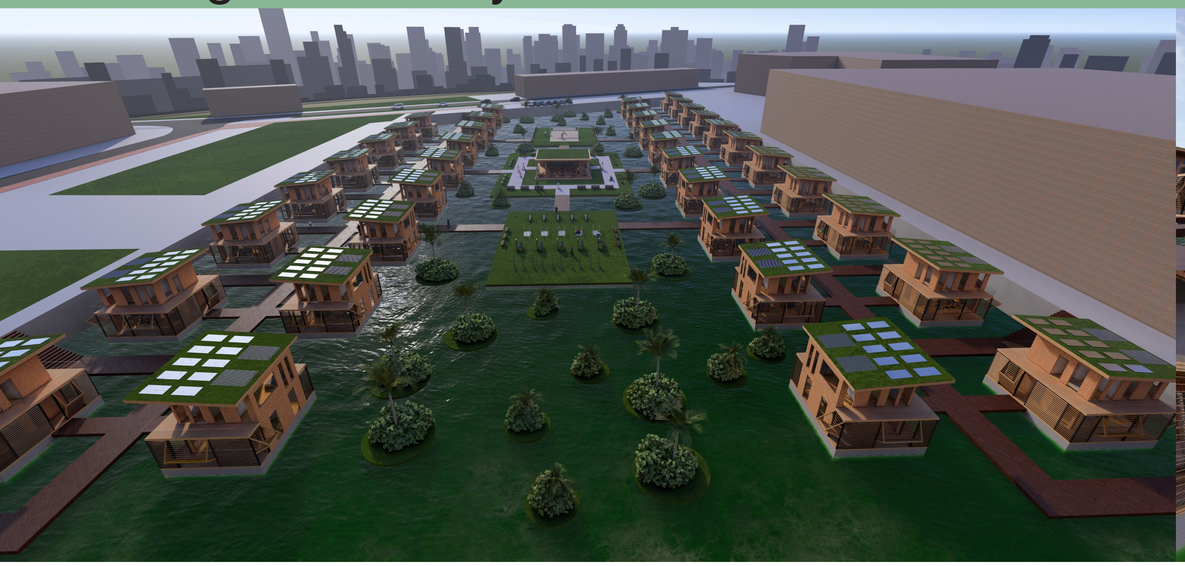
Floating community - schiedam

Inspired by A0-1

Groep 16



Site Analysis

A location study was conducted to map key points and provide a clear understanding of the surroundings.The site is well connected by metro, tram, and water taxi.- Facilities such as cafés and schools are slightly further away, but Schiedam Centrum is only two tram stops away and easily accessible.The red-marked area on the map is currently an industrial zone, with municipal plans to transform it into a mixed-use district for living and working.

Central community café with terrace

A small café with a floating terrace is placed at the centre of the neighbourhood to stimulate social interaction and community bonding.
It serves as a low-threshold meeting place for both residents and visitors, creating a welcoming and inclusive atmosphere.
Located between the park and the sport islands, the café acts as a connector — encouraging informal gatherings, shared moments, and a strong neighbourhood identity.

Floating Public Garden & Sports Fields

Two floating islands enhance the neighbourhood's social, recreational, and ecological value.

- The public garden offers a peaceful, green retreat for relaxation, connection, and biodiversity.
- The sports island, with gym equipment and a volleyball court, promotes active lifestyles, play, and community in a unique floating setting.

USTAINABLE DESIGN STRATEGIES

Nature Based Solutions integrated:

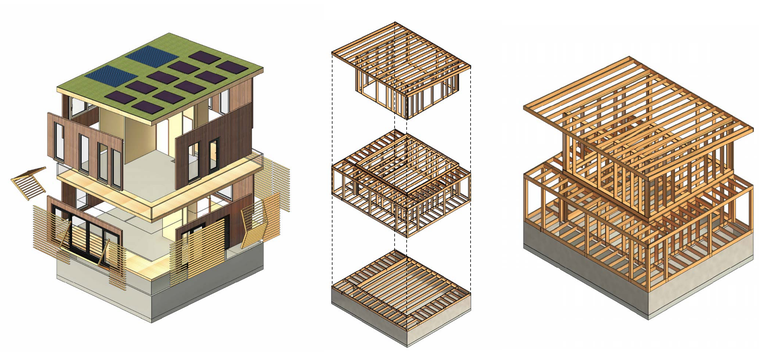
- Green roofs
- Reed water filters
- Floating gardens
- Shared urban agriculture zone
- Solar panels, passive sun orientation, minimal mechanical systems

