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New Zealand Qualifications Authority

Level 3 Design and Visual Communication 2026

91627 Initiate design ideas through exploration

SAMPLE EXEMPLAR – EXCELLENCE

Brief

The Department of Conservation (DOC) seeks new designs to replace aging tramping huts across New Zealand's national parks. These huts provide essential shelter for outdoor enthusiasts and must be sustainable, durable, and comfortable while respecting heritage and the environment. This project aims to modernize New Zealand's backcountry huts, balancing tradition with innovation while preserving environmental and cultural values.

Design Requirements:

- Capacity: 4 to 10 people
- Materials: Sustainable, weather-resistant materials.
- Energy: Passive heating/cooling (i.e. Sunlight for warmth).
- Prefab Components: Create a design that can be split into multiple parts to remove construction time and cost
- Aesthetic: Blend with the landscape while maintaining a unique identity.
- Transport: Make the design in a way to be able to be moved to remote locations

Project Goals:

1. Sustainability: Use eco-friendly materials and energy-efficient systems (Natural sunlight for lighting).
2. Durability: Use materials that reduces maintenance.
3. Comfort: Provide warmth and functionality while keeping a unique charm.

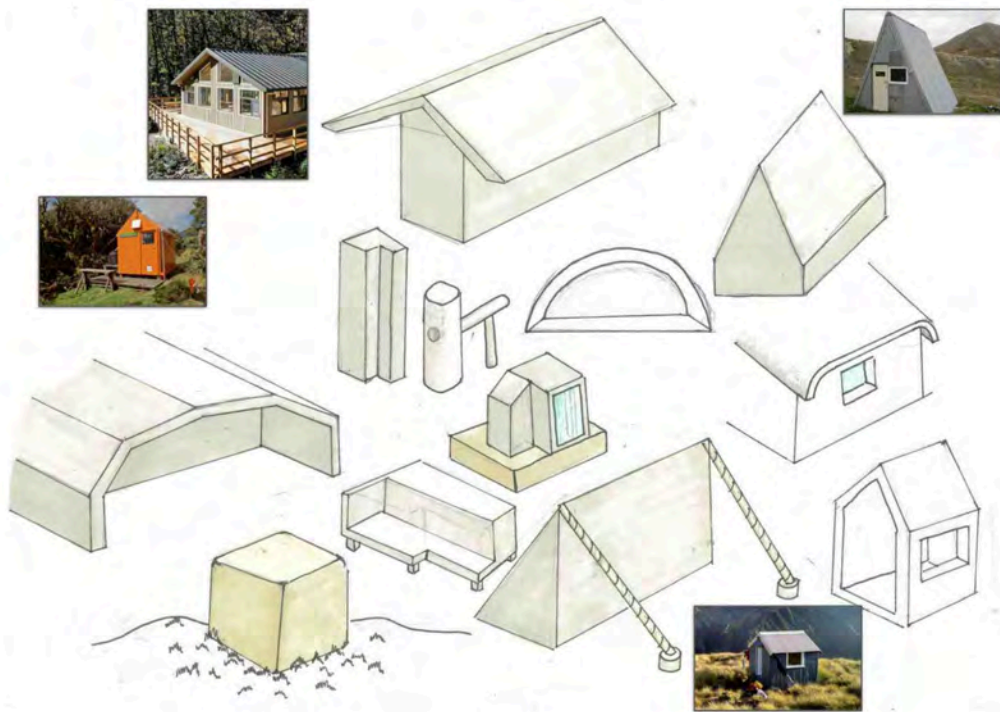
Challenges:

- Varying climates from alpine to coastal.
- Compliance with DOC regulations and environmental standards.



Santiago Calatrava

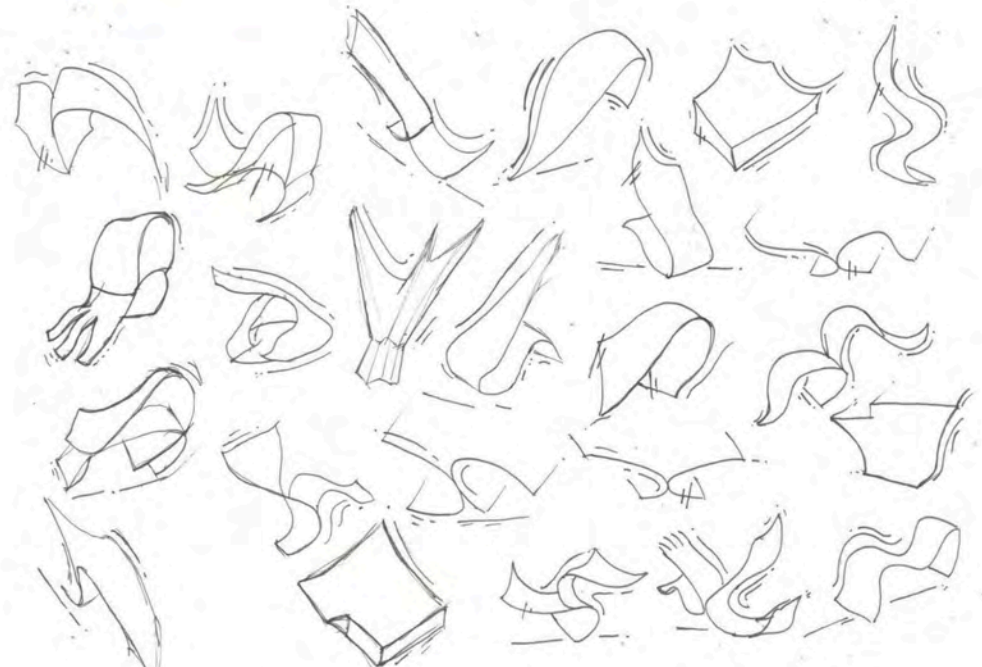
Architect of the Oculus Mall in the heart of New York City, Santiago Calatrava applies a considerable amount of inspiration from birds and natural forms into his work. I am going to take inspiration from some of his pieces and apply aspects of them into my work



Environment

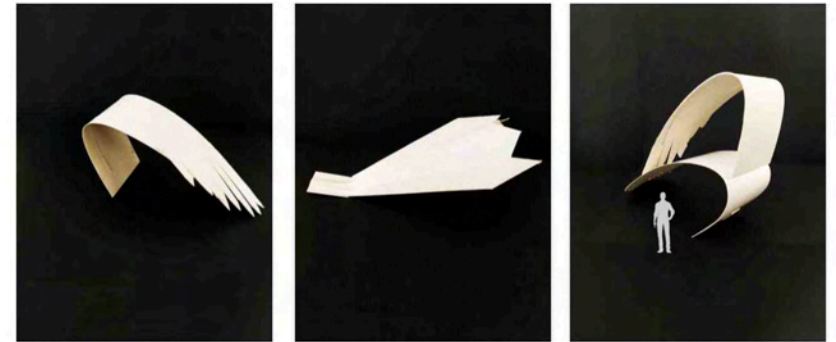
DOC huts in New Zealand are shelters for hikers, trampers, and hunters, located in different natural environments:

1. **Alpine Huts** – High up in the mountains, exposed to snow, wind, and freezing temperatures. Used by climbers. (e.g., *Mueller Hut, Aoraki/Mount Cook National Park*)
2. **Bush Huts** – Found in native forests, sheltered but often damp. Home to native birds and sandflies. (e.g., *Lake Waikaremoana huts, Te Urewera*)
3. **Coastal Huts** – Near beaches, exposed to sea breezes and salt spray. Great ocean views. (e.g., *Whariwharangiri Hut, Abel Tasman National Park*)
4. **Remote Backcountry Huts** – Very isolated, basic shelters often used by hunters and experienced hikers. (e.g., *Siberia Hut, Mount Aspiring National Park*)
5. **Great Walk Huts** – Larger, well-equipped huts on famous hiking tracks, often requiring bookings. (e.g., *Clinton Hut, Milford Track*)



MODELS _____

These models explore shapes and structures inspired by bird wings. These designs show sweeping curves that suggest lift and movement and layered, feather-like elements. By simplifying and reshaping the forms of wings, I tested how they could become spaces people move through, gather in, or find shelter under. These experiments help show how natural movement and structure can be turned into architectural design, guiding the development of a hut that feels both practical and connected to the landscape.



CREATING STRUCTURES — FROM MODELS

The dynamic lines of the wings capture a sense of lift and motion, giving the huts a strong visual identity that blends into natural landscapes

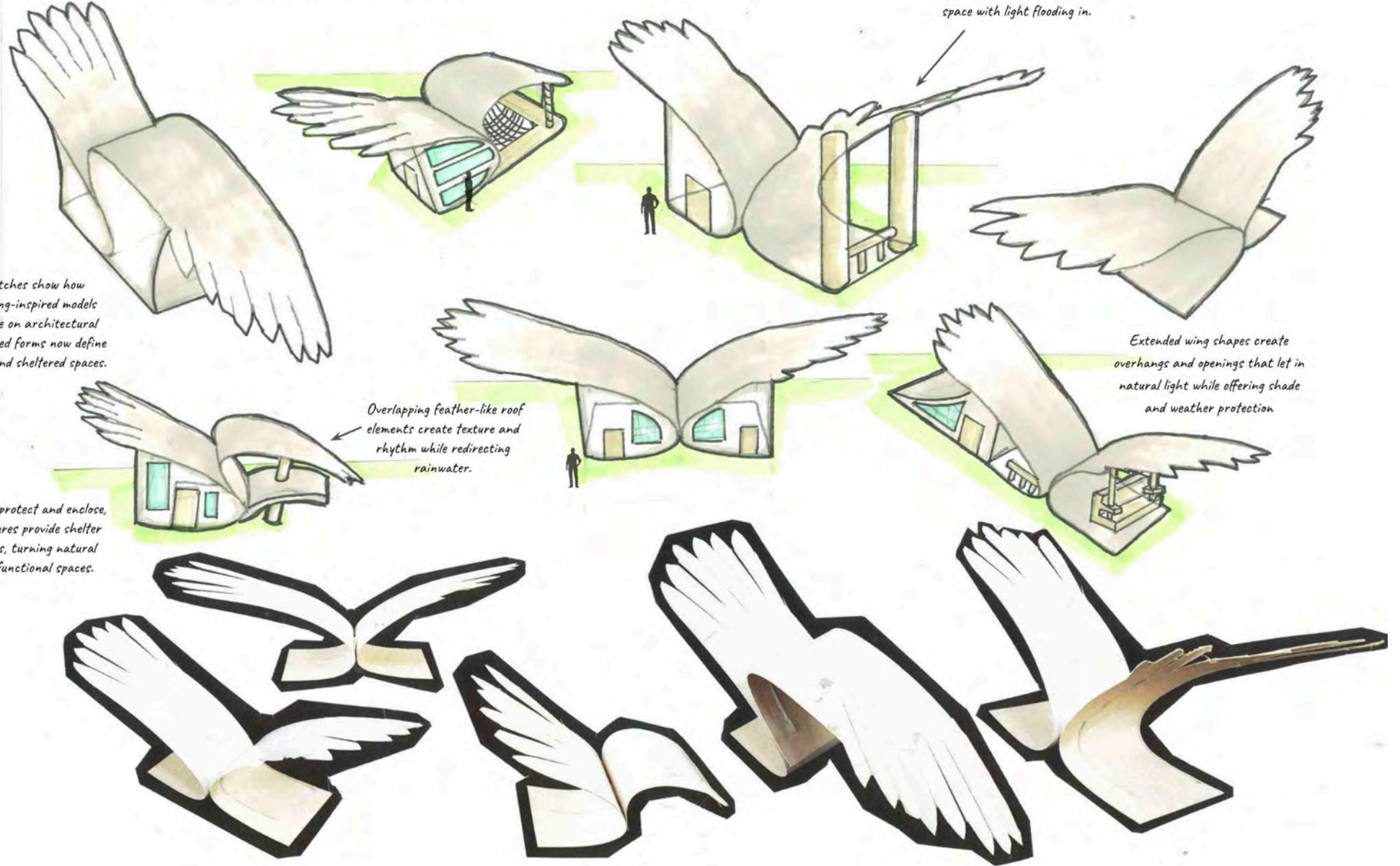
Wing form lifted above columns, allowing openness beneath — suggesting a communal gathering space with light flooding in.

These sketches show how abstract wing-inspired models begin to take on architectural qualities. Curved forms now define roofs, walls, and sheltered spaces.

Just as wings protect and enclose, these structures provide shelter for trampers, turning natural forms into functional spaces.

Overlapping feather-like roof elements create texture and rhythm while redirecting rainwater.

Extended wing shapes create overhangs and openings that let in natural light while offering shade and weather protection.



