Reviving the Edge:
A Resilient & Adaptive Future Tai O

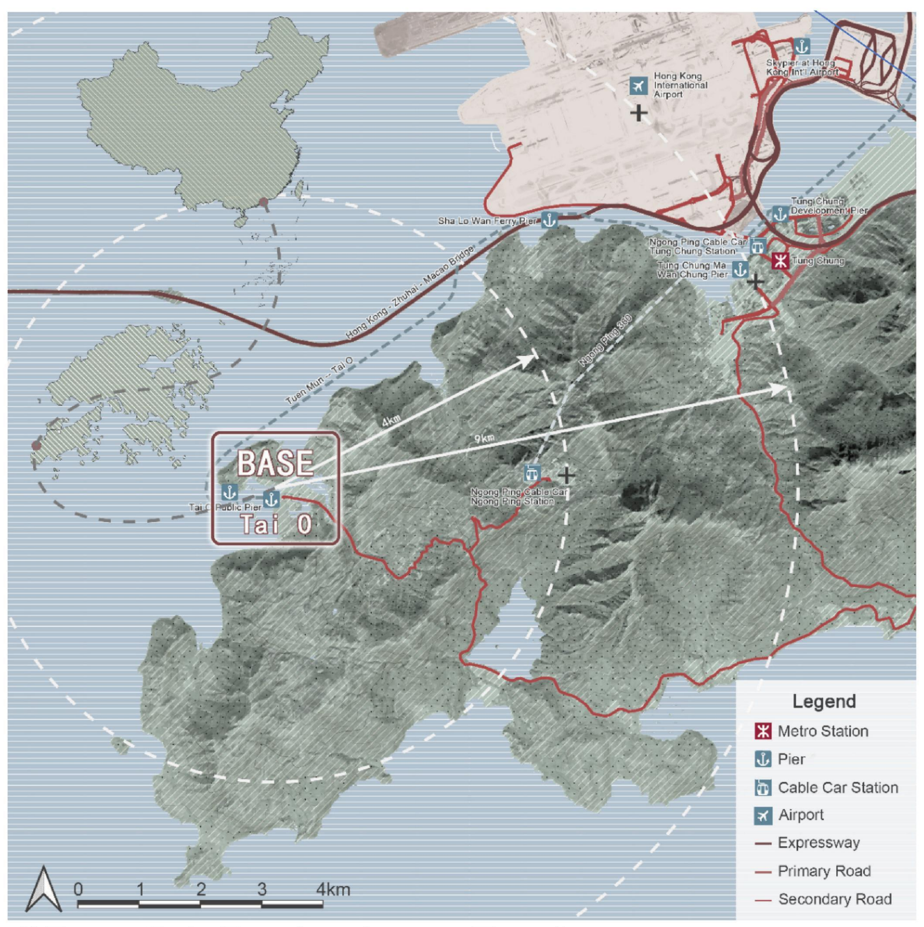
Project description

This project envisions a resilient and adaptive future for Tai O in response to rising sea levels, intensifying typhoon events, and increasing flood risks. At present, the community faces physical isolation due to water barriers, which limits daily accessibility and convenience for residents. Meanwhile, the underutilized mangrove areas represent both an ecological asset and an opportunity for enhanced spatial activation.To address these challenges, the proposal integrates a multi-layered resilience strategy across different landscape and urban conditions. Along the riverfront, a combination of semi-permeable sediment guiding systems, thin-layer sediment placement, and Leisure park is introduced to mitigate tidal surges and improve natural sedimentation processes. In the hut areas, amphibious building typologies are proposed, allowing structures to adapt dynamically to fluctuating water levels and significantly reduce flood vulnerability.The mangrove zone is reimagined as a Mangrove Tidal Park, enhancing ecological resilience while activating public use. The park incorporates elevated boardwalks, bird-watching house, viewing platforms, and waterfront landscapes, transforming an underused environment into a vibrant ecological and recreational destination.Within the town center, two Tai O mixed-use community centers are strategically introduced to improve daily life and emergency preparedness. These hubs integrate wet markets, retail spaces, reading rooms, and designated shelter areas, strengthening both social infrastructure and disaster response capacity. Through the integration of nature-based solutions, adaptive architecture, and community-oriented design, this project aims to create a holistic, resilient, and livable future for Tai O.