Floating Foundation

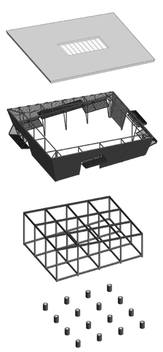
Each house rests on a 6 × 6 m concrete floating hull, matching the house's footprint for structural stability.
The hull is 1.72 m high, with a 30 cm thick bottom slab. The remaining 1.42 m cavity serves as a technical basement.
Houses are placed on top of the hull—elevated for better views and above quay level.Floating wooden walkways surround the houses and are secured with pile guides.

Construction Method

We chose timber frame construction for its low weight, excellent insulation, and prefabrication potential—ideal for floating homes.
Lighter than CLT, it reduces load on the foundation and supports disassembly and circularity.
Its flexible wall design allows optimal use of biobased materials.

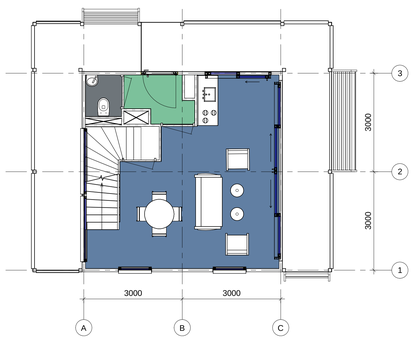


What We Took from A-01 in Our Design



Our floating homes reflect A-01's No Footprint House through:

- Green roofs for cooling, biodiversity, and nature integration
- Timber slatted façades for passive sun shading and warm aesthetics
- Lush planting around each unit for a biophilic, nature-connected living experience
- Floating garden islands as shared or private green spaces on the water
- Together, these elements express A-01's vision of lightweight, adaptable, and climate-responsive architecture.

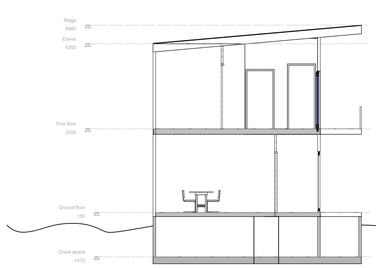


Ground floor

Living area
Hallway
Bathroom & toilet
Sleeping area

Room	Area (m2)	Notes
Basement		
Technical/storage	36 m2	Heat pump/storage
First floor		
Living room + kitchen	27	Oriented to water
Toilet	1	
Storage	3,8	
Corridor	3	
Second floor		
Bedroom 1(parents)	15	
Bedroom 2	5	Optional room
Bedroom 3	5	
Bathroom	4	Shower, washbasin
Corridor	3	

First floor



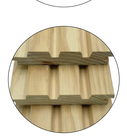
Cross section

Cross section

Materials

Wood

Vegetation



Accoya

Wood fiber insulation

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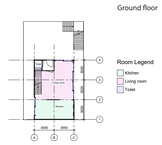
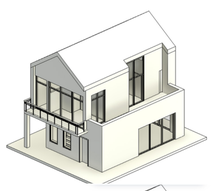
Variant 1

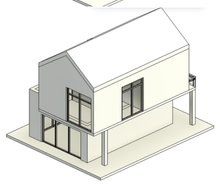


Raees' sketch design

The floor plan includes a shared kitchen and living room, creating an open and spacious feel.
The first floor is mainly dedicated to sleeping, with three bedrooms.
In 3D, the house has an exotic appearance thanks to the use of wood, and features a terrace and balcony on the upper level.