Large window offers panoramic view of outside scenery, adding to not only the comfort of the design but also the natural lighting and warmth

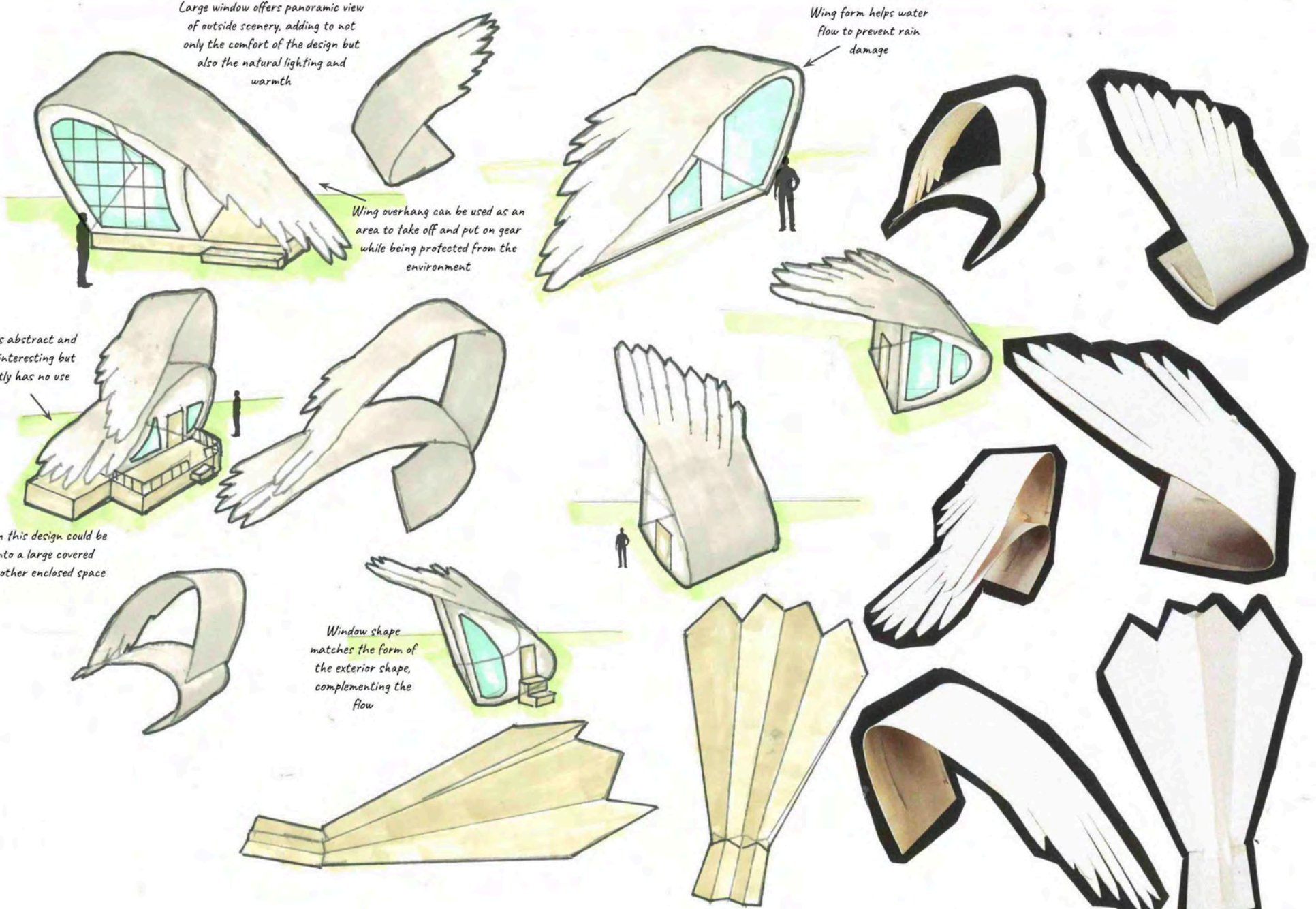
Wing form helps water flow to prevent rain damage

Wing overhang can be used as an area to take off and put on gear while being protected from the environment

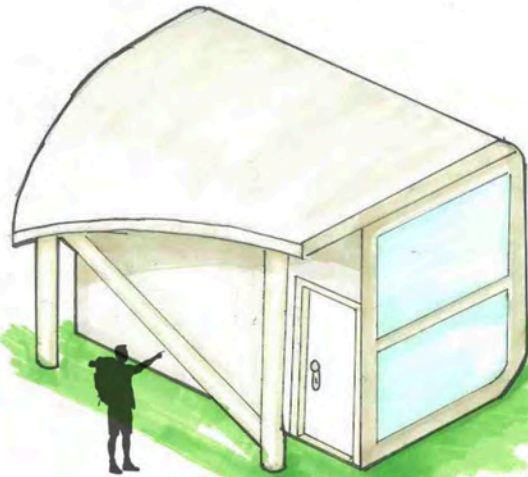
Design is abstract and visually interesting but currently has no use

Second floor in this design could be converted into a large covered balcony or another enclosed space

Window shape matches the form of the exterior shape, complementing the flow

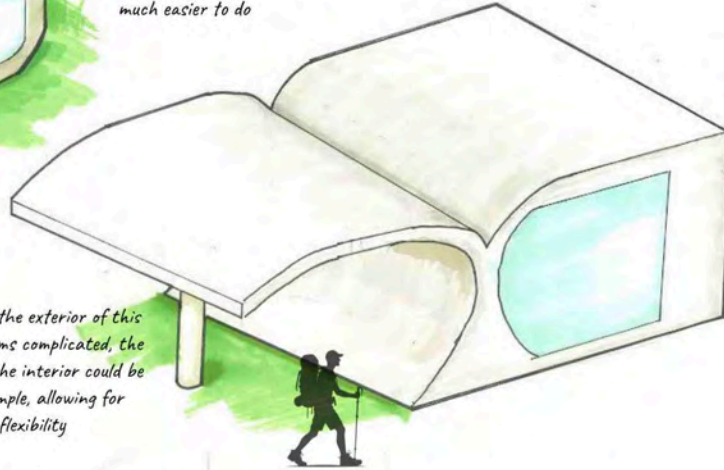


REFINING MODEL — STRUCTURES

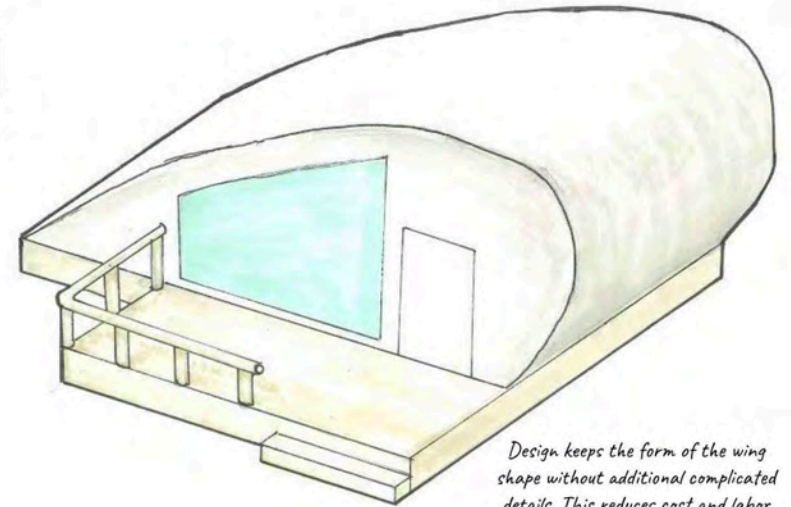


Although the space is small, the simplistic structure means it is easily scalable to a larger size

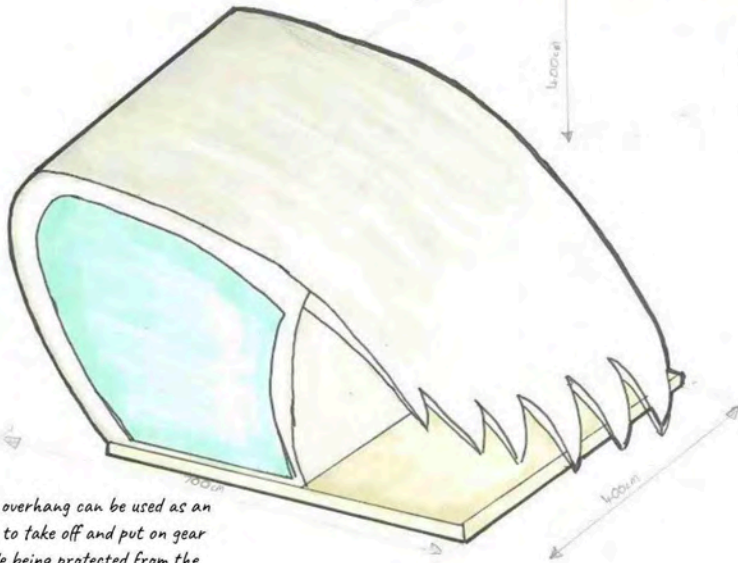
As the exterior of this design is very straightforward, interior considerations will be much easier to do



Although the exterior of this design seems complicated, the shape of the interior could be quite simple, allowing for flexibility

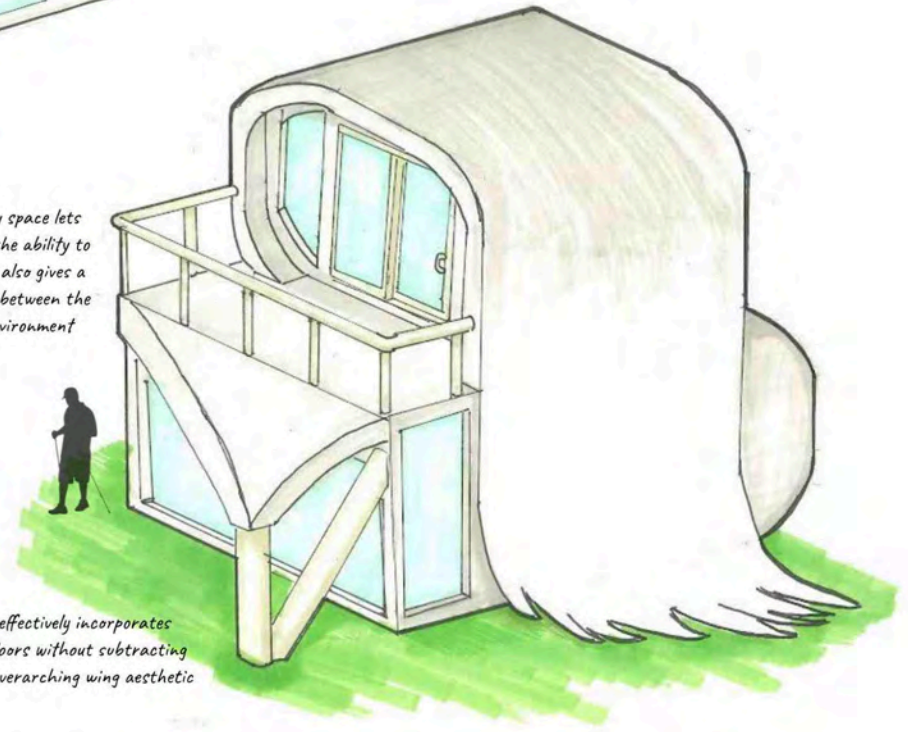


Design keeps the form of the wing shape without additional complicated details. This reduces cost and labor putting it together without compromising on the brief



Wing overhang can be used as an area to take off and put on gear while being protected from the environment

Second floor balcony space lets people using the hut the ability to admire the views. It also gives a greater sense of flow between the interior and the environment

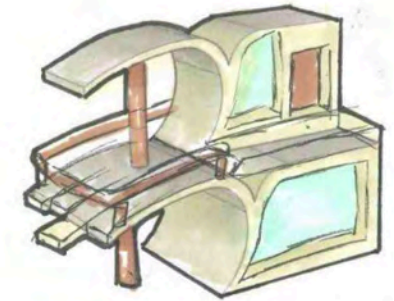
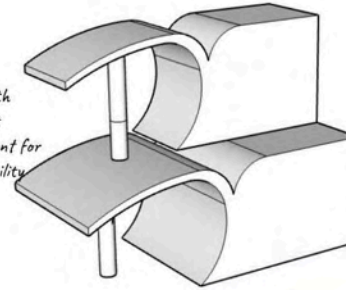


Design effectively incorporates multiple floors without subtracting from the overarching wing aesthetic

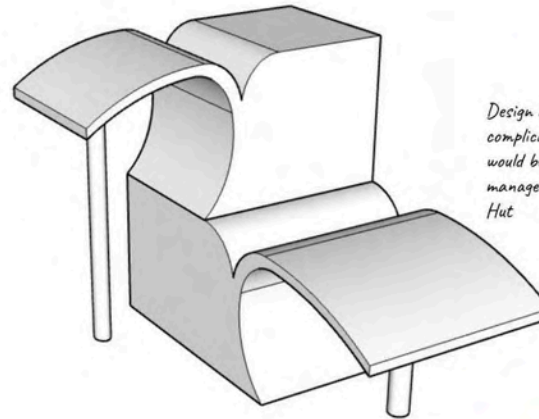
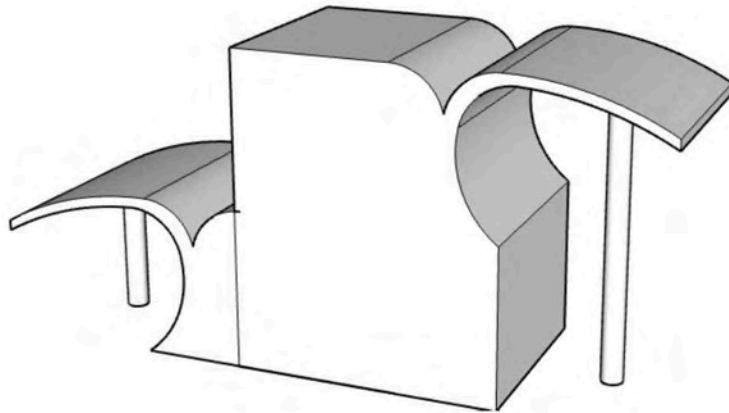
EXPANDING DESIGN

CONSIDERATIONS

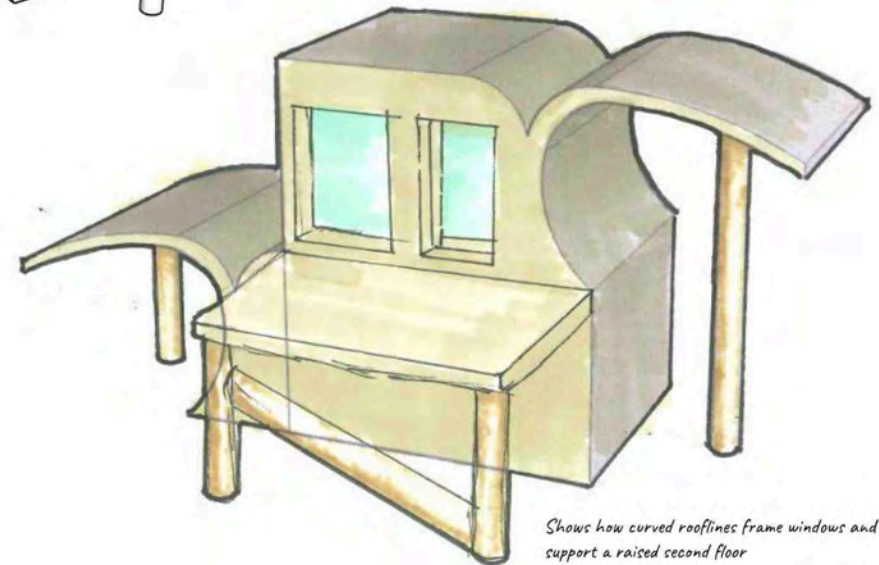
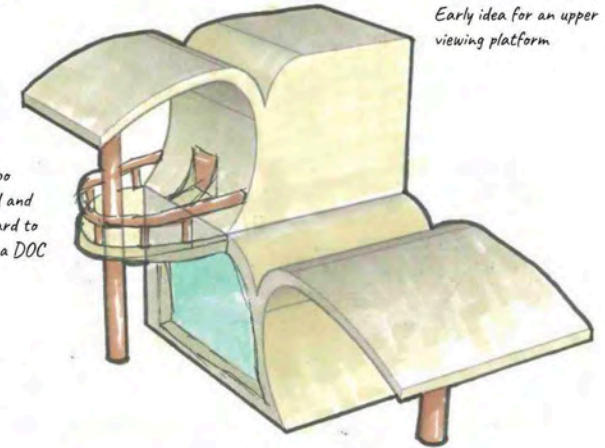
Although pillars on both floors add an abstract aspect, it is inconvenient for construction and usability.



