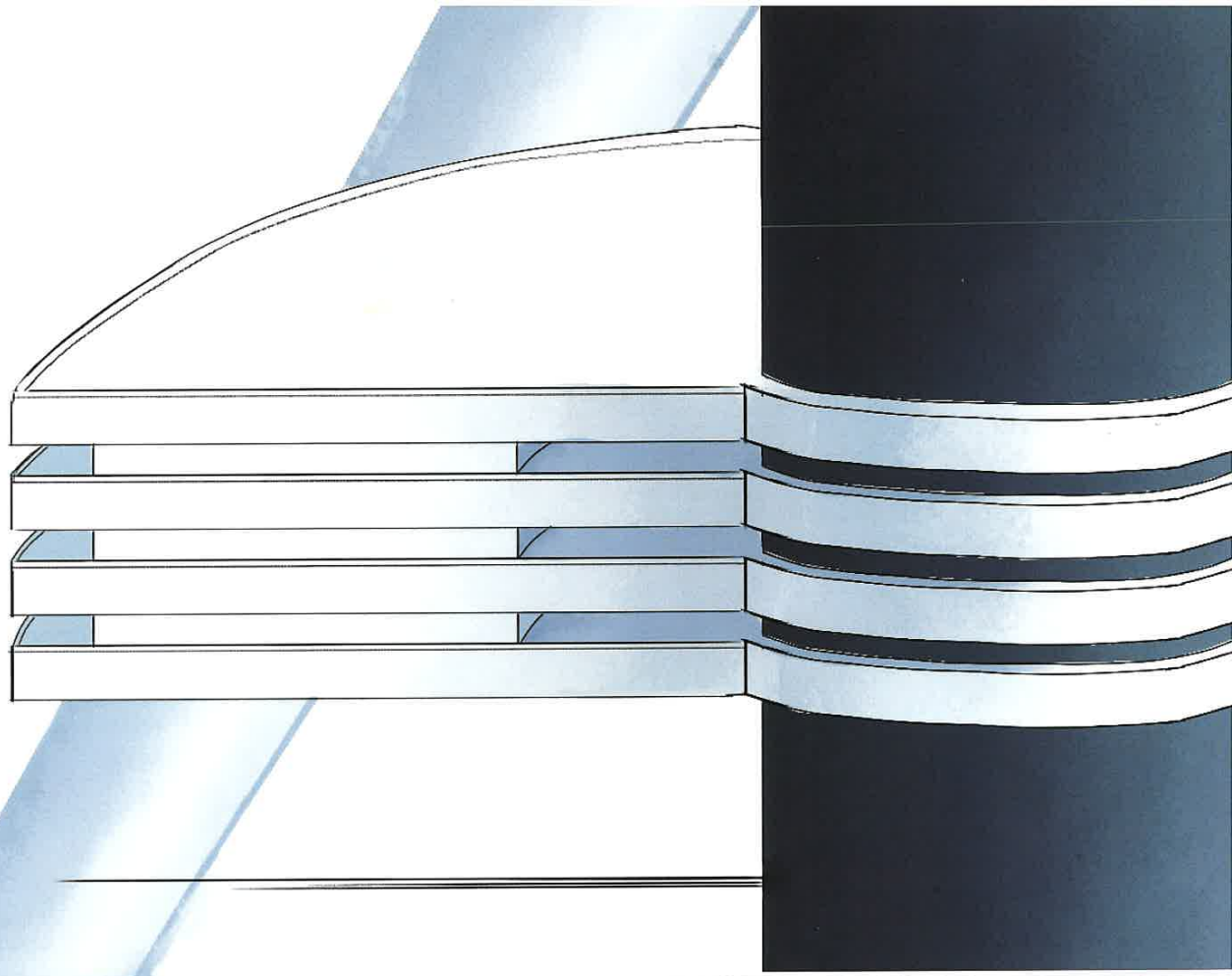
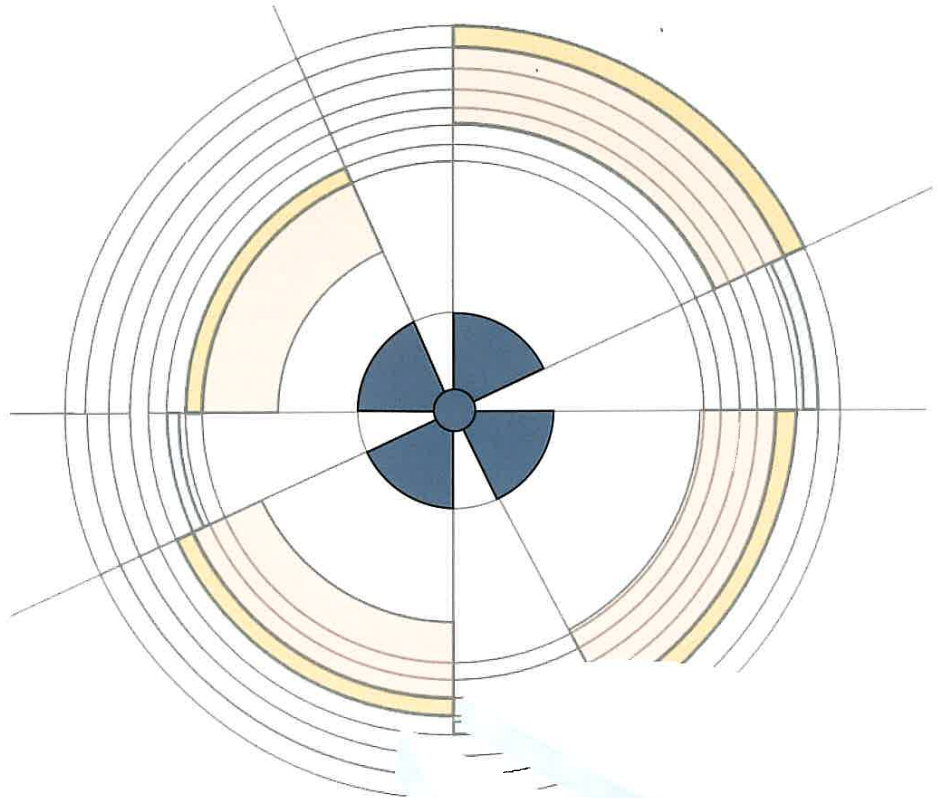
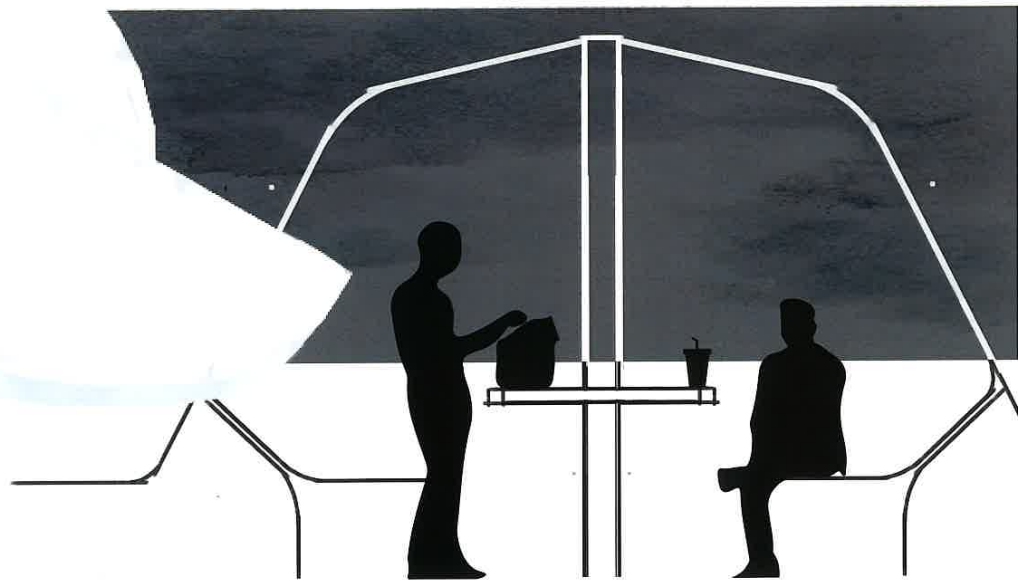
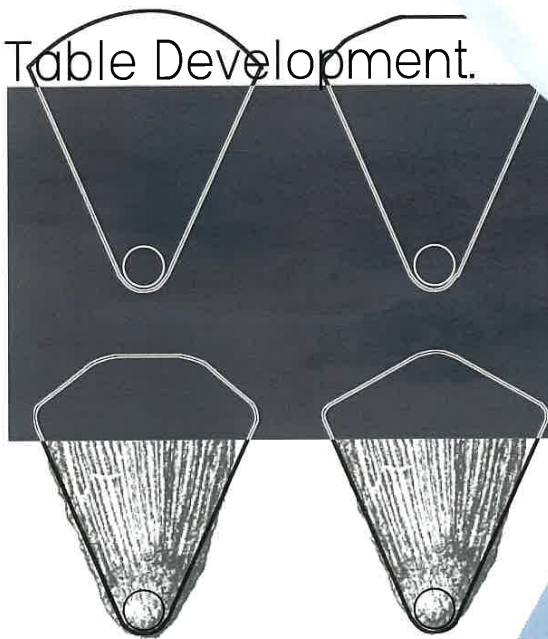
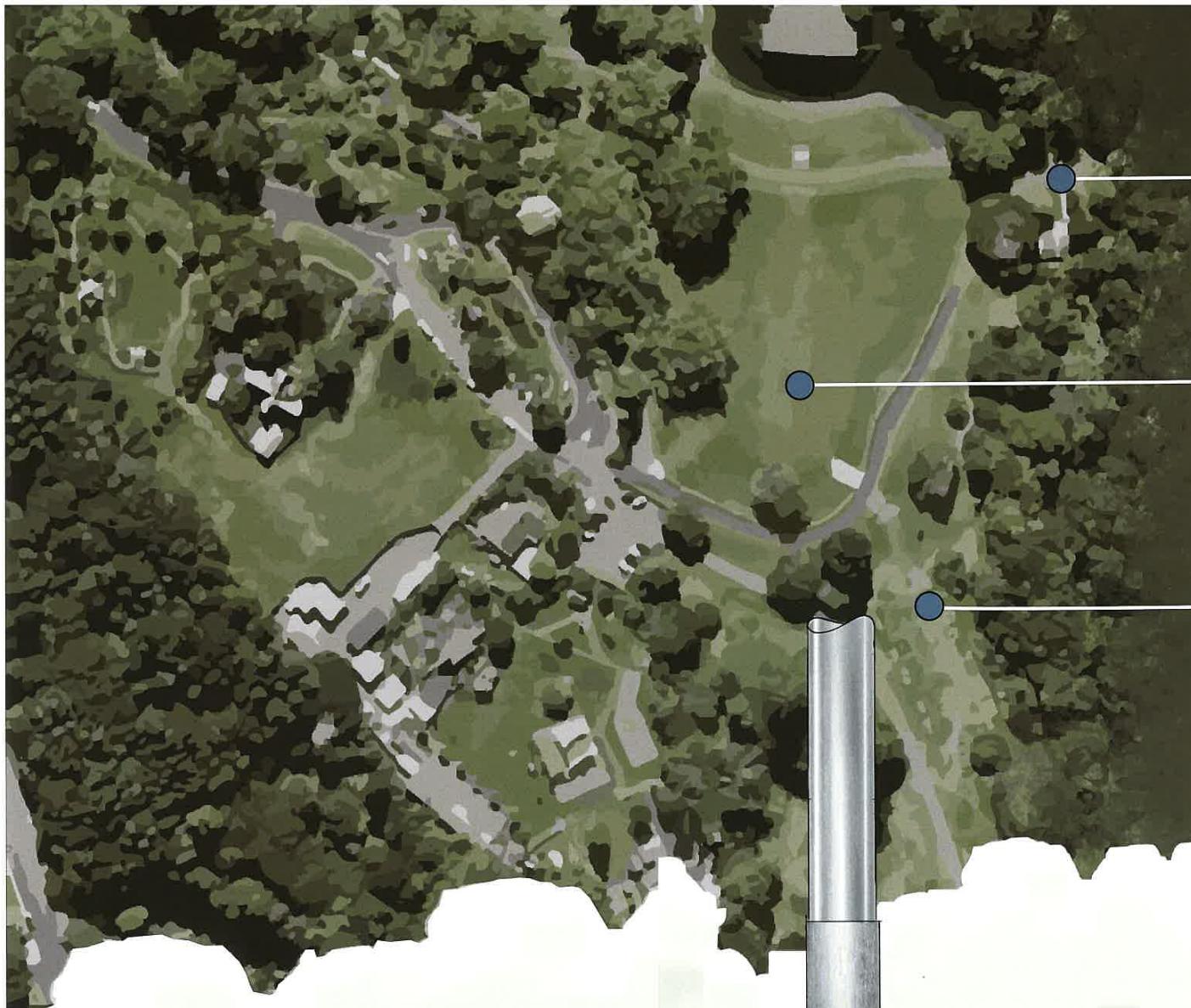