Variant 2

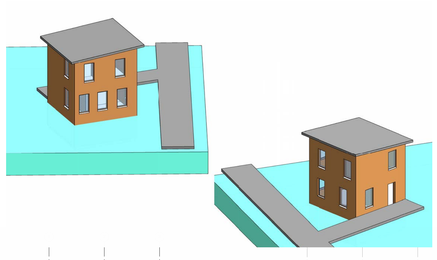


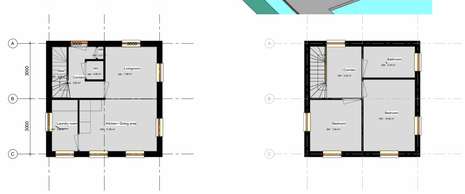


Bella's sketch design

The floor plan includes a shared kitchen and living room, creating an open and spacious feel.
The first floor is mainly dedicated to sleeping, with three bedrooms.
In 3D, the house has an exotic appearance thanks to the use of wood, and features a terrace and balcony on the upper level.

Variant 3





Xue Ya's sketch design

The layout is based on modular construction using standard module A01, measuring 3 by 3 meters. The interior is flexibly organized within this grid.
The ground floor contains the living room and kitchen.
The first floor includes the bedrooms and the bathroom.

Variant 1

criteria	--	-	+	++
Ecological impact			■	
Accessibility	■			
Processing A 01			■	
oriented placement			■	
Space layout				■

Variant 2

criteria	--	-	+	++
Ecological impact				■
Accessibility		■		
Processing A 01		■		
oriented placement		■		
Space layout			■	

Variant 3

criteria	--	-	+	++
Ecological impact				■
Accessibility	■			
Processing A 01				■
oriented placement			■	
Space layout				■

Harris Profile – Design Variants Evaluation

Each team member developed one design variant, evaluated based on sustainability, originality, spatial quality, and integration of A-01 principles.

Variant 1 received the highest score due to its balanced approach: it integrates biobased materials, green strategies, and shows originality in form and layout.

Variant 2 scored the lowest, as it lacked design cohesion and missed several key sustainability criteria.

Variant 3 followed A-01's design almost identically, without personal interpretation or adaptation — its 3D model reflects the No Footprint House directly.

Target Group: Families in Sustainable Transition

Our design is aimed at young, conscious families seeking affordable, eco-friendly living in a connected and community-driven environment.

Why Schiedam?

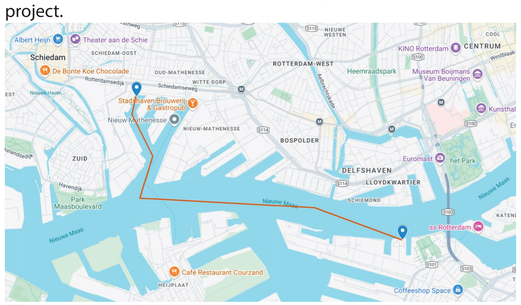
- Rising housing demand in the Rijnmond region
- Schiedam supports circular, participative neighbourhoods
- Ideal location: waterfront, public transport access, close to Rotterdam

Logistic analysis

We chose to transport prefab materials by boat from Bouwhub 010 in Rotterdam. This method is:

- Efficient: A direct 20–30 minute trip with easy planning and unloading (just in time delivery)
- Sustainable: Lower CO_2 emissions than road transport
- Practical: Avoids traffic and delivers directly to the water-based site
- Flexible: Larger modules can be shipped with fewer size/weight restrictions

This solution fits perfectly with the floating and sustainable nature of the project.



Construction method analysis

To determine which construction method is most suitable for our floating homes, a comparison table was created, listing the most important criteria and the three most logical construction methods. From this comparison, timber frame construction and CLT emerged as the best options. However, since we place greater value on the advantages of timber frame construction, such as its lightweight nature and fully biobased composition, we ultimately chose timber frame construction as our building method.