Early idea for an upper viewing platform.



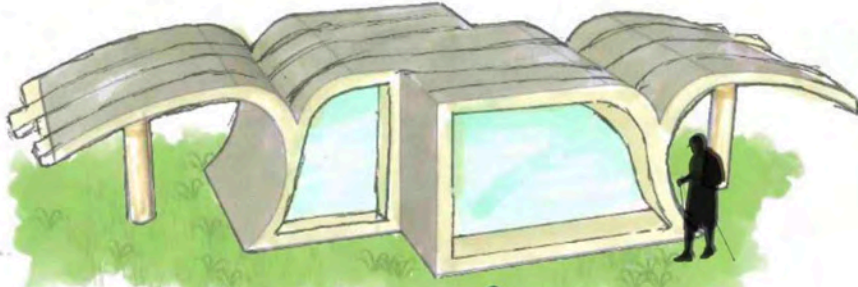
Design is too complicated and would be hard to manage as a DOC Hut.



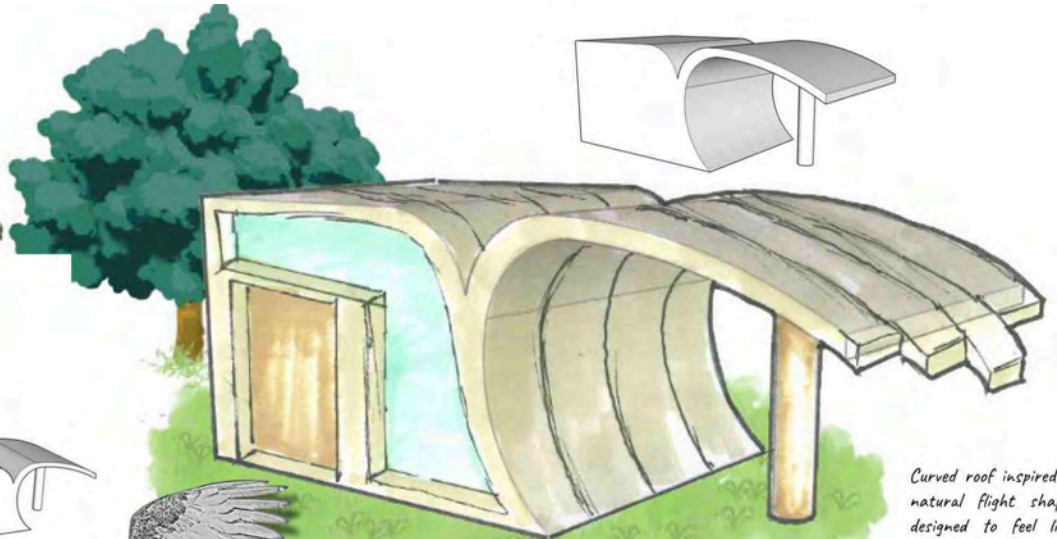
Shows how curved rooflines frame windows and support a raised second floor.

EXPANDING DESIGN

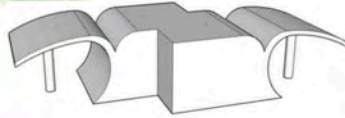
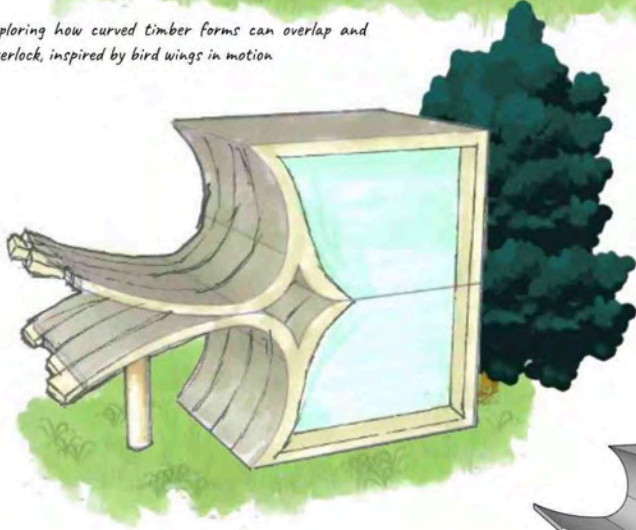
CONSIDERATIONS



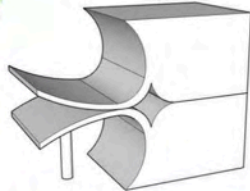
Exploring how curved timber forms can overlap and interlock, inspired by bird wings in motion



Curved roof inspired by natural flight shapes, designed to feel light and sheltering

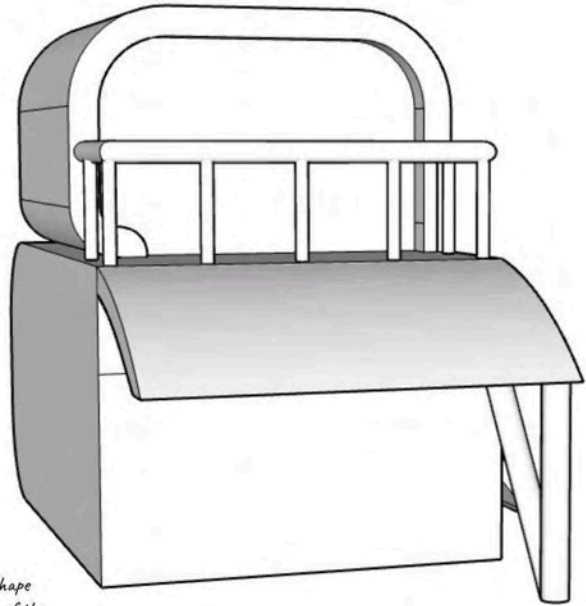


The sketches explore flowing, curved wooden structures inspired by bird wings, particularly the way feathers layer and arc through motion. These curves influence both the roof shape and how the walls connect, creating a sense of life and movement.

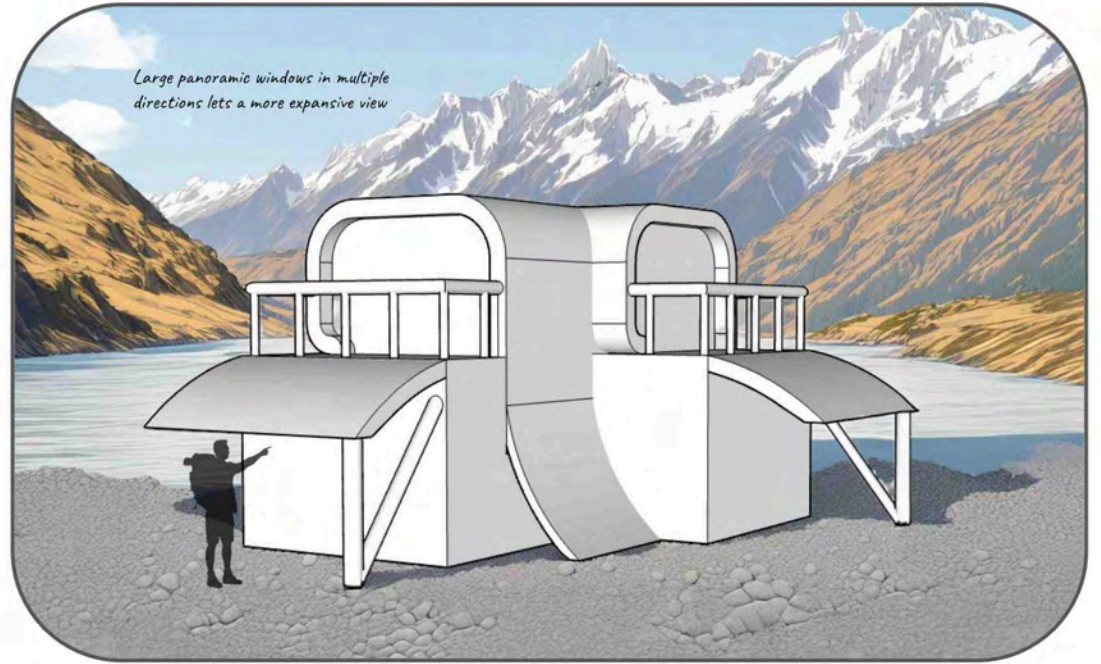


Huts linking together to form a small community

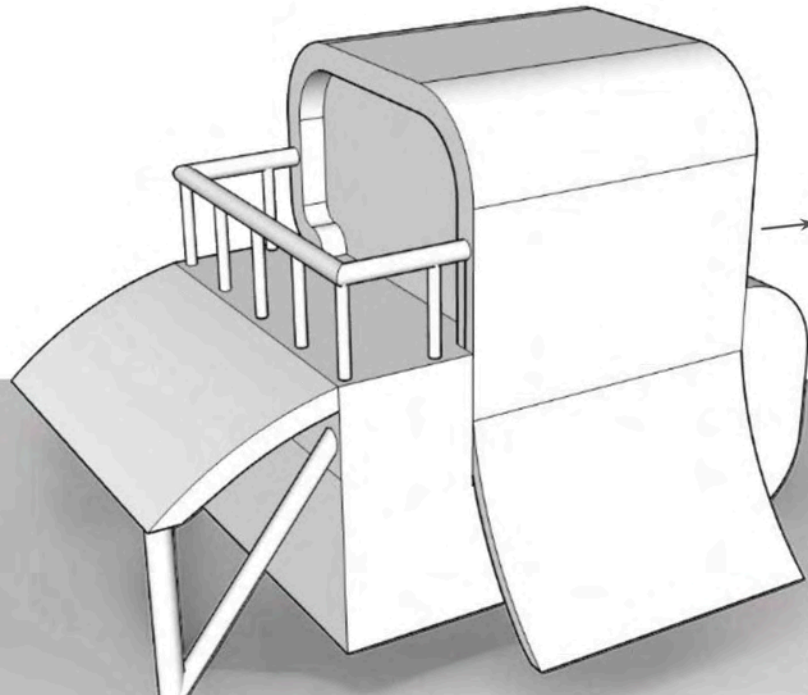




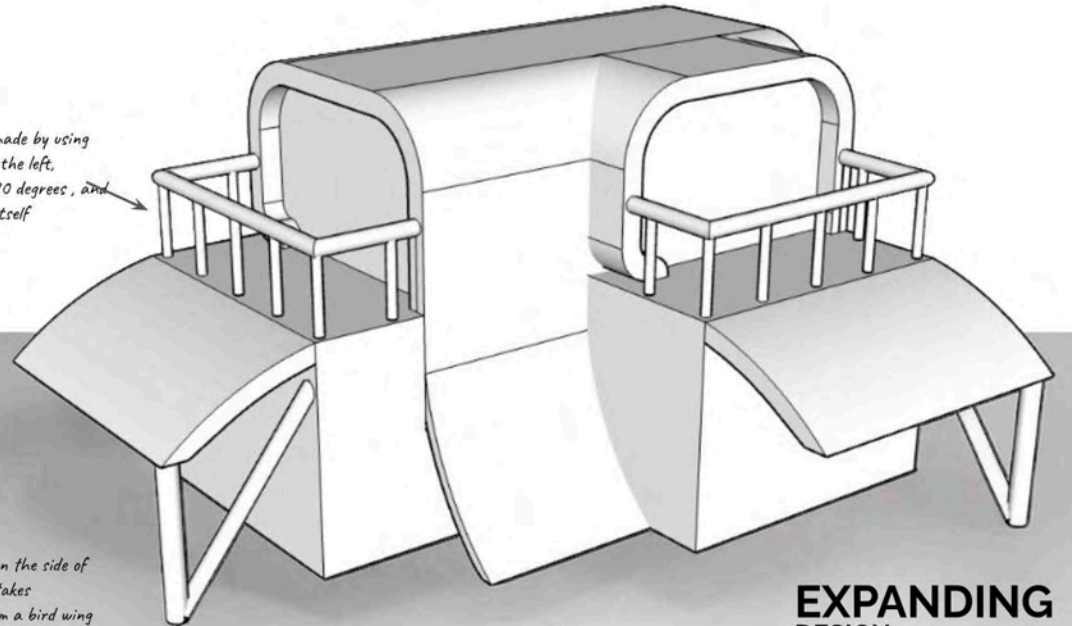
Front shade cover shape represents the beak of the bird



Large panoramic windows in multiple directions lets a more expansive view

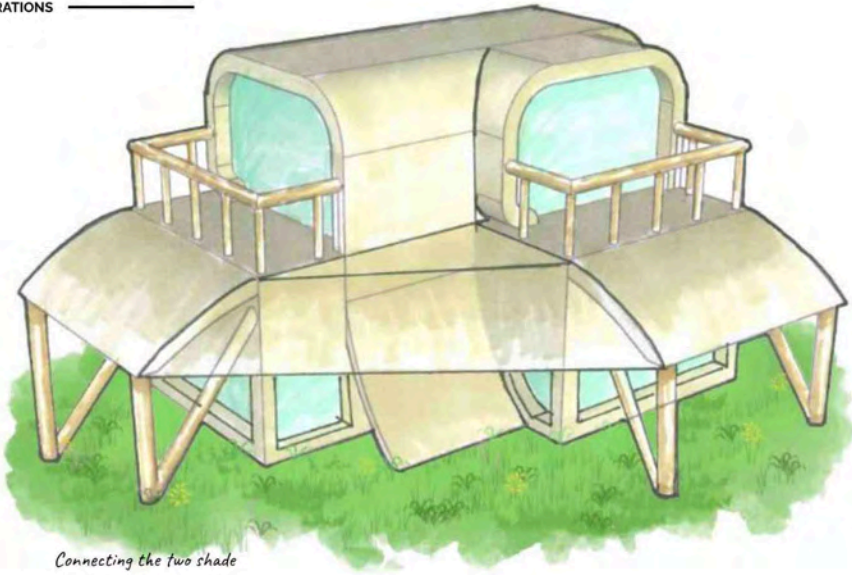


Design was made by using structure on the left, rotating by 90 degrees, and adding it to itself