Table Development.





Each of these locations in The Bowl of Brooklands site are worth exploring as they each offer a different terrain. The goal is to create a support foundation for the structure that can work on all of these surfaces. (Flat, concrete/ Sloped, grass/ Flat, grass).



CENTRAL POLE FOUNDATION.

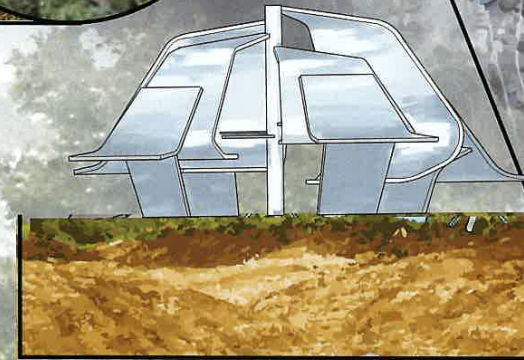
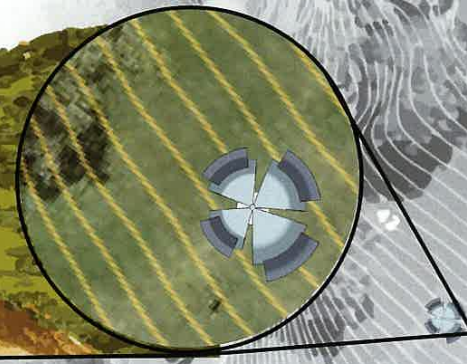
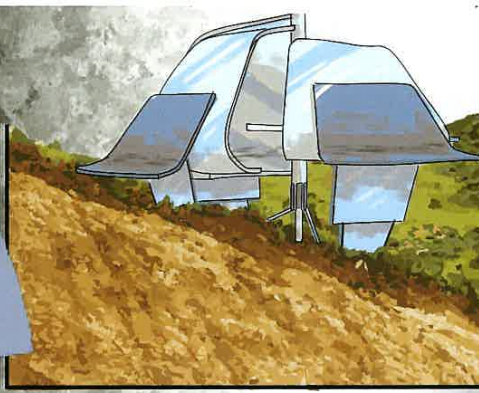
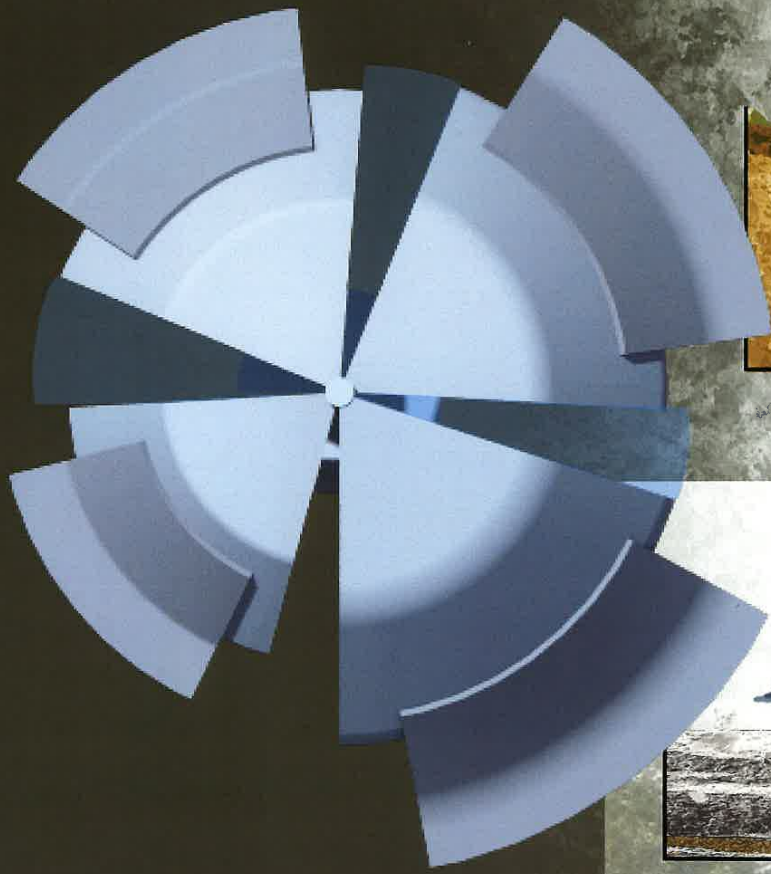
	grass	gravel	concrete	flat	bumpy	sloped
1.	✓	✓	✓	✓		
2.	✓	✓	✓	✓	✓	✓
3.	✓	✓		✓	✓	✓

1.
-Solid support, works on all flat surfaces.
-Wide distribution of mass while not taking up much interior space.
-Will not work on terrains that aren't flat.

2.
-The four adjustable supports allow sturdy support on all surfaces and terrains.
-Supports are compactable so can easily be adjusted and packed down.
-The legs stick out into interior space, so could be trip hazards.

3.
-Strongest and most secure support due to ground screw foundation.
-Support works on all types of terrain.
-Will not work on concrete and other similar hard surfaces.
-Requires drilling of ground.





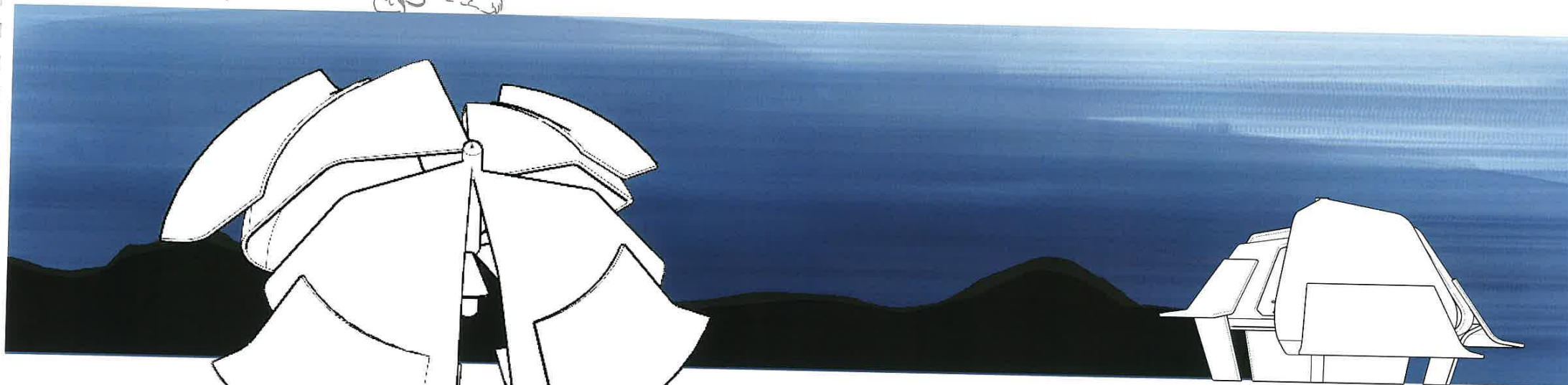
Finalised Form.



YOMAD



HOW CAN THE DESIGN BE IMPROVED?



WORKING UP

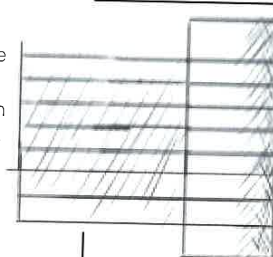
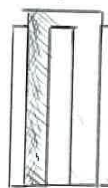
How will each part function?

At the moment only the form has been designed. I would like to explore and develop how each detail will function starting from the ground up. This will ensure that the design itself is feasible and isn't just an idea limited to the pages.