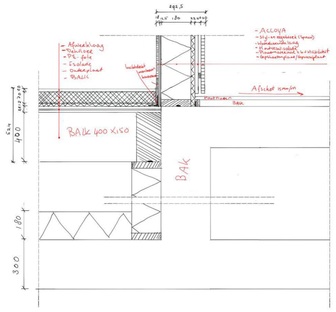
Criterion / Construction Method	CLT Score: 6	Timber Frame Score: 8	Steel Frame Score: 2
1 Lightweight construction	+ Heavier than HSB, lighter than concrete	++ Very lightweight	+ Lighter than concrete, heavier than HSB
2. Stiffness and structural strength	+ Solid panels, high stiffness (less than steel frame)	- Requires extra sheathing or bracing	++ Very strong and stiff
3. Moisture resistance	- Sensitive to moisture, needs good detailing	- Moisture sensitive, requires proper finish	+ Moisture resistant, but can corrode
4. Prefab potential	++ Fully prefabricated possible	++ Very suitable for prefab	+ Prefab possible, less commonly used
5. Circularity & environmental impact	- Contains glue, limited reusability	++ Fully biobased and demountable	-- High environmental impact, non-renewable
6. Insulation	+ Solid wood insulates moderately, extra needed	++ Excellent insulation options	- Poor insulation, always needs extra material
7. Fire savety	+ Fire resistant with sufficient thickness	- Requires additional fire protection	++ Non-combustible material
8. Comfort & acoustics	+ Solid and comfortable	+ Comfortable with proper detailing	- Hollow sound, poorer acoustic
9. Flexibility	+ Limited by panel sizes	++ Very flexible and adaptable	- Less flexible, more suited to standard designs

Why A-01 (Costa Rica) – Adapted for Dutch

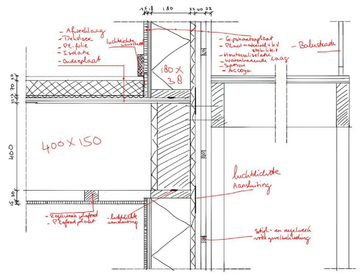
Category	Costa Rica	Netherlands
Climate type	Tropical savanna climate(Aw)	Temperate maritime climate(Cfb)
Average annual temperature	28°C	25°C
Average daytime temperature in summer	29°C	22°C
Average daytime temperature in winter	27°C	6 °C
Average annual rainfall	1795mm	850 to 1000mm
Rainfall distribution	Fairly evenly distributed throughout the year	Fairly evenly distributed throughout the year
Sun hours per year	1800 to 2000 hours	1800 to 2000 hours
Sunniest months	June and July	May, June and July
Snow	No snow, but frequent rainfall	5-15 snow days per year
Storms	No hurricanes	Storms in autumn and winter, especially along the coast

We adopted A-01's modular, flexible, and demountable design principles.
However, due to the climate differences, a direct copy isn't feasible.
In Costa Rica, the design features an open living space — ideal for a warm climate.
In the Netherlands, we need thermal insulation to handle seasonal variation. That's why our design includes a well-insulated core, combined with veranda-like outdoor areas.

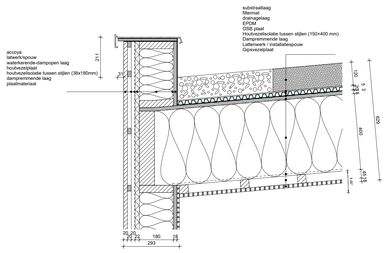
Ground floor detail



First floor detail



Roof detail



Used materials

For the floating home, we chose wood fiber insulation because it is biobased, offers excellent thermal performance (high R-value), and allows for thinner, lightweight wall constructions without compromising comfort. This makes it particularly suitable for a compact and buoyant structure, where both weight and space efficiency are essential.

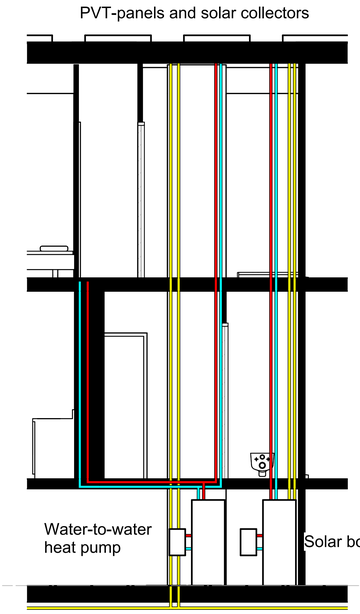
As facade cladding, we selected Accoya wood due to its exceptional durability, dimensional stability, and resistance to weathering. Accoya is made from fast-growing softwood and undergoes an environmentally friendly modification process, making it long-lasting without the need for harmful coatings. This makes it a sustainable, low-maintenance, and aesthetically high-quality choice, perfect for use in a waterside environment.