Sloped design on the side of the structure takes inspiration from a bird wing in rest

EXPANDING DESIGN CONSIDERATIONS



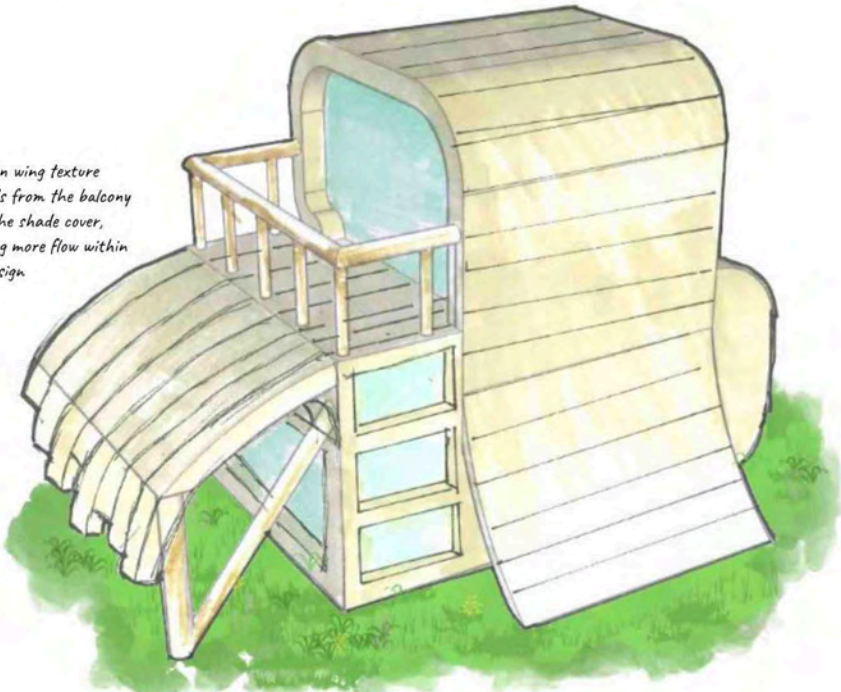
Connecting the two shade covers together creates a larger usable outdoor area

This design has almost too many windows which could suck too much heat out of the hut

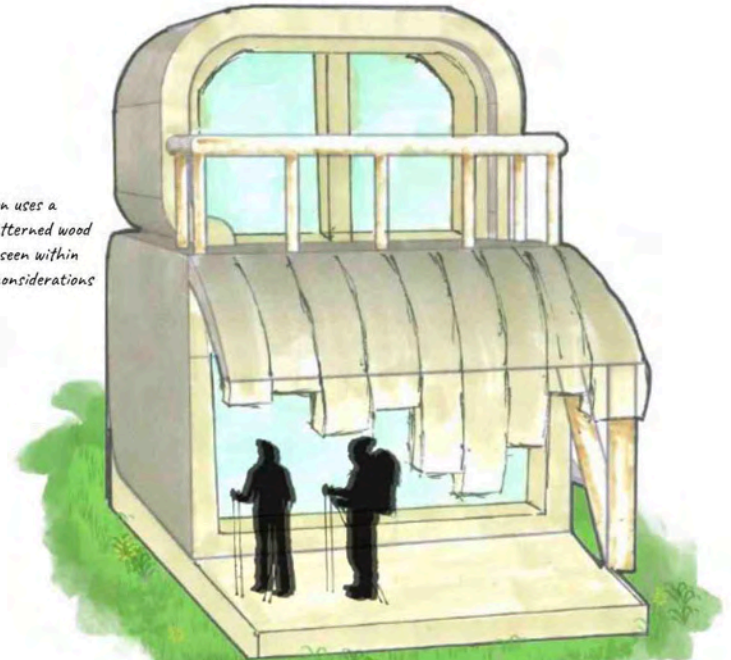


This slope / wing design on the edge of the building could be cleverly integrated into the surrounding environment by planting native plants on it

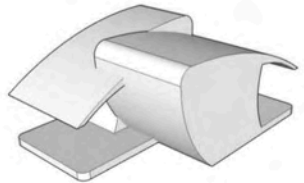
Wooden wing texture extends from the balcony onto the shade cover, offering more flow within the design



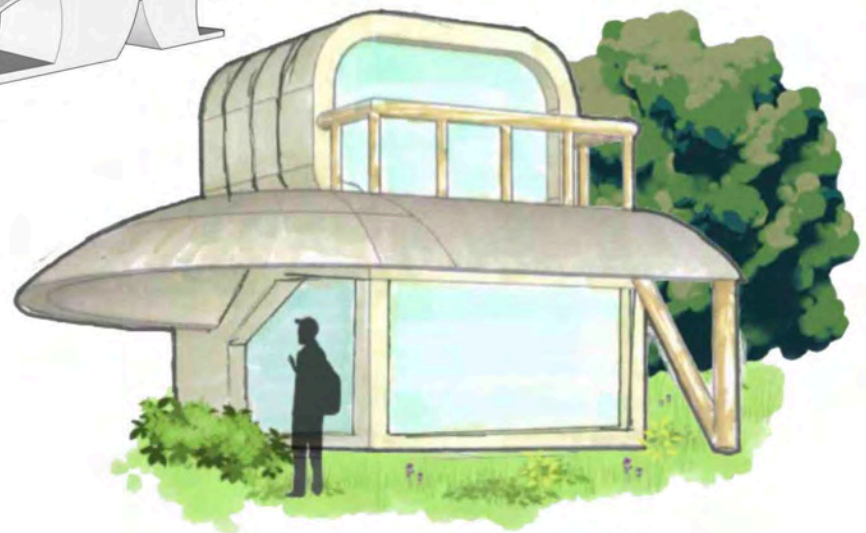
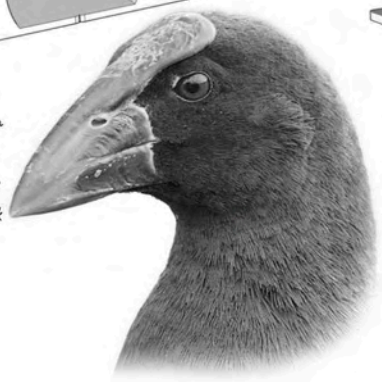
This design uses a similar patterned wood that was seen within my form considerations



**EXPANDING
DESIGN**
CONSIDERATIONS

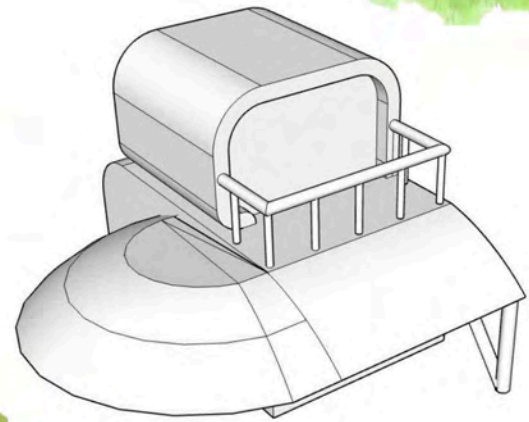
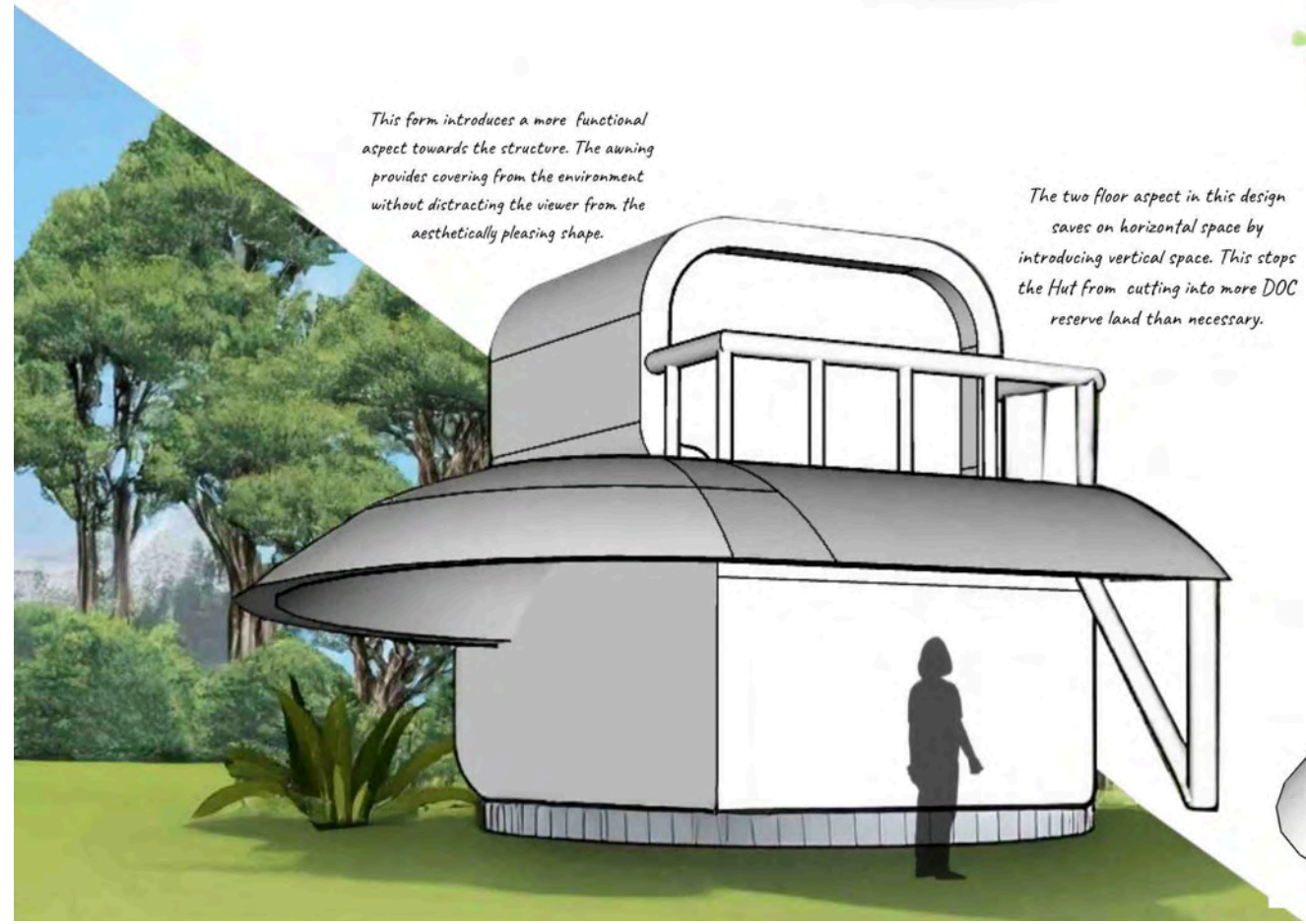
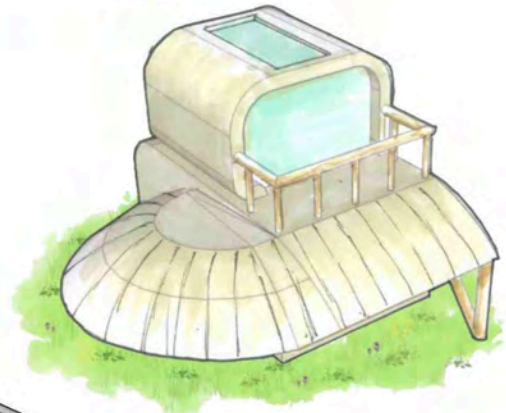


Surrounding designs have had huge inspiration from the original wing design, as well as the shape of a pūkeko. The main body of the design represents the pūkeko's head, while the awning represents the beak.



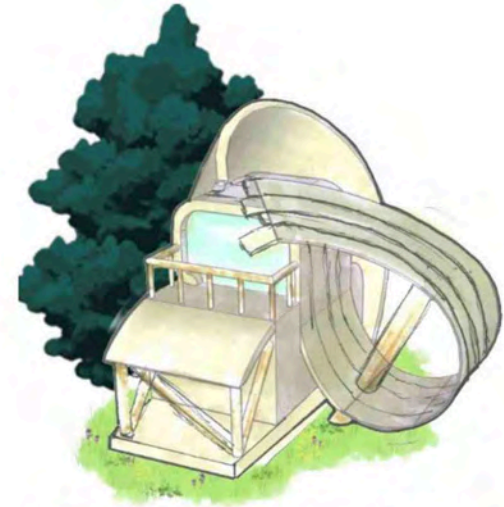
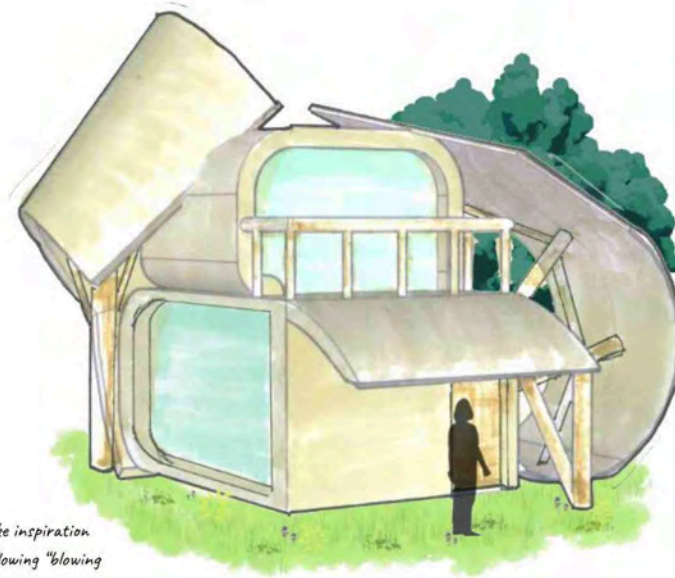
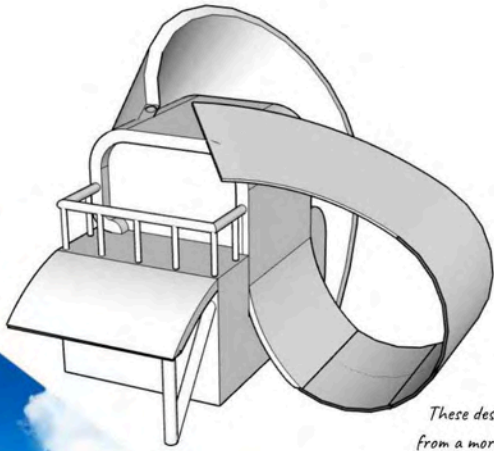
This form introduces a more functional aspect towards the structure. The awning provides covering from the environment without distracting the viewer from the aesthetically pleasing shape.