CENTRAL SUPPORT.

Must figure out how the central foundation is attached to structure and how legs fold out allowing for support on different surface types

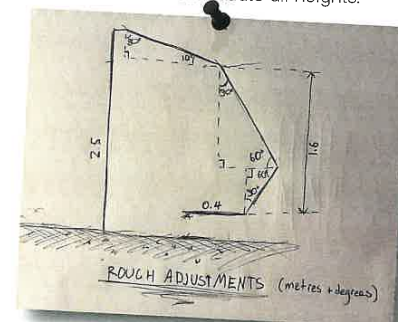
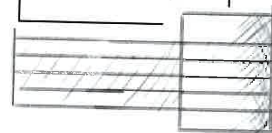


TOP PIVOT.

This framing attachment must be made similarly to the table section allowing for framing to rotate around center. each frame must be as close as possible in order to reduce staggering of shell heights as otherwise design would have to have an extremely large outer shell to allow for the smallest shell to accommodate all heights.

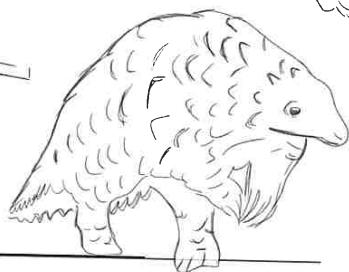
TABLE SECTION.

Must decide how the tables are fixed onto the central pole so that they can spread around while also remaining close together so the table heights aren't staggered significantly.

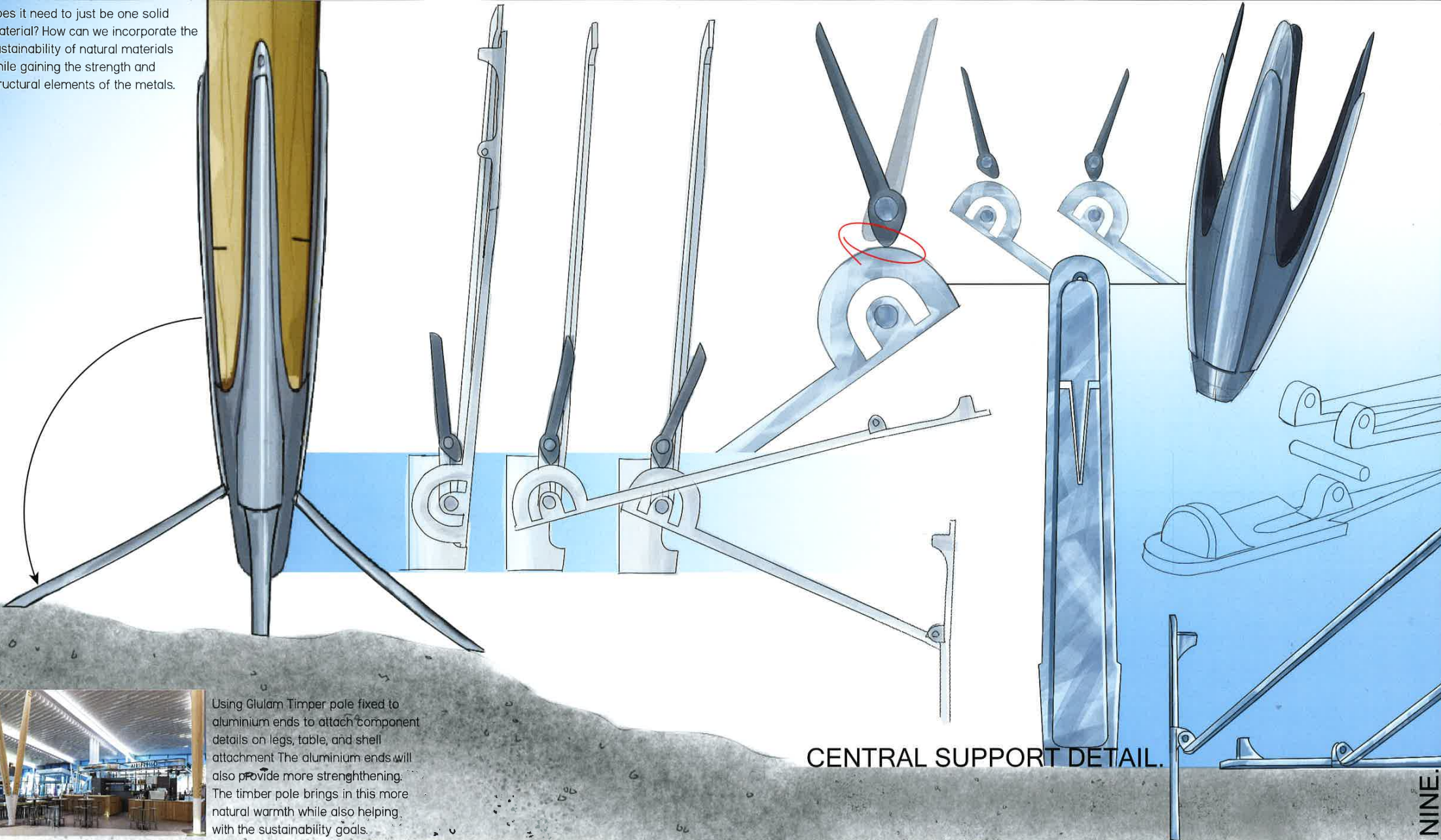


SMALL ADJUSTMENTS

I want my design to feel more comforting and organic. Some aspects that will have to change will be the lengths of sections so that people can seamlessly interact with the space - not hitting their head on inside wall when seated. The back seat and support, I would also like to change so that the support leg fits within the framing of the back seat. This will allow each shell to be flush when folded. By lengthening the back it will also allow for both seats be lower to the ground, making it easier for anyone to access as the seats aren't so high off the ground. This way the leg support will also be able to reach the ground while remaining within the back seats section.



Does it need to just be one solid material? How can we incorporate the sustainability of natural materials while gaining the strength and structural elements of the metals.



Using Glulam Timber pole fixed to aluminium ends to attach component details on legs, table, and shell attachment. The aluminium ends will also provide more strengthening. The timber pole brings in this more natural warmth while also helping with the sustainability goals.



Woods

- | | |
|---|---|
| <p>Totara</p> <ul style="list-style-type: none"> -NZ native hardwood -Natural rot prevention -Strong durability -Warping over time -Risk of splitting -Very heavy | <p>Glulam Timbers (pine)</p> <ul style="list-style-type: none"> -Pine, NZ grown/sustainable -Warm natural appearance -1.5-2x the strength-to-weight ratio of steel -High durability/low maintenance -Manufactured for use -Won't warp or split -Low energy cost (efficient to produce) |
|---|---|



Metals

- | | |
|---|--|
| <p>Aluminium pole</p> <ul style="list-style-type: none"> -Lightweight but strong -Corrosion resistant -Long lasting -versatile/flexible -High cost -Not as structurally strong as steel | <p>Steel pole</p> <ul style="list-style-type: none"> -Same load-bearing capacity as wood -High strength -Long lasting -Resistant to wear and tear from the wind and UV rays -Harsher appearance -High cost |
|---|--|



Composites

- Fibreglass composite pole
- Lightweight
 - Transfers load weight through fibres
 - Long-lasting
 - Low maintenance
 - High base cost

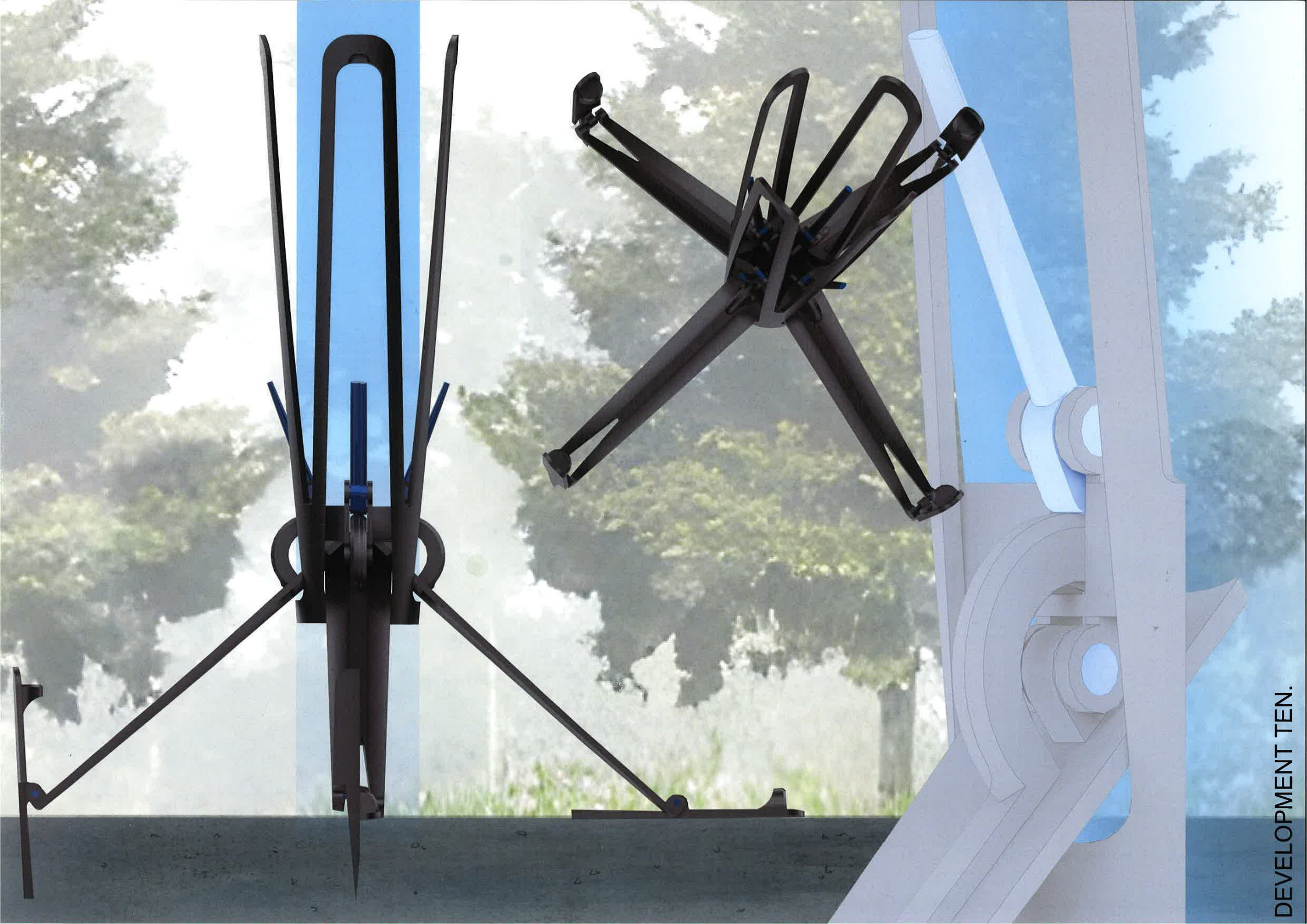


TABLE PIVOT DETAIL.