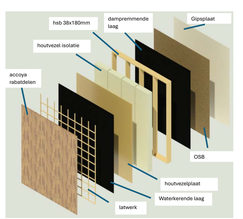
We use a green roof to promote biodiversity and contribute to a greener living environment. The roof not only provides extra space for plants, insects, and birds, but also improves the insulation of the homes. In addition, the vegetation has a cooling effect in summer and helps to regulate temperature fluctuations, increasing indoor comfort.

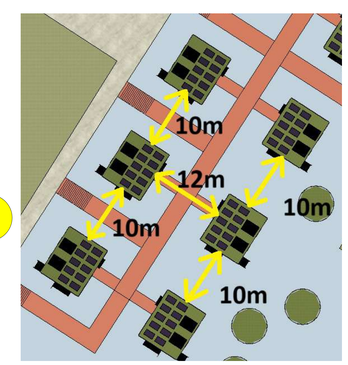
Installation analysis

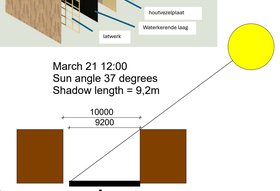
The PVT panels and the water-to-water heat pump operate in synergy to provide both thermal and electrical energy. The PVT panels generate electricity while simultaneously preheating the fluid in the closed-loop system. This preheated fluid reduces the workload of the water-to-water heat pump, as less energy is required to raise the temperature further.

Additionally, a solar boiler contributes significantly to domestic hot water production, covering up to 60% of the annual demand. This further lowers the energy requirement of the heat pump. The system is seasonally balanced: during summer, the PVT panels perform more intensively due to higher solar gains, while in winter, the water-to-water heat pump plays a more prominent role in maintaining thermal comfort and hot water supply.







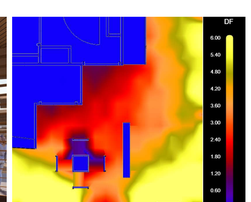


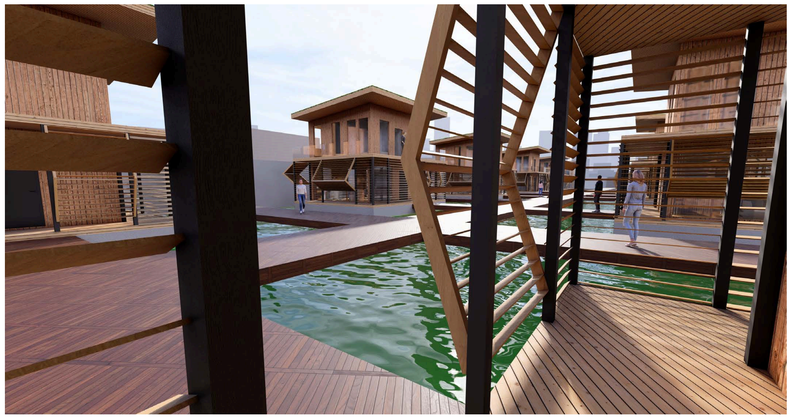
Sun analysis

March 21st at 12:00 PM is used as a standard reference for solar studies because it represents the equinox, when day and night are equal in length. This provides a neutral and balanced solar condition, allowing designers to assess daylight access and overshadowing in a consistent and seasonally representative way.
Based on a solar altitude of 37° on March 21st at noon, the minimum required spacing between two buildings with a height of 7 meters is approximately 9.2 meters, calculated using shadow geometry. A spacing of 10 meters ensures sufficient daylight penetration even during early spring.

Daylight analysis living room

The results indicate that most areas of the living room achieve a Daylight Factor (DF) between 2% and 5%, which is considered optimal for visual comfort. However, some zones exceed 6%, which may lead to glare or overheating. To mitigate this, we have chosen to implement automated louvers. These not only improve indoor comfort but also complement the Costa Rica-inspired aesthetic of the A-01 reference project.





Marina Verde