The two floor aspect in this design saves on horizontal space by introducing vertical space. This stops the Hut from cutting into more DOC reserve land than necessary.

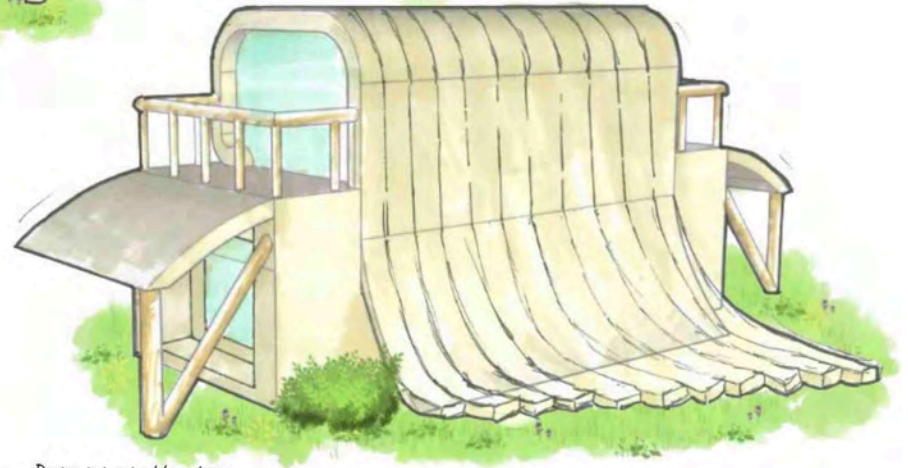


EXPANDING DESIGN

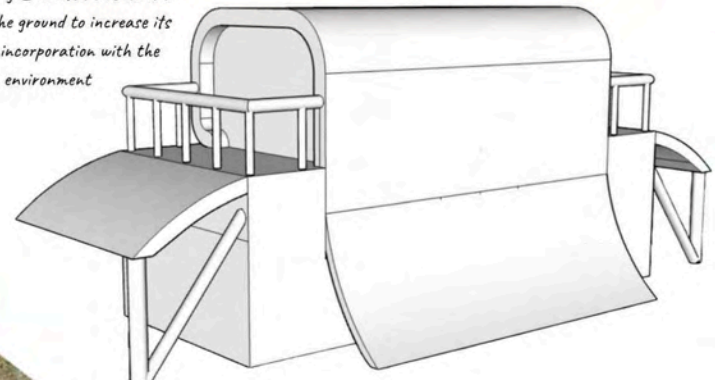
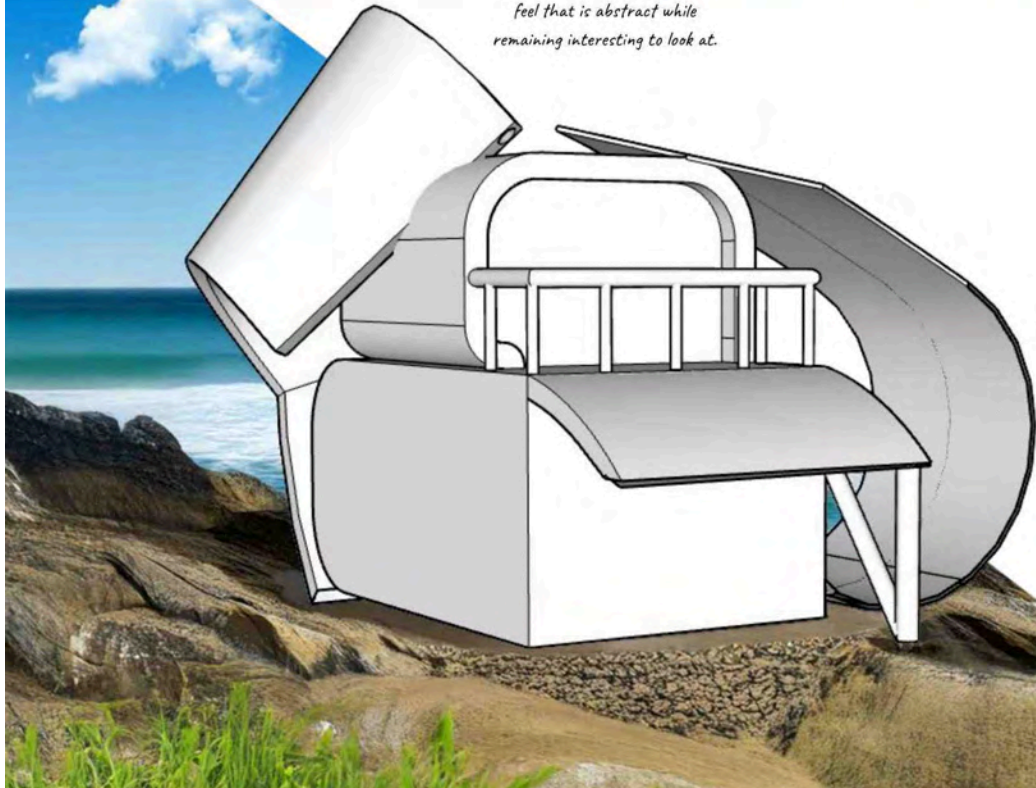
CONSIDERATIONS

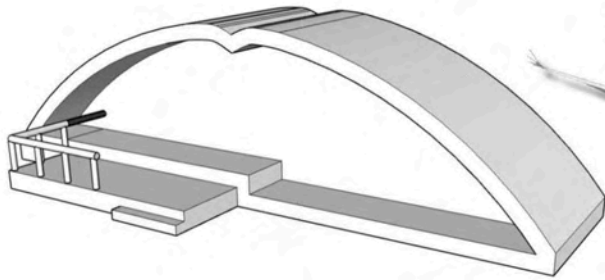


These designs take inspiration from a more free-flowing "blowing in the wind" idea. It creates a feel that is abstract while remaining interesting to look at.



Design is inspired by a large textured wing. I wanted this wind to flow into the ground to increase its seamless incorporation with the environment

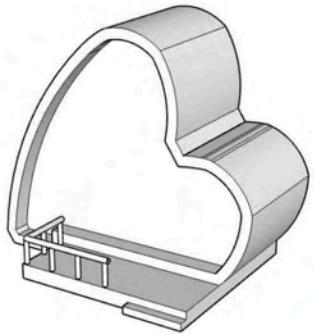
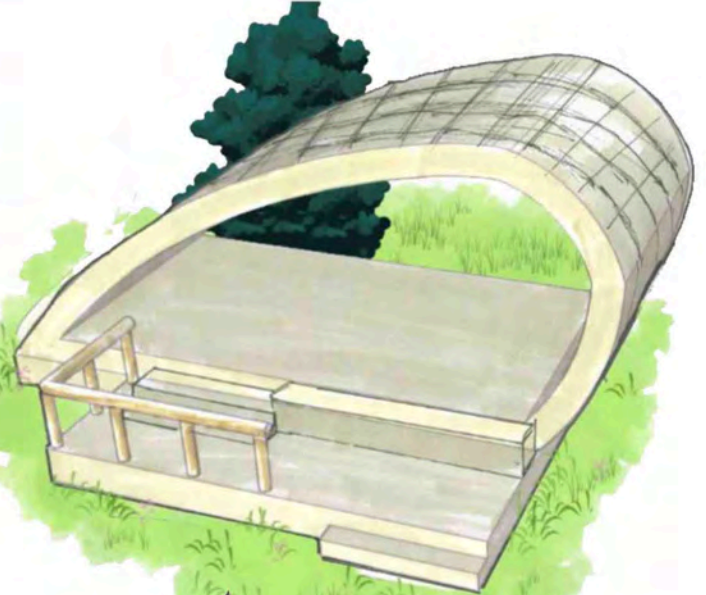
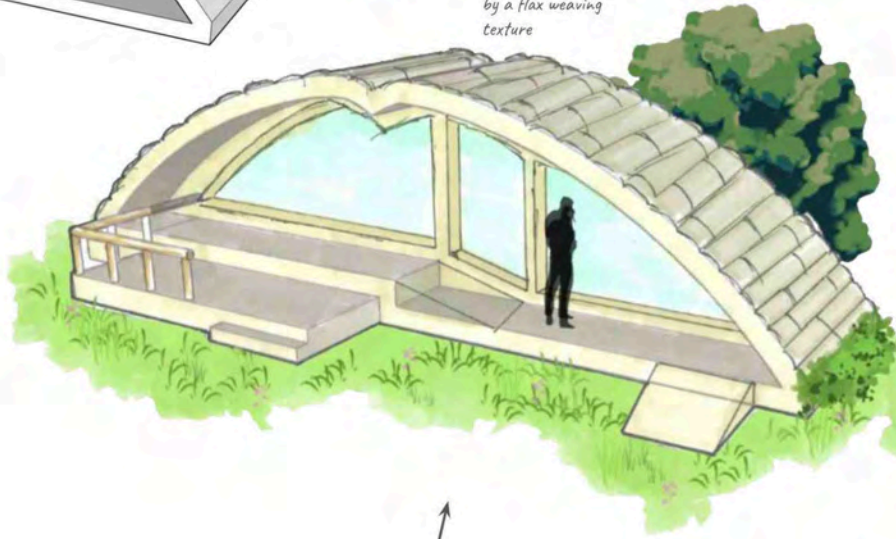
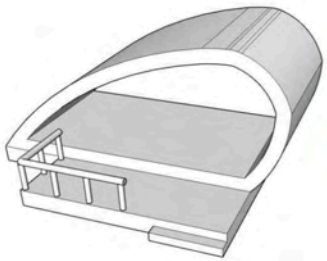




This iteration takes inspiration from the shape of a bird and its wings while looked at from front on



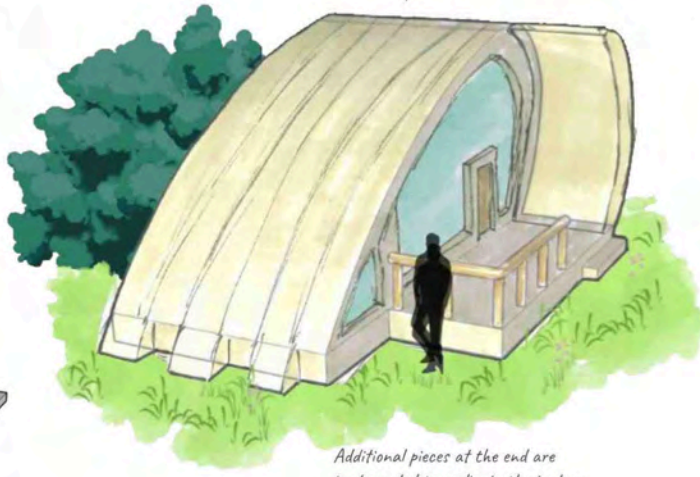
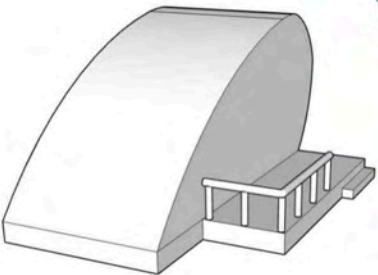
Roof texture is inspired by a flax weaving texture



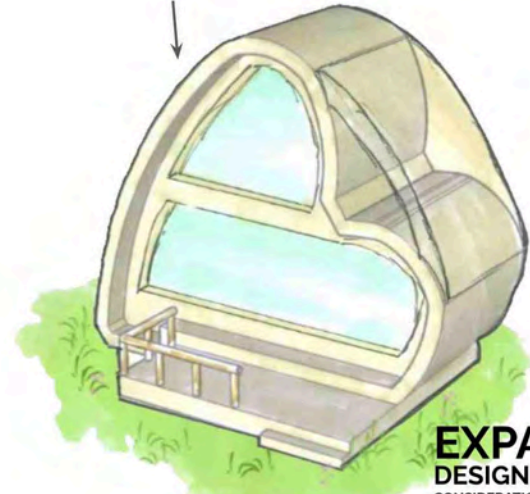
Wings

All these designs take inspiration from either the wing or beak of a bird

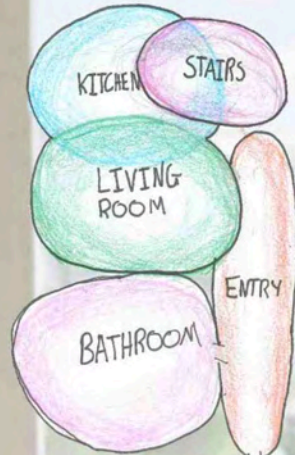
Beaks



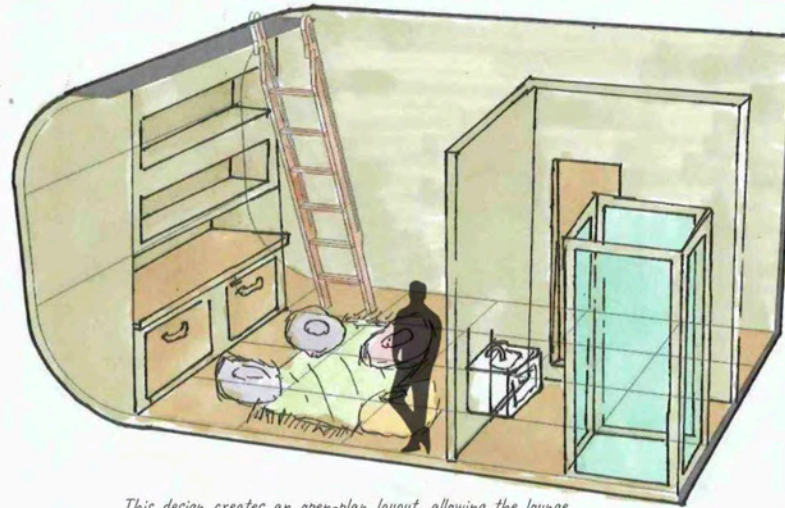
Additional pieces at the end are implemented to replicate the texture