Pole.

End Piece.

Table Piece.

Spacer.

Strengthening Core.

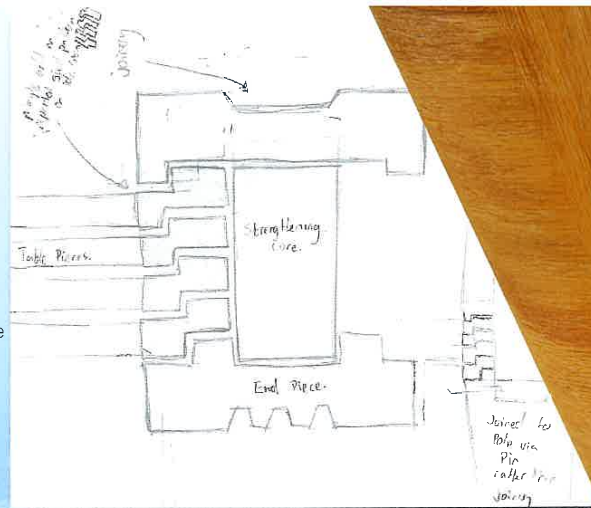
Table made of native NZ timber sat on top of aluminium frame, creating combination of natural and man-made elements.

3. Made up of two sections of wood attaching either side of table piece. The attachment runs flush with pole and allows for

2.

3.

Spacer removed and table piece redesigned so that each piece stacks directly on top of the other.

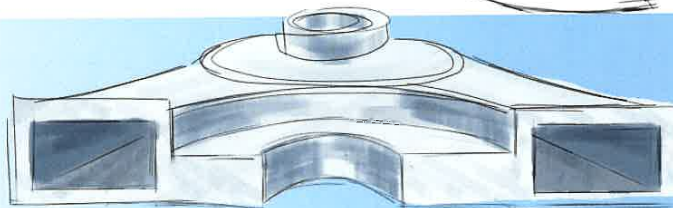
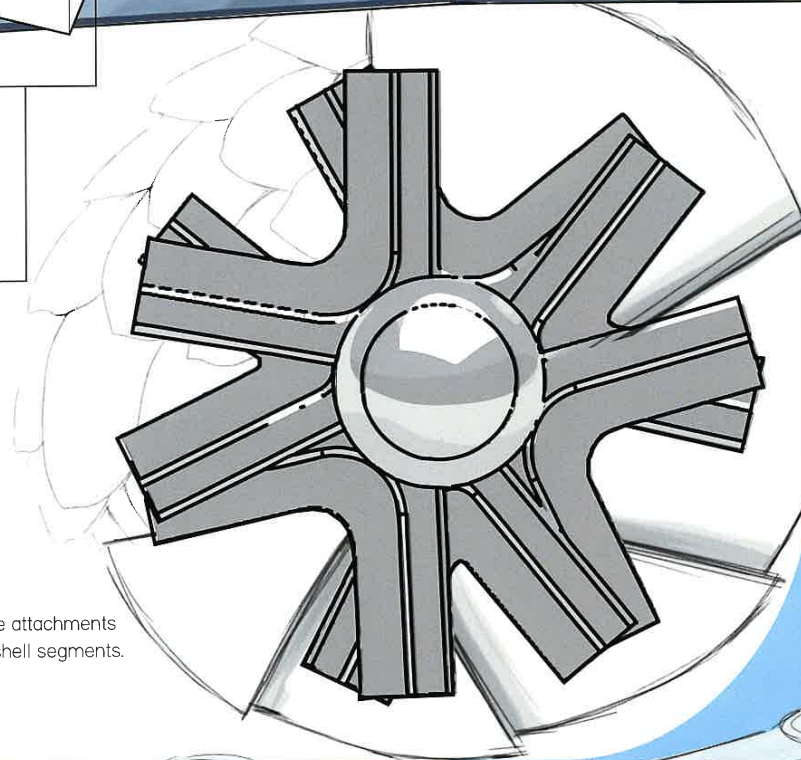


FRAME PIVOT DETAIL.

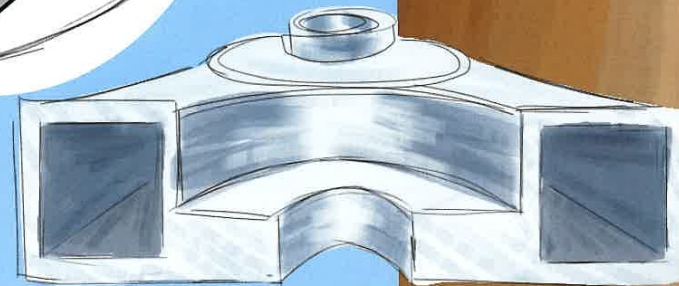
Framing slots into
ends of attachments.

Domed top screwed
on to lock sections
and protect them from wear.

Same mechanism of table section only more attachments
as there will be an extra three for the glass shell segments.



Glass frame attachment.

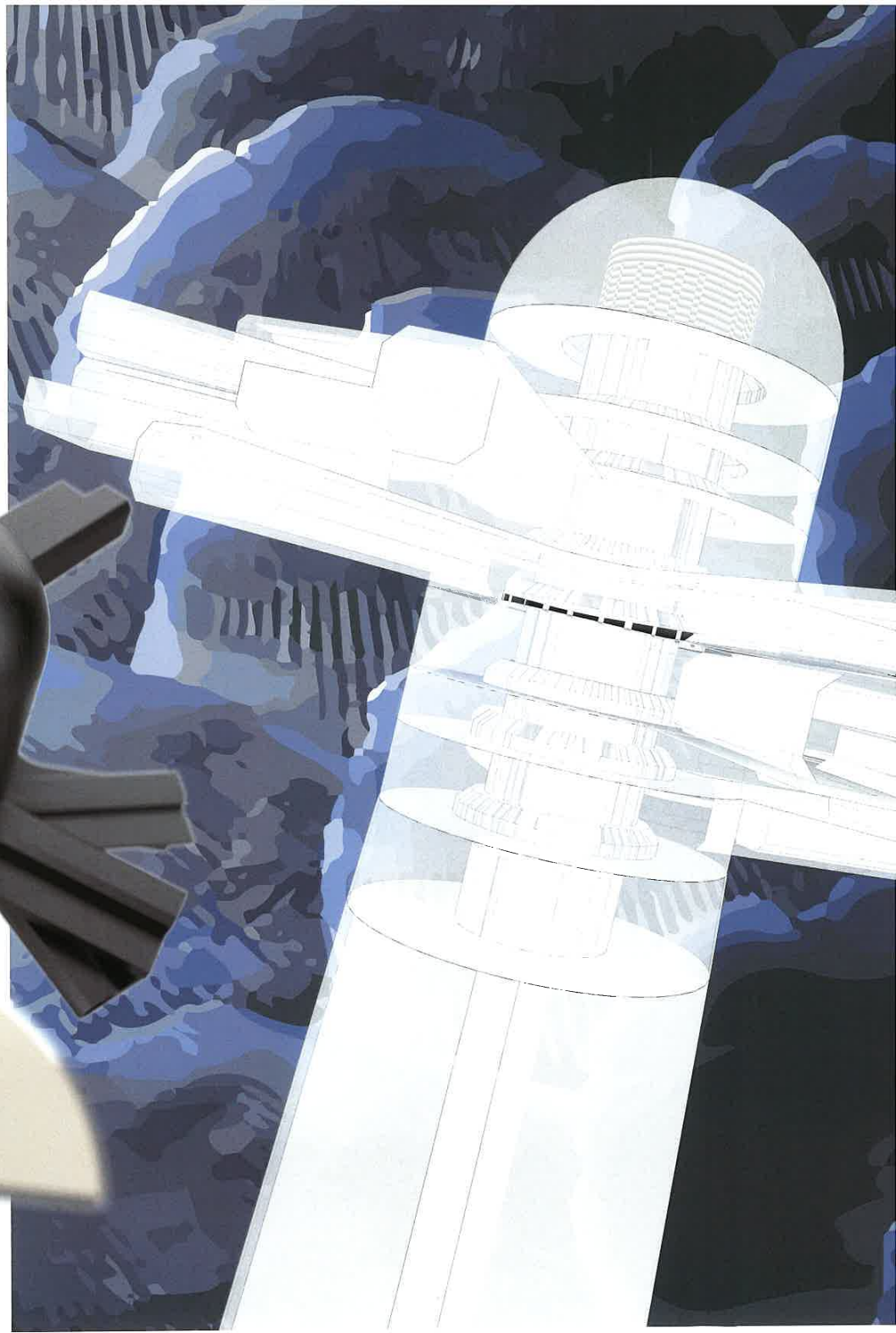


Main Frame attachment.

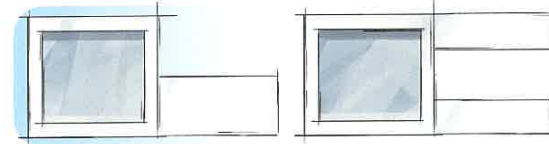


Top cap screws on locking each pivot in place.

Made from lightweight aluminium pieces that slide on top of each other, making construction easy.