INTERIOR



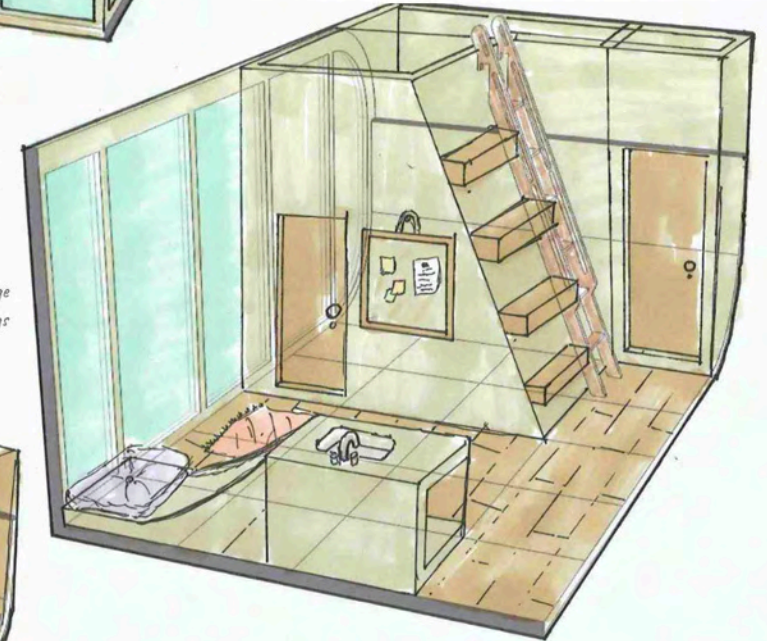
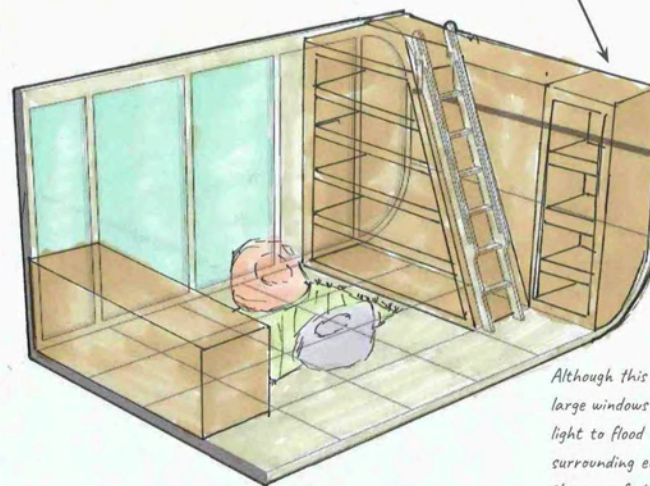
Bubble diagram considerations for floor plan



This design creates an open-plan layout, allowing the lounge and kitchen to flow seamlessly into one another. By minimizing internal walls and barriers, it maximizes the perception of space, making the small hut feel larger and more comfortable. At the same time, essential utilities like the kitchen and bathroom are thoughtfully incorporated, ensuring functionality is not compromised despite the compact footprint.

Placing an enclosed bathroom on the opposite side of the room from the entrance is a smart design choice because it maximizes privacy and reduces noise or visual disruption from the main entry. This layout also helps the space feel more open and organized, as visitors aren't immediately confronted with the bathroom, and it naturally separates functional areas from social or living areas.

Designs implement vertical storage systems to tuck away beanbags when not in use

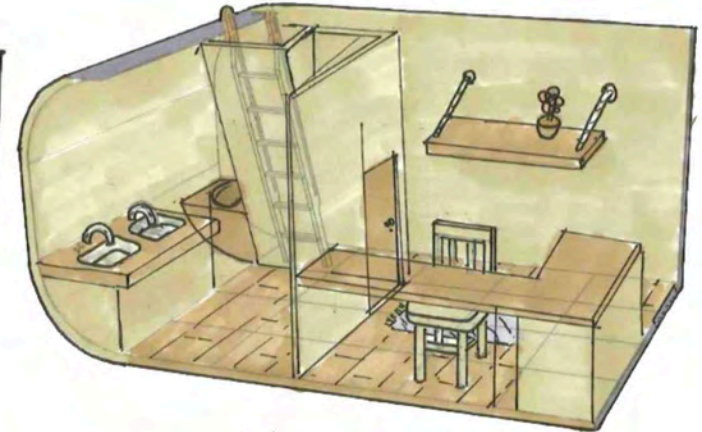
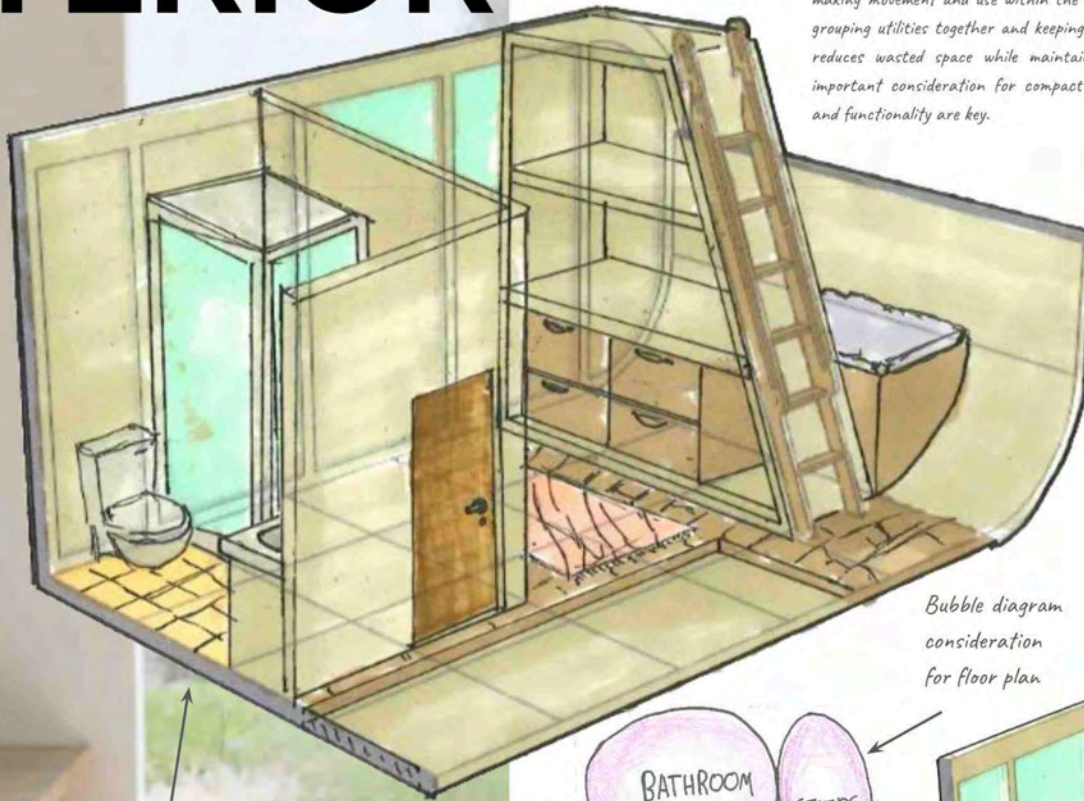


Although this design only includes a lounge area, it effectively demonstrates how large windows can transform a small space. The expansive glazing allows natural light to flood the interior, creating a sense of openness and connection to the surrounding environment. By framing views of the outdoors, the windows make the room feel larger and more inviting, reducing the sense of confinement often found in compact structures.

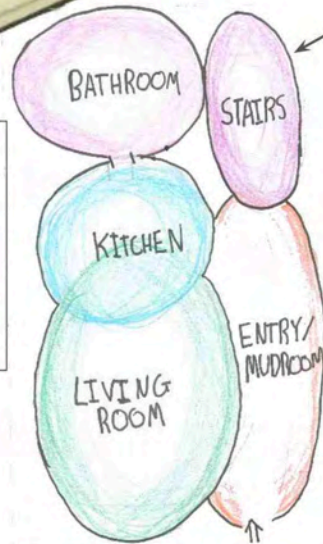
INTERIOR

The design maximises efficiency by organising the bathroom, kitchen/dining, and seating area into three clearly defined zones. This layout allows each space to serve its function without overlap, making movement and use within the hut simple and practical. By grouping utilities together and keeping circulation open, the design reduces wasted space while maintaining comfort and flow, an important consideration for compact DOC huts where efficiency and functionality are key.

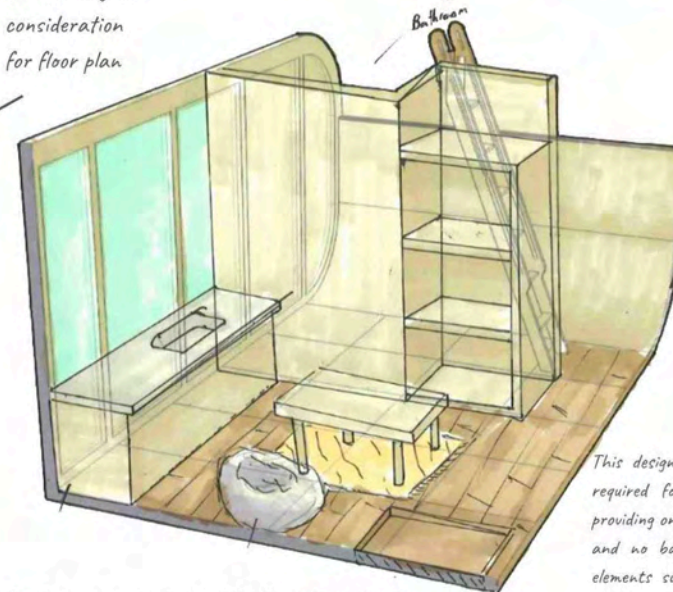
This design currently lacks a kitchen area, which is a key requirement for a functional DOC hut. Additionally, the bathroom takes up more space than is necessary for a compact, efficient layout. By reducing the size of the bathroom, there would be enough room to incorporate a small kitchen or kitchenette.



Bubble diagram consideration for floor plan



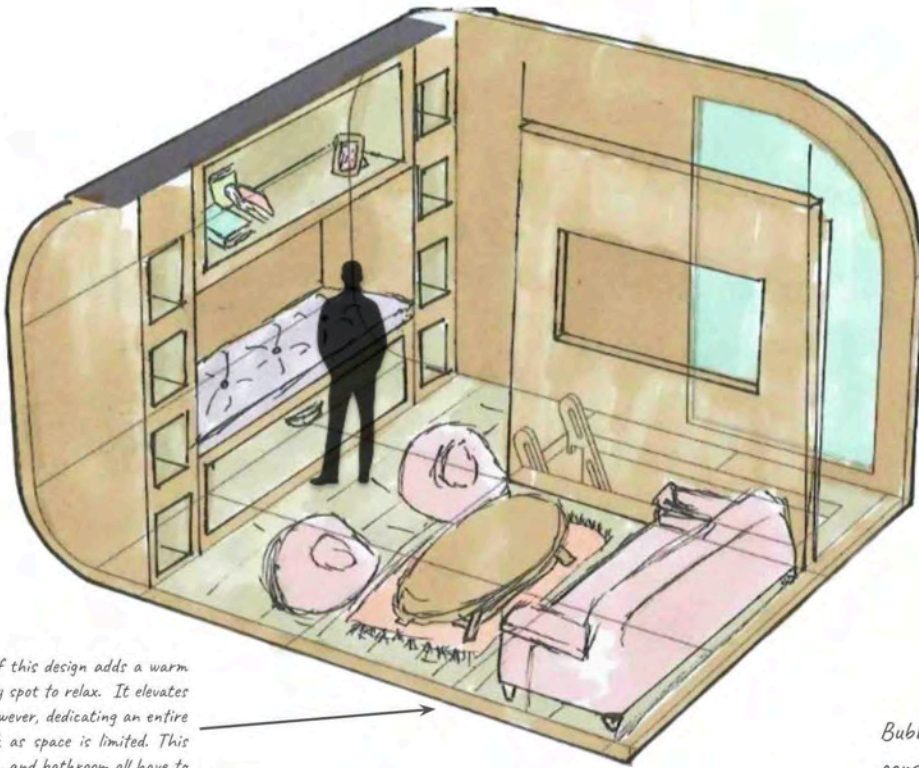
The kitchen and bathroom are positioned close to each other, allowing both spaces to share the same water and plumbing systems. This not only simplifies the construction process but also reduces material and maintenance costs. By minimising the length of pipes and water connections, the design becomes more efficient and environmentally conscious, a practical and sustainable approach ideal for remote DOC hut locations where resources and accessibility are limited.



Beanbags are a practical and flexible seating option for the hut, as they can be easily moved, rearranged, or stowed away when not in use.

This design lacks several key features required for a functional DOC hut, providing only a very basic kitchen setup and no bathroom facilities. Essential elements such as water access, waste management, and hygiene facilities are missing, which limits its usability and comfort in a remote setting.

This seating design is cleverly integrated into the space, creating the impression that it's recessed into the wall. By utilizing the depth of the curved exterior wall, the design contributes to a sleek, built-in aesthetic that feels both cozy and intentional. Additionally, the surrounding and under-seat storage options make practical use of every inch, offering discreet places to stow belongings without cluttering the space. It's a smart blend of form and function that elevates both comfort and utility.

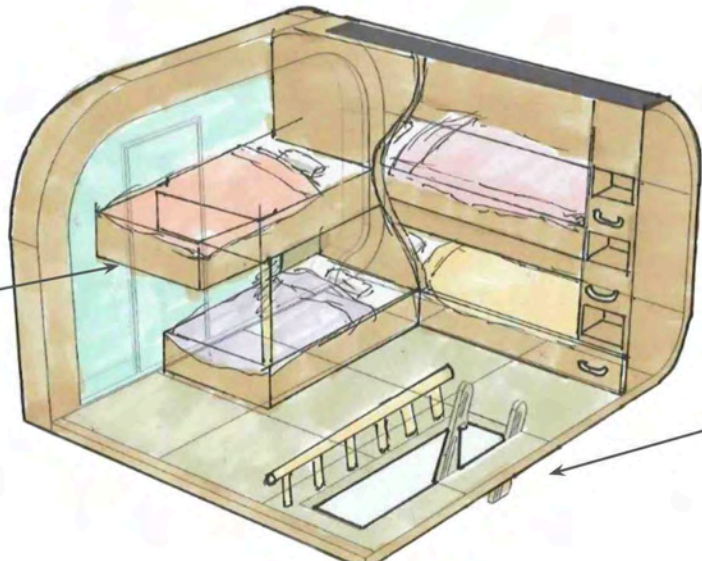


The living area on the top floor of this design adds a warm touch to the space, creating a cozy spot to relax. It elevates the overall comfort of the hut. However, dedicating an entire floor to a living room won't work as space is limited. This layout means the kitchen, bedroom, and bathroom all have to be squeezed into the bottom floor.



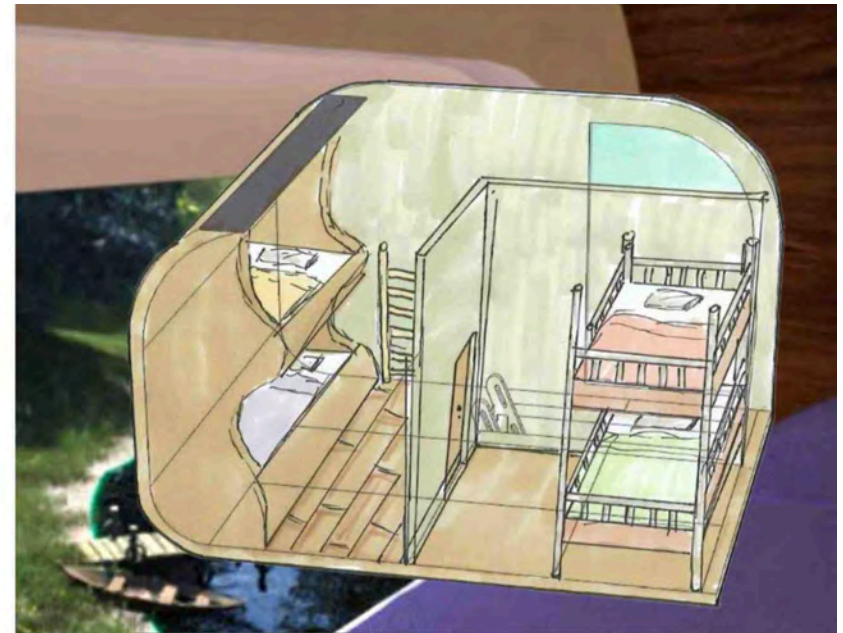
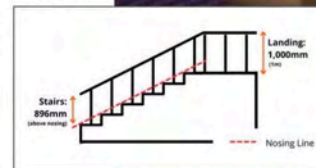
Inspiration image for floating bed design

This 'floating' bunk bed design was thoughtfully added to make the space feel more open and less confined. By lifting the bed and keeping the structure minimal, it helps the room feel larger and more breathable, especially in tighter quarters. That said, the lack of side railings on the top bunk is a real safety concern. Without anything to prevent a fall, it puts anyone sleeping up there at risk.



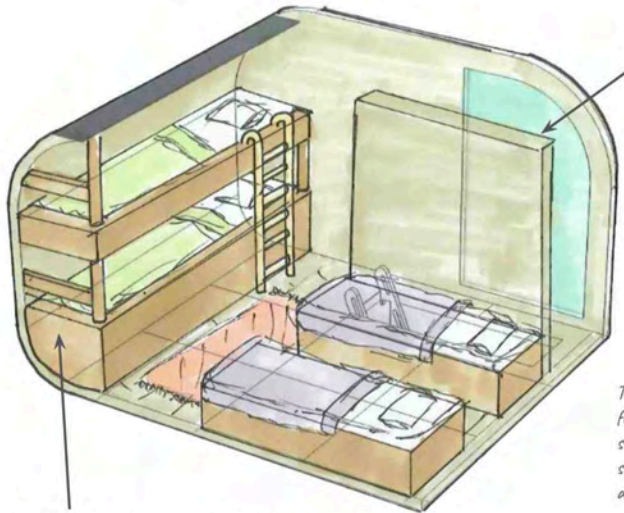
Bubble diagram consideration for floor plan

The railing on the top bunk is a safety concern. The New Zealand building code states that railings should be at least 1,000mm high. Right now, the railing falls short of that requirement, which makes it especially dangerous. Raising the height would not only bring it up to code but also make the space feel more secure.



The separate sleeping space in this design adds a sense of comfort and privacy, making the environment feel more relaxed. However, that added comfort does come at a cost. By creating an individual area, it reduces the overall capacity for beds in the space. So while it improves the experience, it limits how many people the room can accommodate.





The wall separating the bed from the stairs provides a clear advantage in terms of safety and privacy, creating a more secure and secluded sleeping area than a simple railing would. However, this added enclosure also restricts the flow of natural light from the nearby window, which can make the space feel darker and more enclosed.

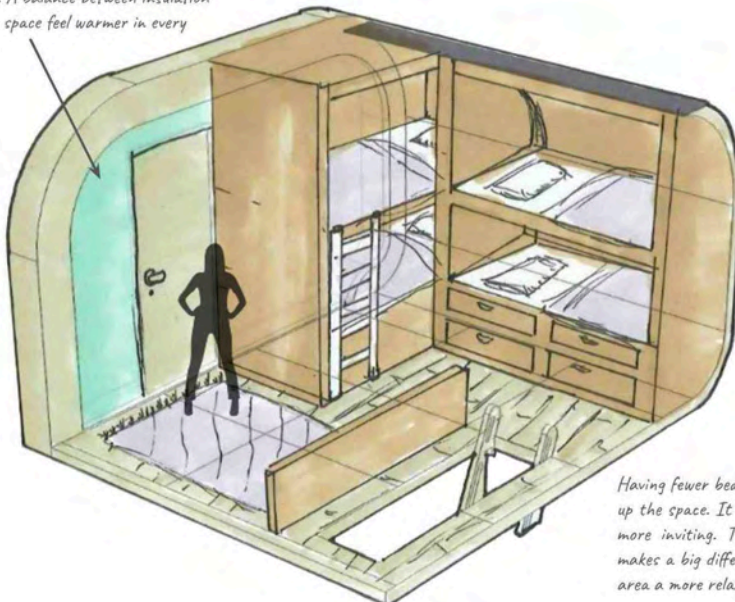
The design isn't practical as fitting two beds would require shrinking them below standard single size, compromising comfort and usability.

The railings at the end of this bed design don't really serve a purpose, since that side will be up against a wall anyway. Additionally, the beds themselves are unusually long being over 3 meters. This adds unnecessary complexity. It's not just about space; sourcing non-standard mattresses at that length would be a real challenge.

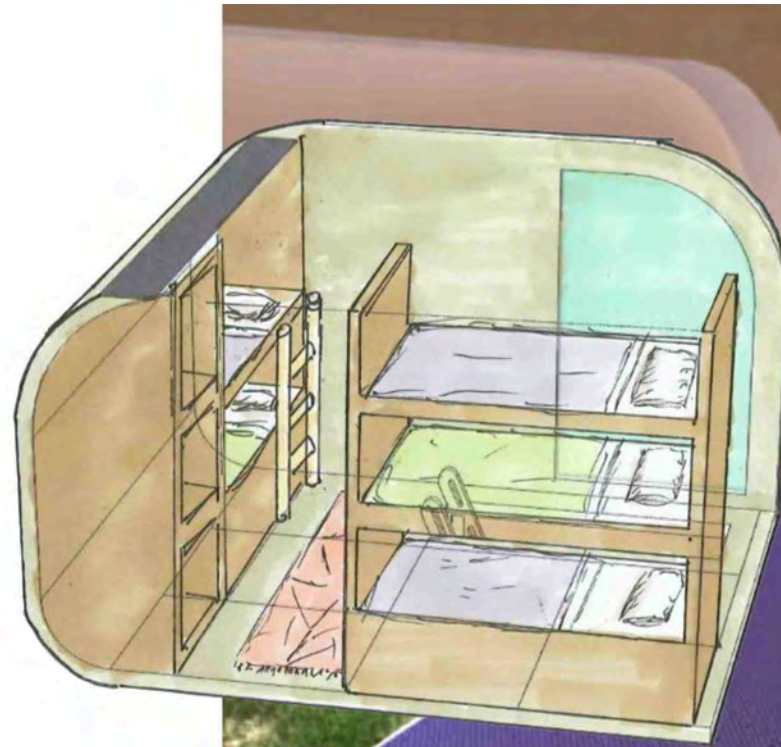
The smaller window area does help retain heat, which is a plus for energy efficiency. But it also means less natural light filters into an already dim space. So while it's cozy, it might feel a bit closed off or shadowy. A balance between insulation and brightness could make the space feel warmer in every sense.



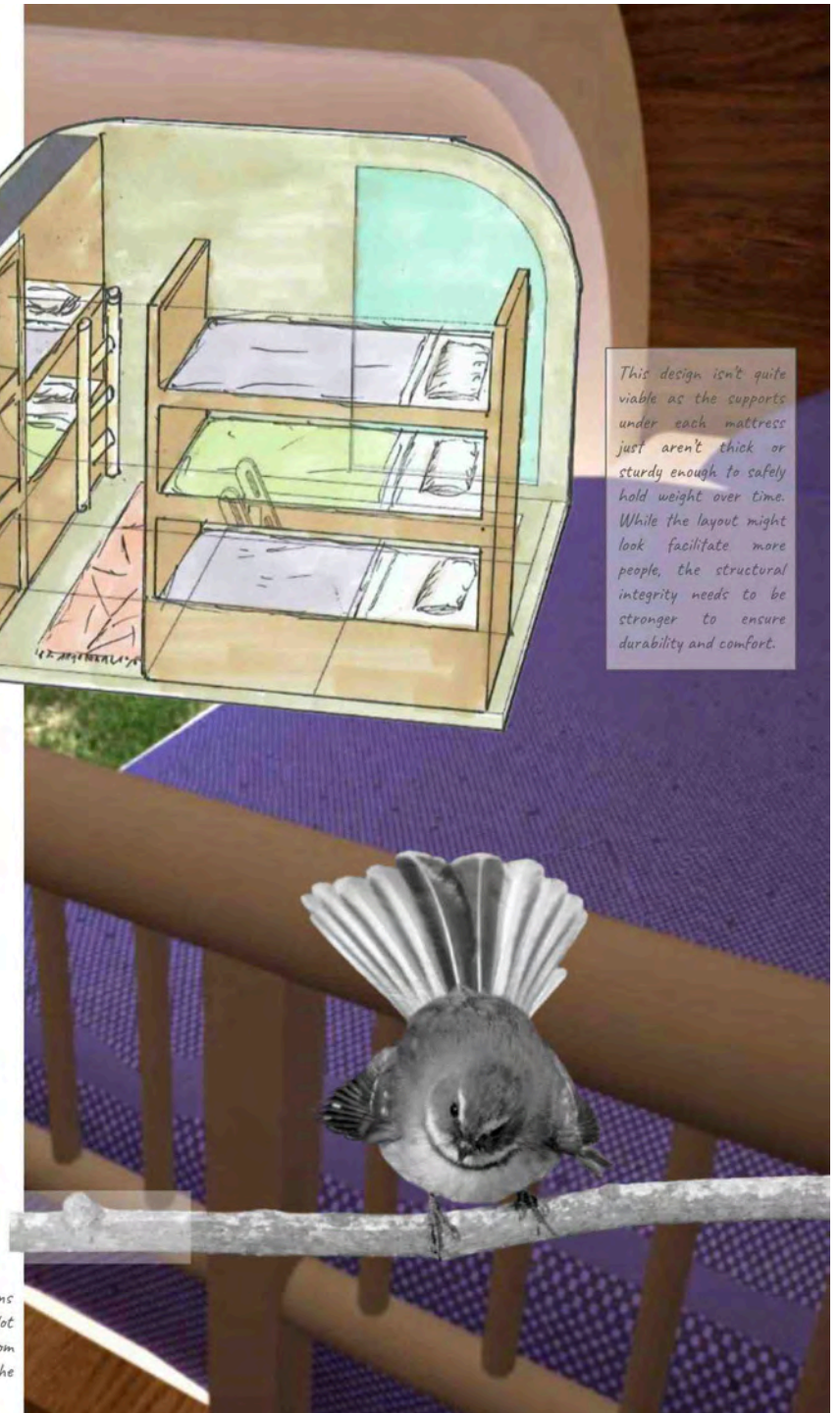
Bed design takes inspiration from Japanese pod hotels



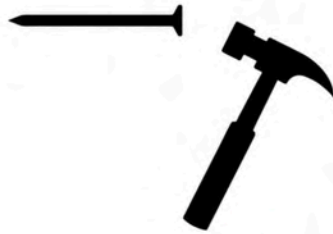
Having fewer beds in this design really opens up the space. It feels less crowded and a lot more inviting. That extra breathing room makes a big difference in comfort, giving the area a more relaxed and livable feel.



This design isn't quite viable as the supports under each mattress just aren't thick or sturdy enough to safely hold weight over time. While the layout might look facilitate more people, the structural integrity needs to be stronger to ensure durability and comfort.



EXTERIOR MATERIALS



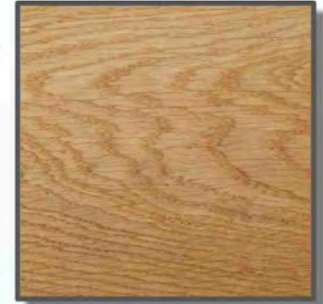
WESTERN RED CEDAR —

Western Red Cedar is a strong choice for these huts because it is naturally durable, lightweight, and resistant to moisture and decay, making it ideal for New Zealand's varied climates. Its natural insulation helps keep the interior warm in winter and cool in summer, supporting comfort without heavy reliance on energy systems. Cedar also weathers beautifully, blending into the surrounding landscape over time while requiring little maintenance. By using sustainably sourced cedar, the huts can meet DOC's goals of durability and environmental respect, while also achieving a warm and welcoming aesthetic that connects with the natural environment.