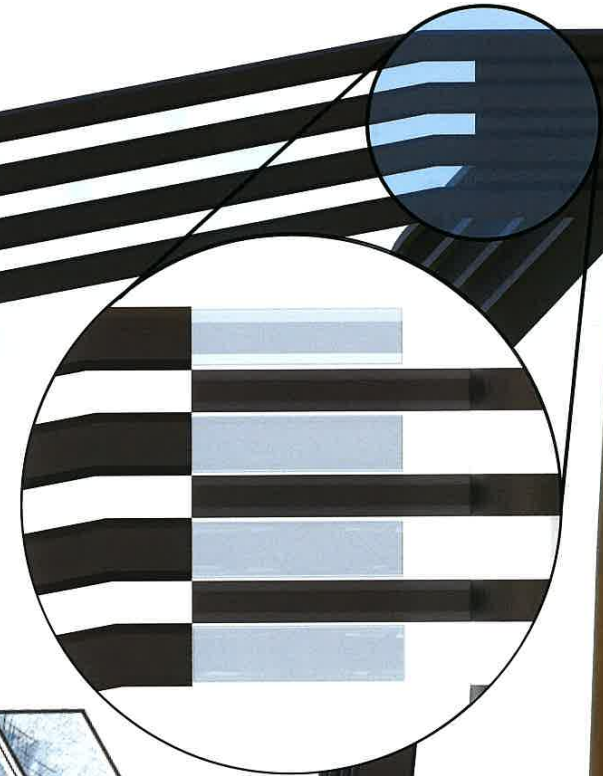
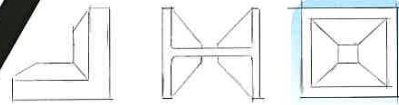


How will the cladding/panelling sit on the frame?

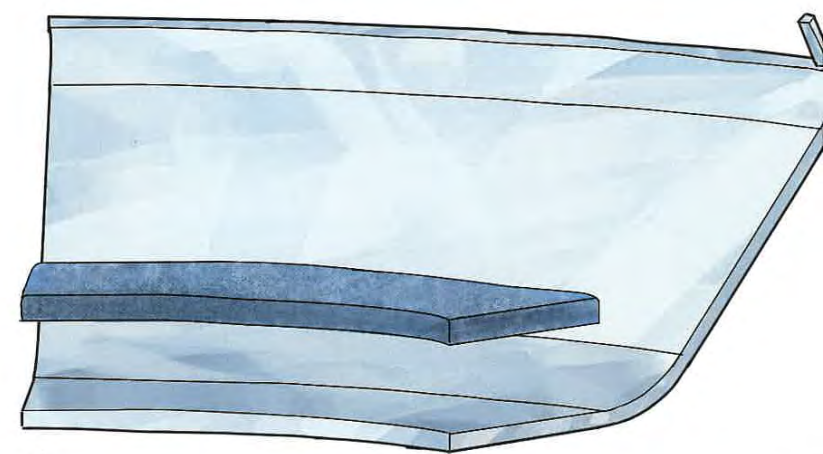
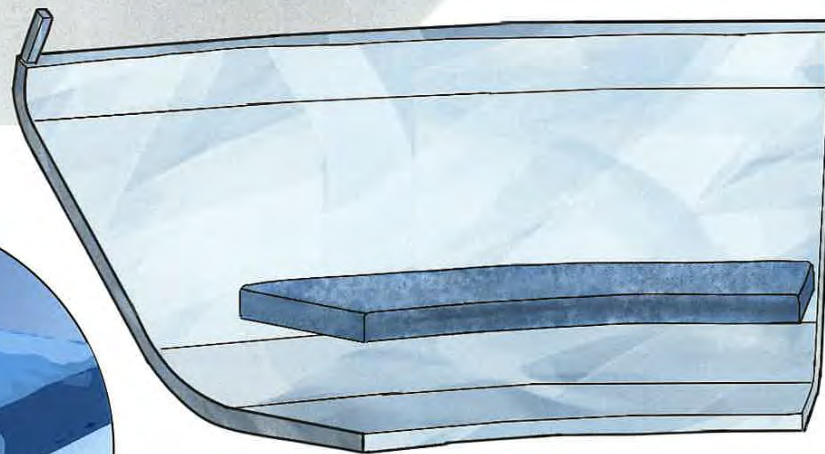
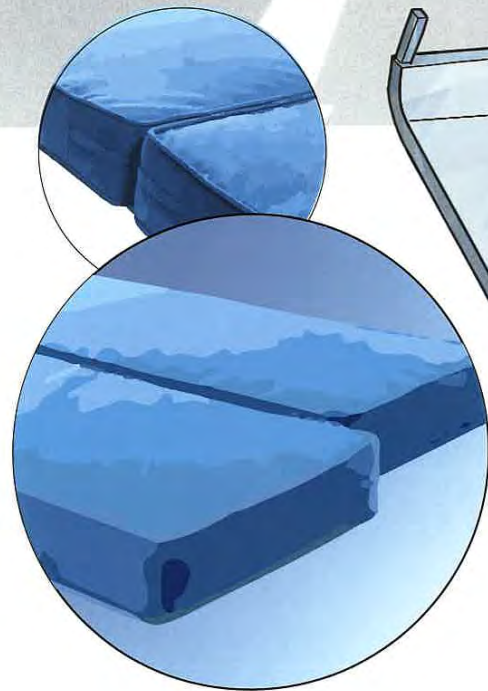
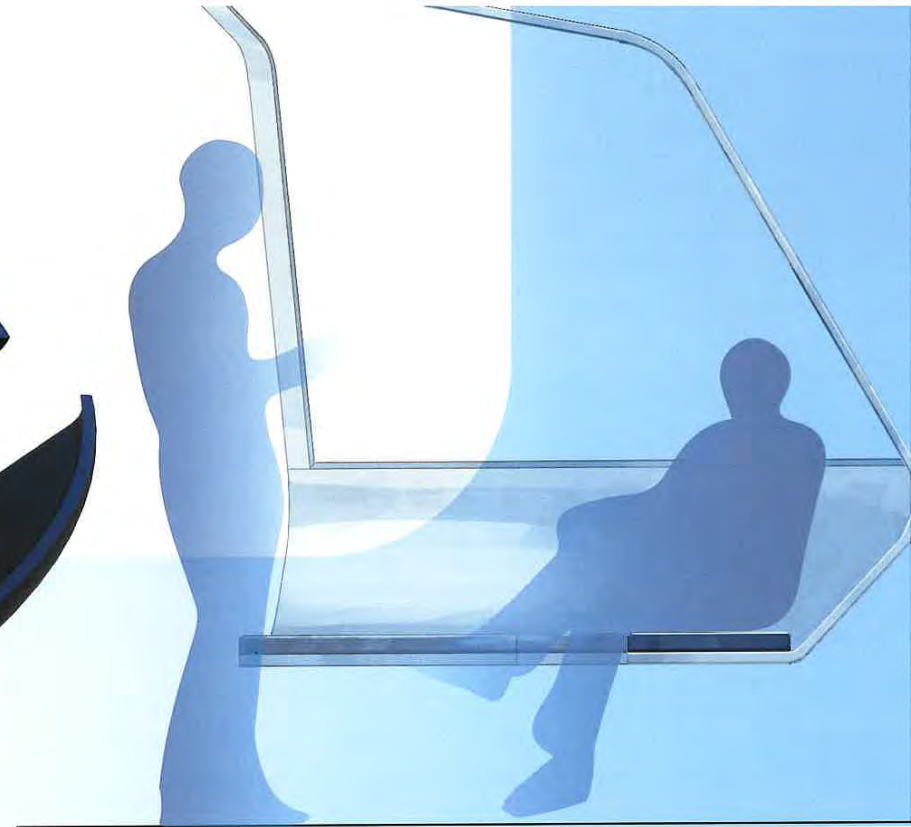


Framing will be made from the same lightweight but strengthened aluminium. It is custom made into these frames creating parts that slot in place, creating an easy assembly

Potential framing options.



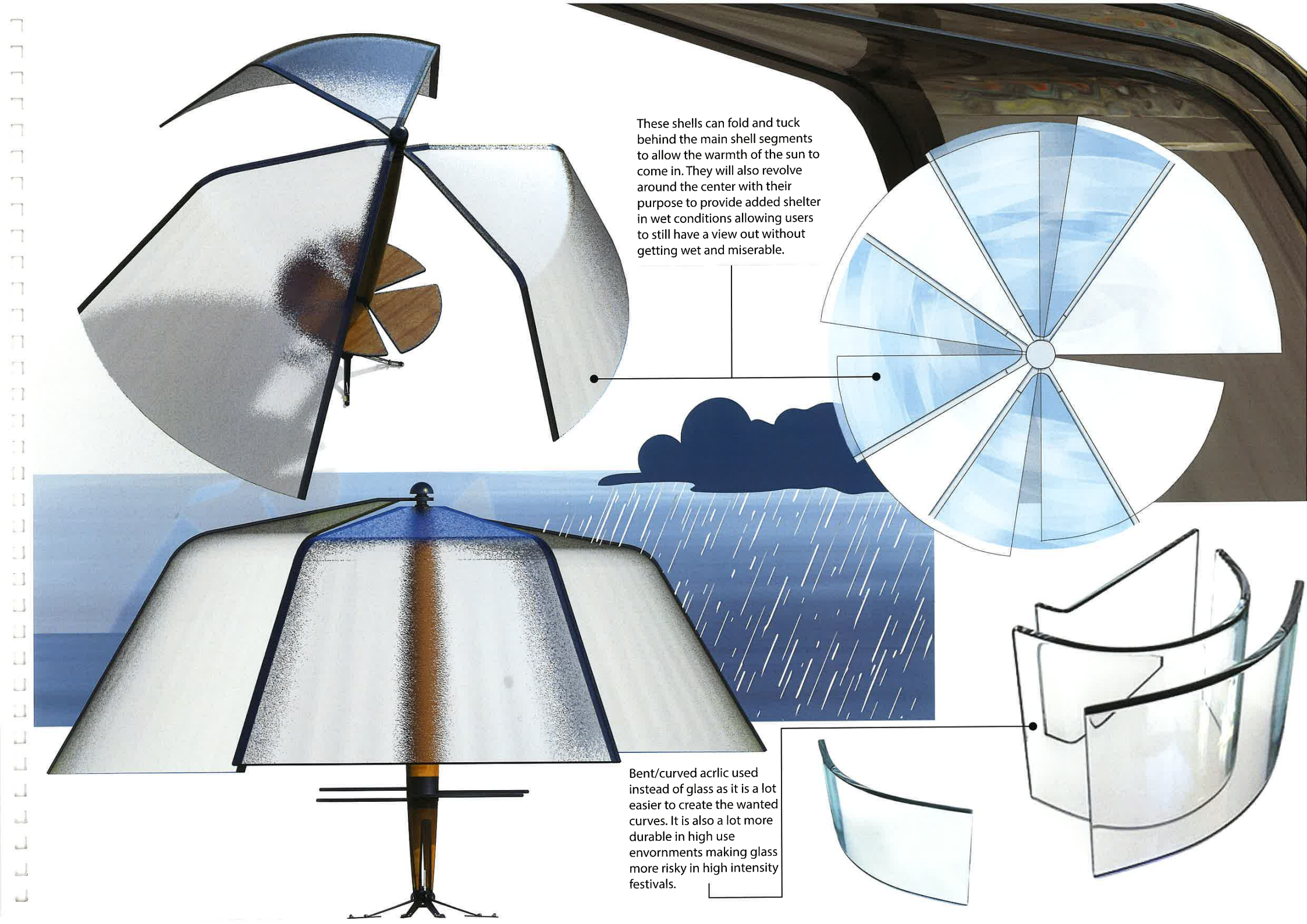
FRAMING DETAIL.



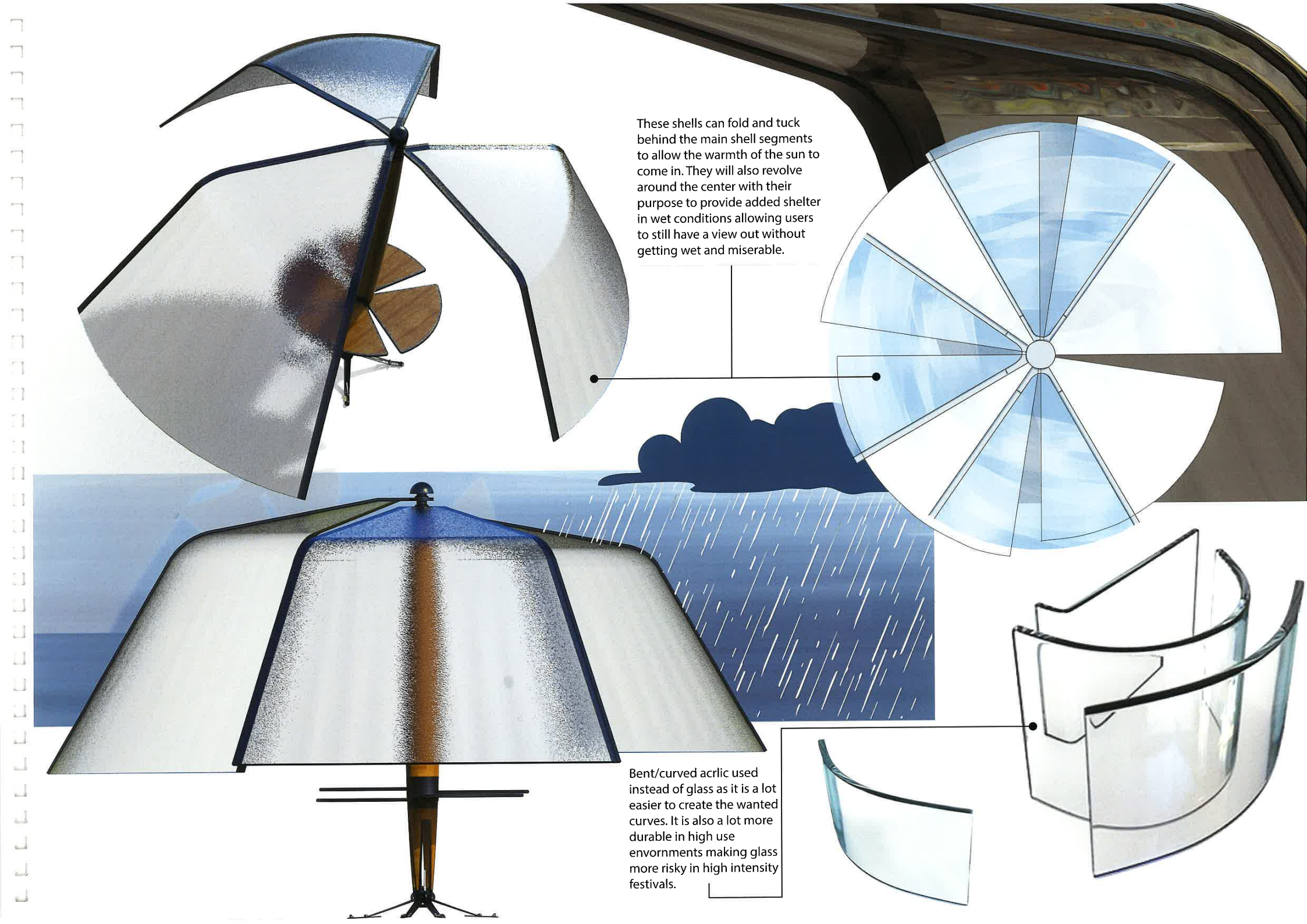
Outdoor bench cushions.
These cushions are made
from quick dry foam allowing
water to pass through rather
than holding it. They are
50mm thick
providing great comfort

The seat base is made from the same
material as the framing, joining with the
same slot attachment as the rest of the
joinery. This is the strong lightweight,
long-lasting aluminium used in the rest
of the structure, as it is lightweight it
makes it a lot easier to assemble so that it
can be done by a group of people.

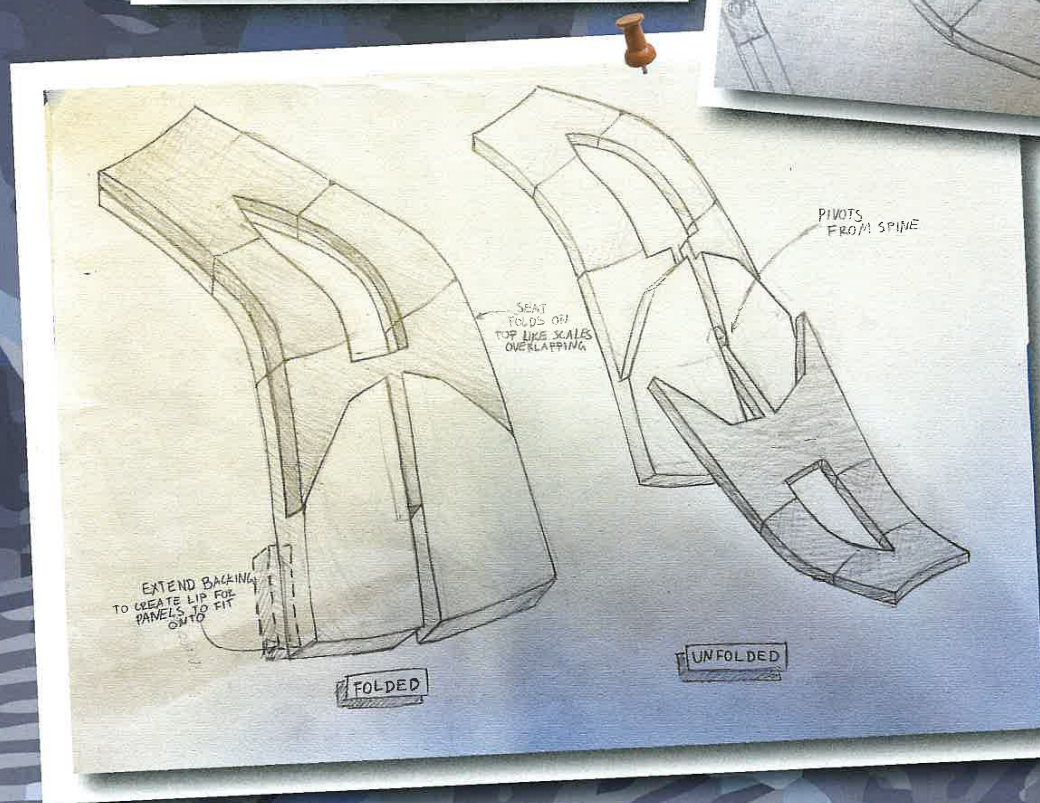
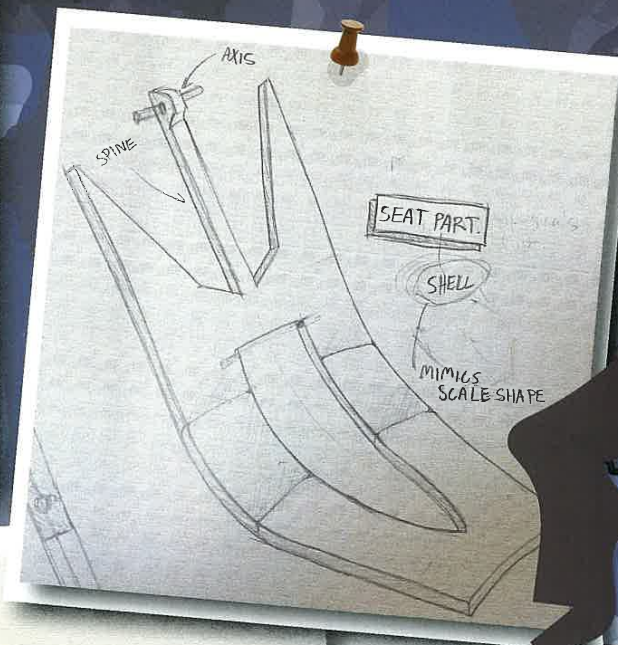
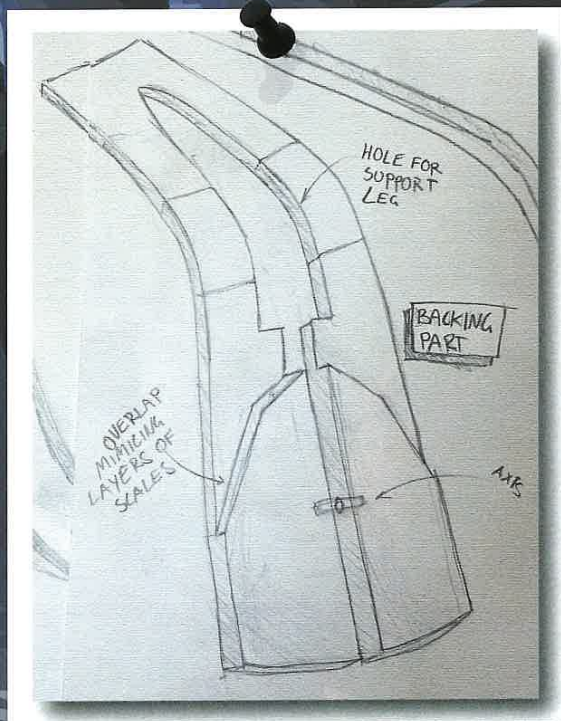




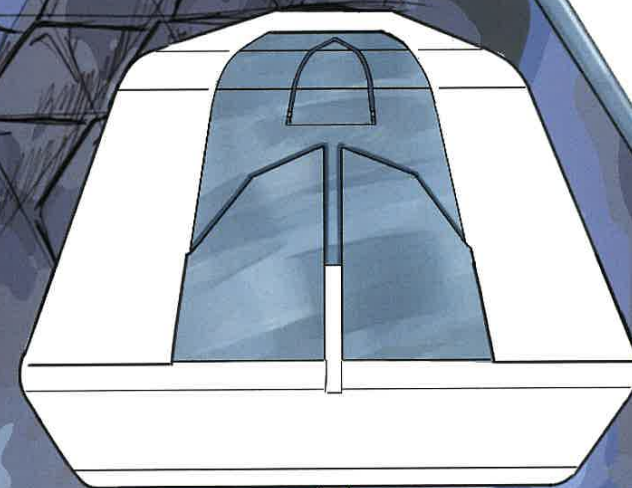
These shells can fold and tuck behind the main shell segments to allow the warmth of the sun to come in. They will also revolve around the center with their purpose to provide added shelter in wet conditions allowing users to still have a view out without getting wet and miserable.