OAK —

Oak is well suited for the curved balcony design because of its natural strength, durability, and flexibility when shaped. Its dense grain makes it capable of withstanding heavy use and outdoor conditions, while still allowing for the smooth bending needed to achieve elegant curves. Oak also weathers attractively, taking on a silvery patina that helps the balcony blend into its natural surroundings over time. By choosing oak, the balcony can remain strong and complement the surrounding environment.



TEMPERED GLASS —

Tempered glass is a strong and practical material choice for the hut, offering durability and safety while keeping a close connection to the surrounding landscape. Its strength makes it far more resistant to impact and extreme weather than standard glass, which is important in remote alpine and coastal environments. Large glass panels allow natural light to flood the interior and provide wide views, helping trampers feel immersed in the environment even while sheltered inside.



STUCCO CLADDING —

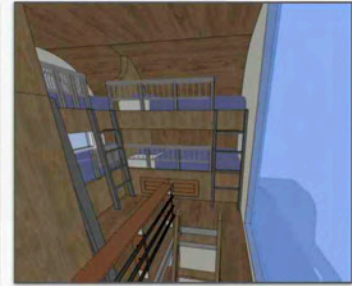
Stucco cladding is a practical choice for the hut because it is highly durable, weather-resistant, and low-maintenance, making it well suited for New Zealand's varied conditions. Its seamless finish protects against moisture while also providing strong thermal performance, helping the interior stay comfortable year-round. Stucco can be coloured and textured to blend into the natural environment, giving the hut a grounded, earthy appearance.





Beds are a standardised single bed size while still leaving enough room for a standard sized door

Bunk Beds that utilise the small space more efficiently. It allows more people to stay at the hut at once, essentially doubling the amount of people.



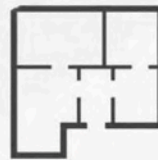
The bunk bed design incorporates partition walls and railings to create individualized sleeping areas, offering a distinct sense of personal space. Despite accommodating six people in one room, the layout fosters privacy, reduces noise and visual distractions, and promotes comfort within a shared environment.

This design makes smart use of limited space by incorporating under-bed storage, turning an often overlooked area into a practical solution for organizing belongings. Elevating the mattress not only frees up room beneath for storage bins or drawers, but also improves airflow around the bed, helping to keep the mattress fresh, dry, and hygienic over time.

Railing is put in place as a safety measure, making sure people don't accidentally fall through the hole where the ladder is placed

FINAL INTERIOR

[SECOND FLOOR]



The bed layout has been thoughtfully designed to make a comfortable and practical environment. Even with standardized single beds in place, there's still plenty of room to move around, so getting outside or reaching storage spaces doesn't feel cramped or awkward. It strikes a nice balance between maximizing usable space and keeping things easy to navigate, creating a cozy and efficient setup for daily life.



FINAL INTERIOR

[FIRST FLOOR]



I drew inspiration from this existing stair design when creating my model. One of the key features I admired was the efficient use of the space beneath the staircase. I incorporated a similar approach in my own design to maximize functionality without compromising aesthetics.

The design places all utilities on the ground floor, streamlining plumbing and minimizing the need for extensive wiring upstairs. This efficient layout reduces construction complexity and cost. However, it necessitates proper ventilation for the bathroom to prevent moisture buildup and odors, ensuring sanitary conditions are maintained throughout the kitchen and living areas.



Kitchen and cabinets under the ladder upstairs utilize the space much more efficiently and effectively

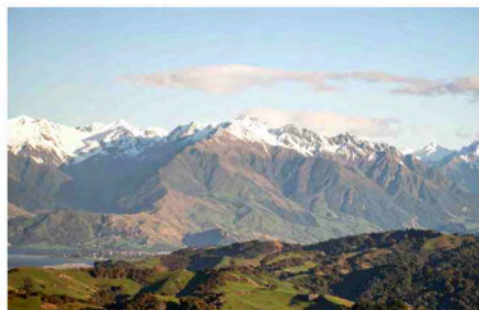
Bench and stools are used in place of a dining table to save room and created a more aesthetically pleasing environment

Kitchen tiles surrounding the counter makes the area easier to clean in case of spills. It also gives the area a mental separation from the rest of the building

Beanbags are crucial to this space as they are comfortable but still easy to move / put away if they end up making the space too cluttered



ELEVATIONS



NORTH ELEVATION

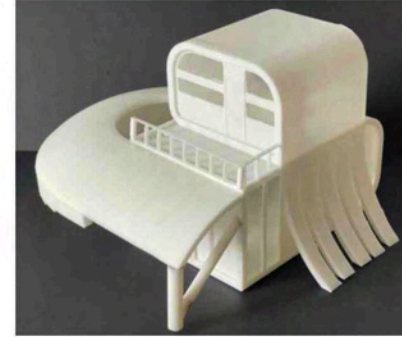
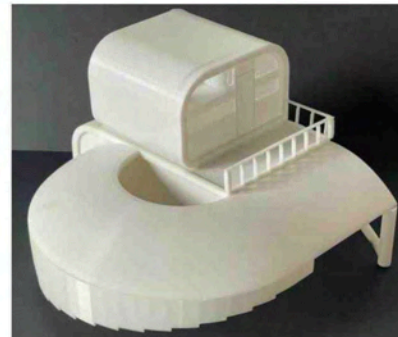
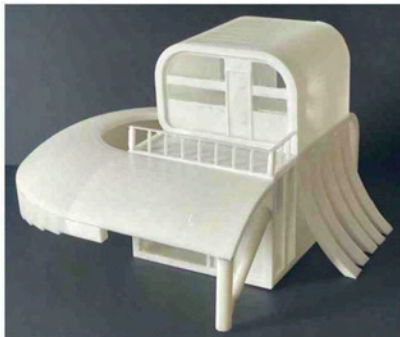
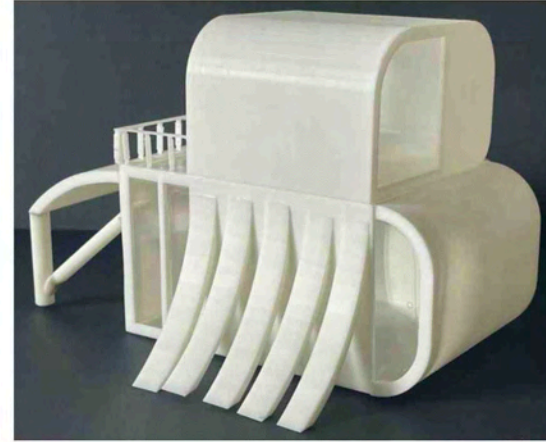
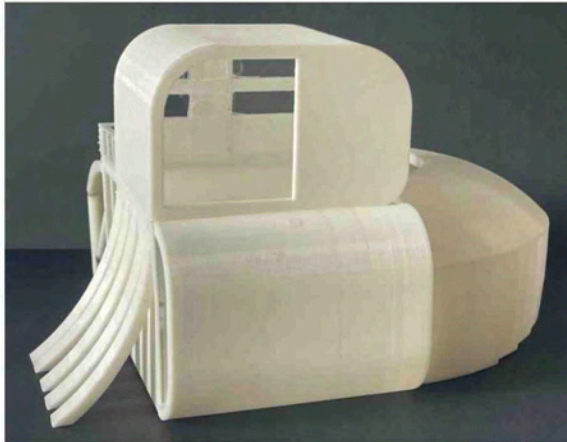
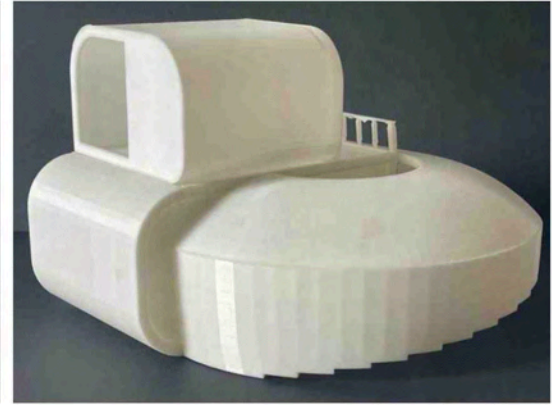
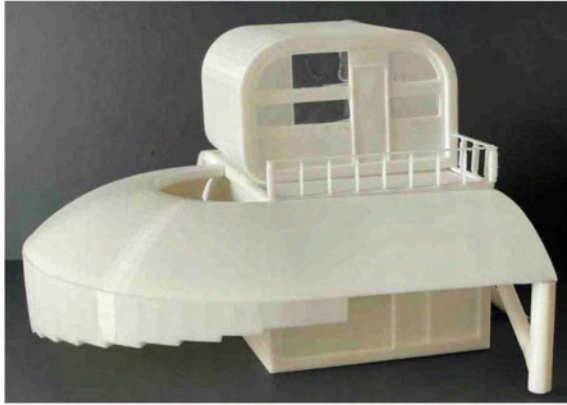


SOUTH ELEVATION

TITLE: DOC Hut

SCALE: 1 : 20

FINAL MODEL



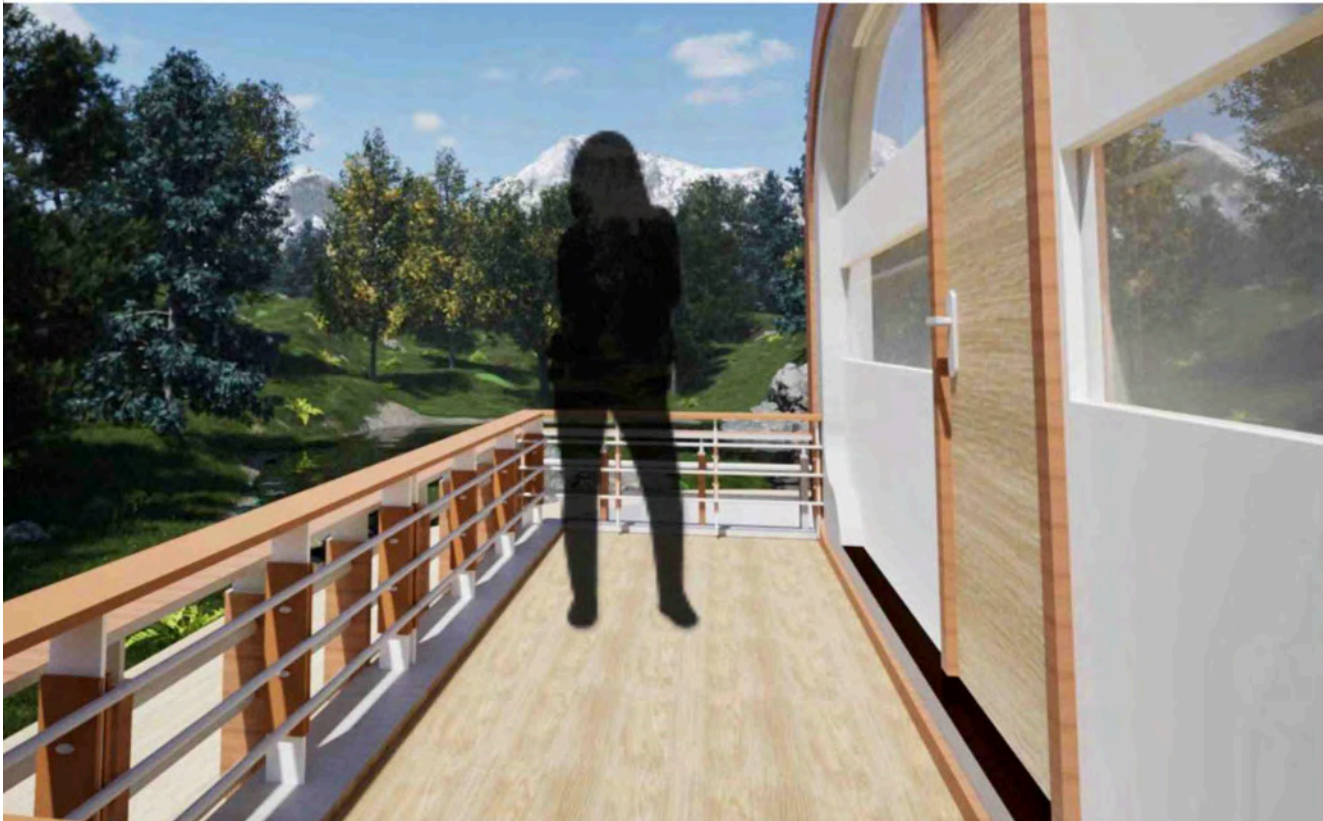
FINAL RENDERS [FIRST FLOOR]

The final renders of the first floor show how the design balances function and comfort within a compact footprint. They highlight key details such as material finishes, lighting, and spatial flow, illustrating how the layout supports practical use while maintaining a warm, natural atmosphere. These visuals bring together the structural ideas and material choices developed throughout the project, showing how the hut would feel in use.



FINAL RENDERS [SECOND FLOOR]

The final renders of the second floor focus on the bedroom space, showing how the design creates a sense of warmth and shelter while remaining connected to the natural surroundings. The use of timber materials and soft lighting emphasises comfort and simplicity, while large windows frame views outward, reinforcing the hut's connection to the landscape. This space reflects the balance between practicality and connection to nature.



FINAL RENDERS [EXTERIOR]

The final exterior renders showcase how the hut sits within its natural environment, highlighting the wing-inspired roof forms and the balance between structure and landscape. Material choices like timber, stucco, and glass create a blend of durability and warmth, while the design's proportions ensure it feels grounded yet lightweight.



FINAL
RENDER



Sample Excellence exemplar

Subject: Design and Visual Communication

Standard: 91627

Total score: E8

Grade score	Commentary
E8	Visual elements of the fantail are generated and regenerated through both sketches and paper models. Different wing forms clearly inform different design ideas for a functional tramping hut. The visual exploration of the abstracted wing form continues with intent, through ongoing refining of hut design. The extent of exploration is such that the candidate pushes the design in a way that transforms in new and creative ways to reach the highest score.