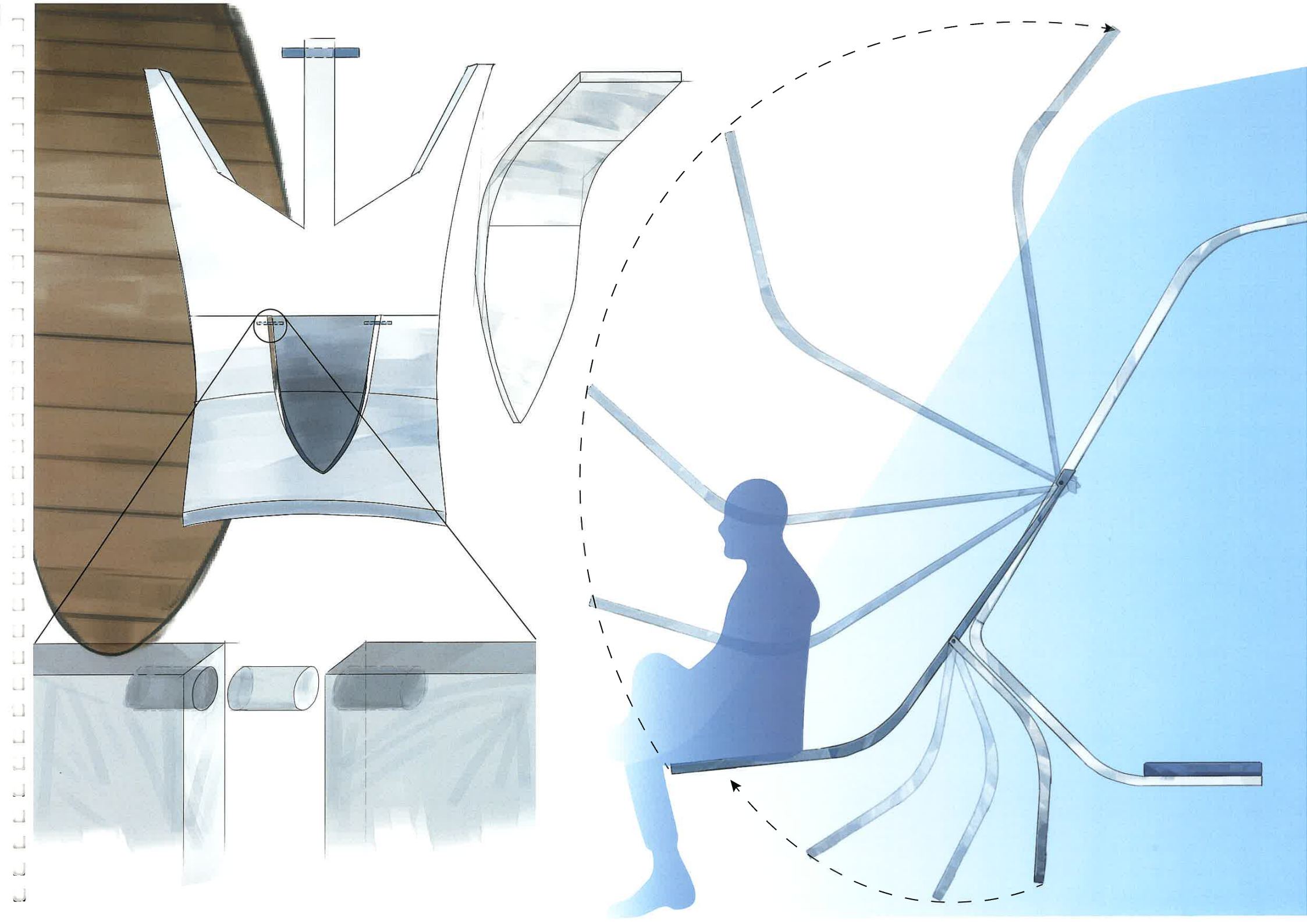


Bent/curved acrylic used instead of glass as it is a lot easier to create the wanted curves. It is also a lot more durable in high use environments making glass more risky in high intensity festivals.



The folding back seat is made from two sections: One, the main backing section which attaches directly onto the shells framing. Two, the seat itself which folds out from a pivot in the backing. The seat and backing are designed similarly to the overlap of pangolin scales tying back into the ideas of comfort, safety and security that come from the strength of the scales.





I have removed the sharp points from version one and replaced them with rounded edges. This removes the harsh angles without compromising the overlapping scale aesthetic.

The new spine that is attached to the pivot is now integrated into the back seat shell. This spine provides more support which not only adds to the practicality but also the strength of the design.

The divot below the new pivot allows the seat to sit in closer to the shell with unfolded so tha it doesn't stick out so far and disrupt the more organic shape.

I have revised the design of the back seat and its backing through rounding and chamfering edges to make a nicer and more comforting look. This revised look subtly portrays the overlapping scales of the pangolin and also appears more inviting.

BACK SEAT - VERSION TWO.

Wall panelling sits
around the framing
ontop of the lip



The back seat pivots out from this axis and
is as simple as a quick pull down to set up.
The support leg folds out from this seat.
The back seat provides comfortably for
one person while the interior seat is much
wider and can sit three to four.



FINALISED SHELL - BACK SEAT.

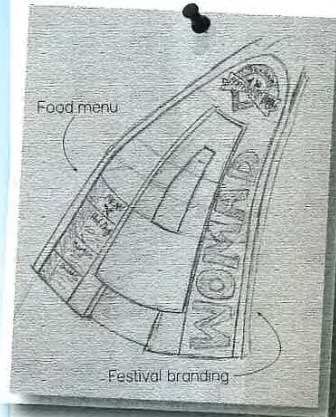


This is the finalised design of the PangoPod with all its shells spread equidistant around the central pole. The design offers comfortable seating space for sixteen people while also having extra standing space that could be used in harsh conditions. The pods can be replicated and spread around The Bowl of Brooklands site, however, they are not restricted to this location and can also be taken to any site across the country. Because of their multi terrain use and ease to set up they are extremely versatile and can be used whenever and wherever.

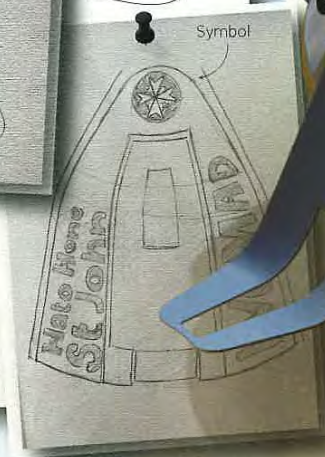
FINAL FORM

SPONSORSHIPS.

An option for the panelling is to offer sponsor advertisements for foodstalls, services and facilities at the events/festivals. This advertising could be as easy as being stuck onto the panels of the shell. This option could not just be for food places, but also provide shelters for services like Saint Johns ambulance which often attend festivals like WOMAD, allowing for more convenient care. The panels could also be used to support local artists, offering them opportunities to present their art in these festivals. Essentially the sponsors offer more specified purposes for the shelter from food and drink to childcare.



Option for food stall. Supporting local Taranaki businesses like Bratwurst Bros and Shining Peak Brewery



Option for New Zealand ambulance and medical-care Saint Johns



CRITICAL CLEANSTONE

An option for the wall panels of the shelter made from 100% recyclable plastic. This option is not only sustainable but it also provides this excitement of colour that is prevalent in WOMAD and other festivals. This cleanstone is made from reclaimed NZ plastic waste so will help meet sustainability targets. These panels provide a lot of durability and strength, so the longevity of them isn't compromised which can often be the case with recycled materials. There is no delamination, no chipping and no loss of quality from breakable veneers. At the end of their 20+ year life CRITICAL buy back the Cleanstone panels to recycle them again, allowing for this continued goal towards lowering NZ's carbon emissions. The panels can also be either selected from the range below or even made with custom colours of finishes.

In use example.



Made from ocean plastics, construction waste, and post consumer packaging.



BREAKING DOWN FOR TRANSPORT.

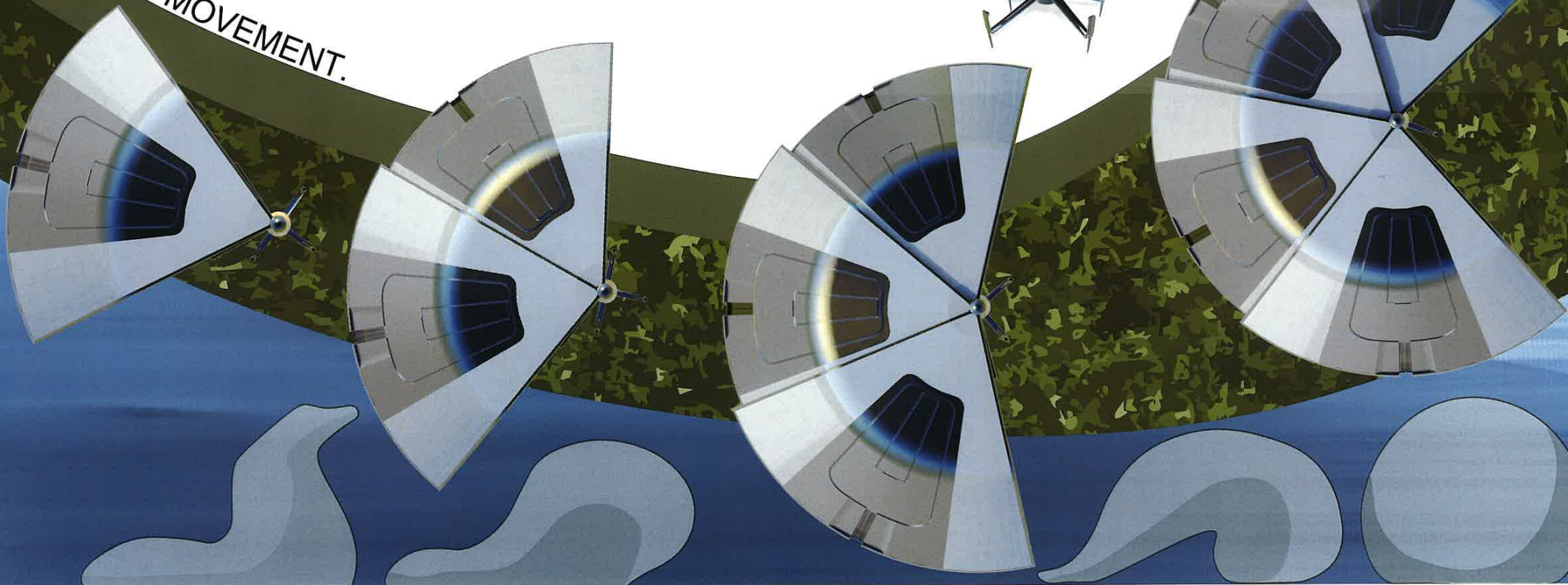
The Pango Pods break down into these sixteen main parts that fit on Pukekura Park's UTV trailer. Each part is easily attached to each other and can be assembled by two park or event staff

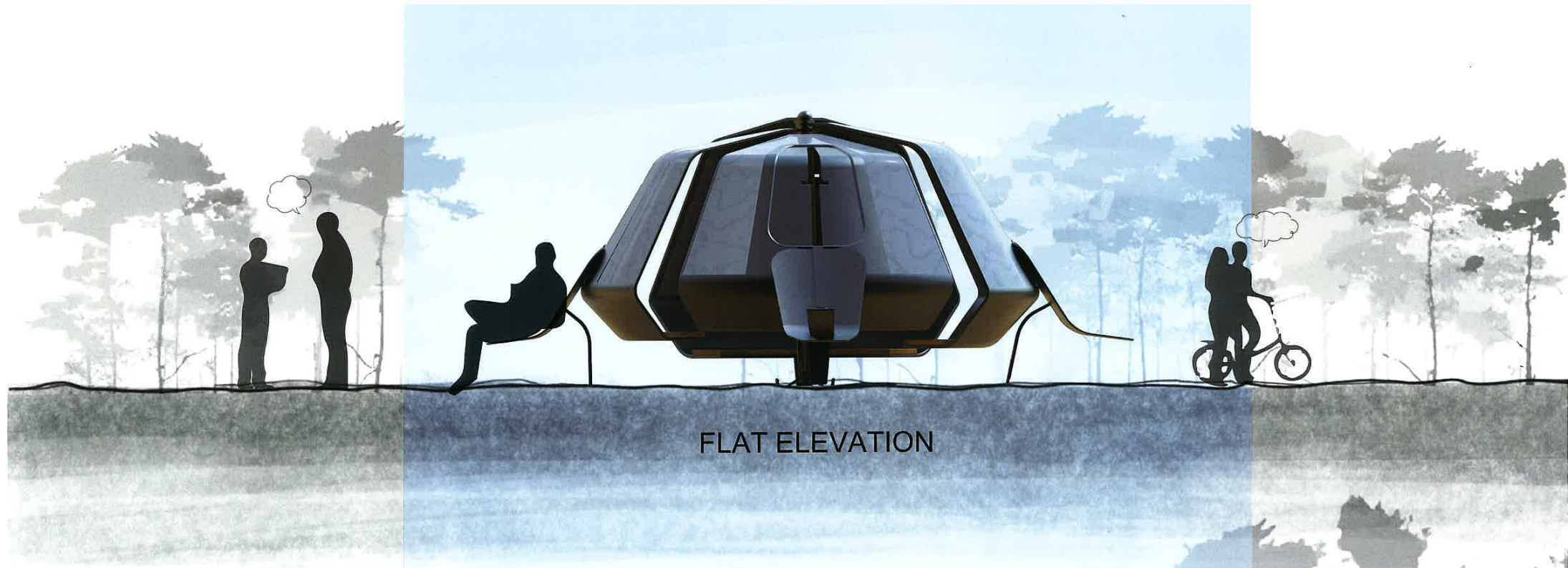


The shells and table all fold up into each other and unfold to create this customisable seating area, that can be revolved to any orientation whether fully enclosed with the acrylic shelter or opened up to the heat of the sun.

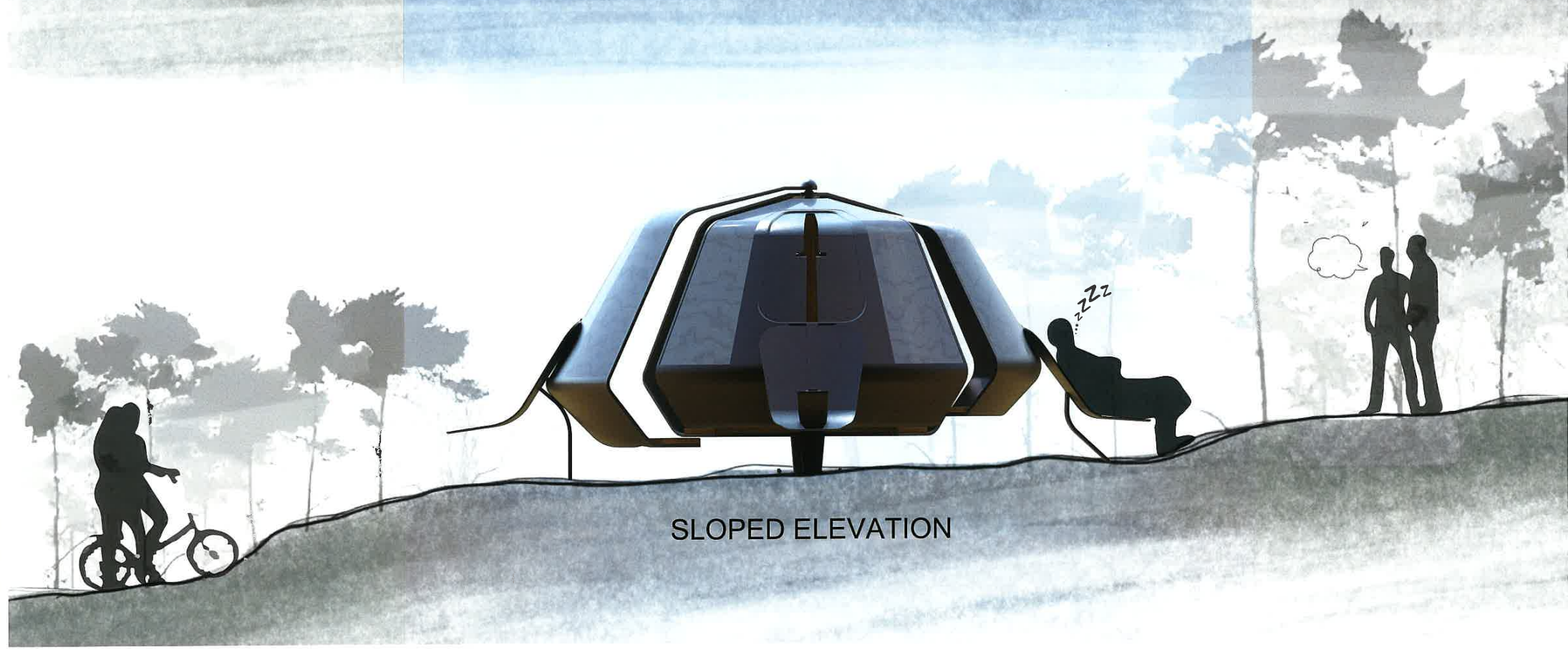


ROTATING MOVEMENT.





FLAT ELEVATION



SLOPED ELEVATION



FOLDED BACK SEAT



UNFOLDED BACK SEAT



FINAL RENDERS ONE.





FINAL RENDERS THREE



PANGO PODS.

The Pango Pods achieve this vision of creating a outdoor shelter that seamlessly merges its practicality with sustainability, providing sheltered seats to not only Pukekura Park but also anywhere in need of any easy temporary shelter. The Pango Pods have created this innovative way to have a fully enclosed shelter while also offering the choice to open up and merge with the outdoor and beauty of the Park. The Pod's core concept revolved around it's replication and ability to rotate around its center. Each pod connects to the curling up of the pangolin with most components revolving around an axis mimicing the protection that the pangolin and its scales provide when tucked. The Pango Pods fit the brief creating this space that provides both seating and shelter to festival goers as well as park users. Because of its ability to replicate and be set up anywhere, the pods can provide far more shelter to a site/environment than simply one shelter, far surpassing the current alternatives.

Outstanding Scholarship

Subject: Design and Visual Communication

Standard: 93602

Total score: 21

Score	Marker commentary
7	Design ideation The design outcome in this project is innovative and captivating. The ideation process through the project has shown high levels of extending and transforming ideas to reach an outcome that is original and exciting.
6	Design practice The thinking throughout this submission is highly intentional. The location and purpose are well integrated into the developing design. Mechanical knowledge, visual skills, and design intent have been integrated successfully together. The outcome engages in considered exploration and decision making, although there is room for further resolution of some key functional aspects and the spatial experience for people using the pods.
8	Visual communication Visual communication is a clear strength of this project, with sophisticated and refined visual techniques employed throughout the submission. A high level of visual fluency enables communication of a convincing design narrative. Visual skills have been used to show the design intentions and to express thinking in an assured manner. Details of the design have been expressed clearly using suitable visual communication techniques.