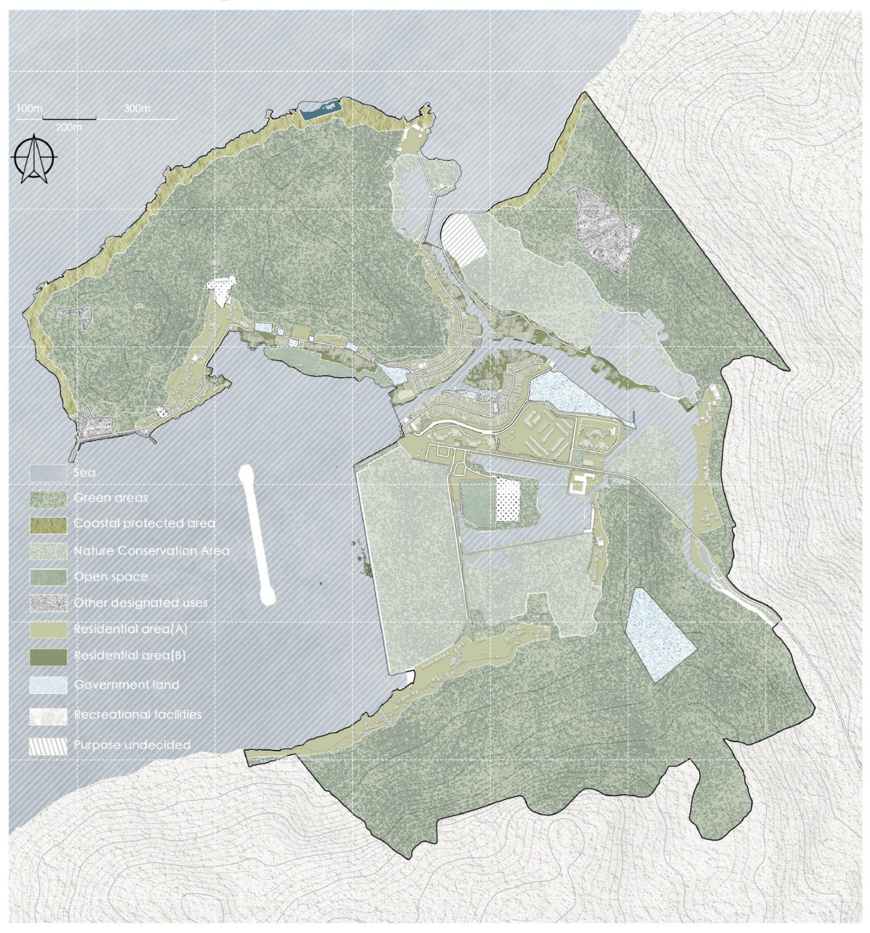
Key objectives: **Tai O, Mangroves, Amphibious house, Sediment layer,Mix-use community**

Instructor: Prof.HU Yu
Group member: LIU Jie, MO Yufan, LI Yaxin, SHI Ziyuan, ZHAO Yingjie, SU Yang

#Site Location

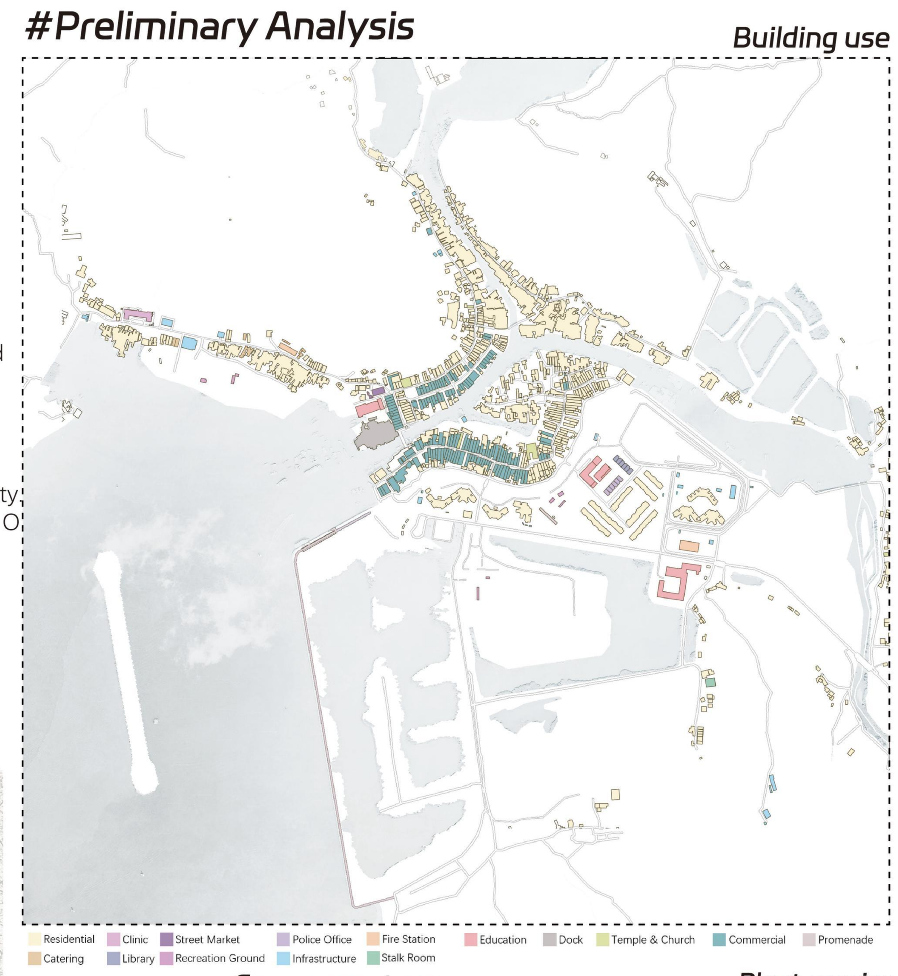


#Site Zoning

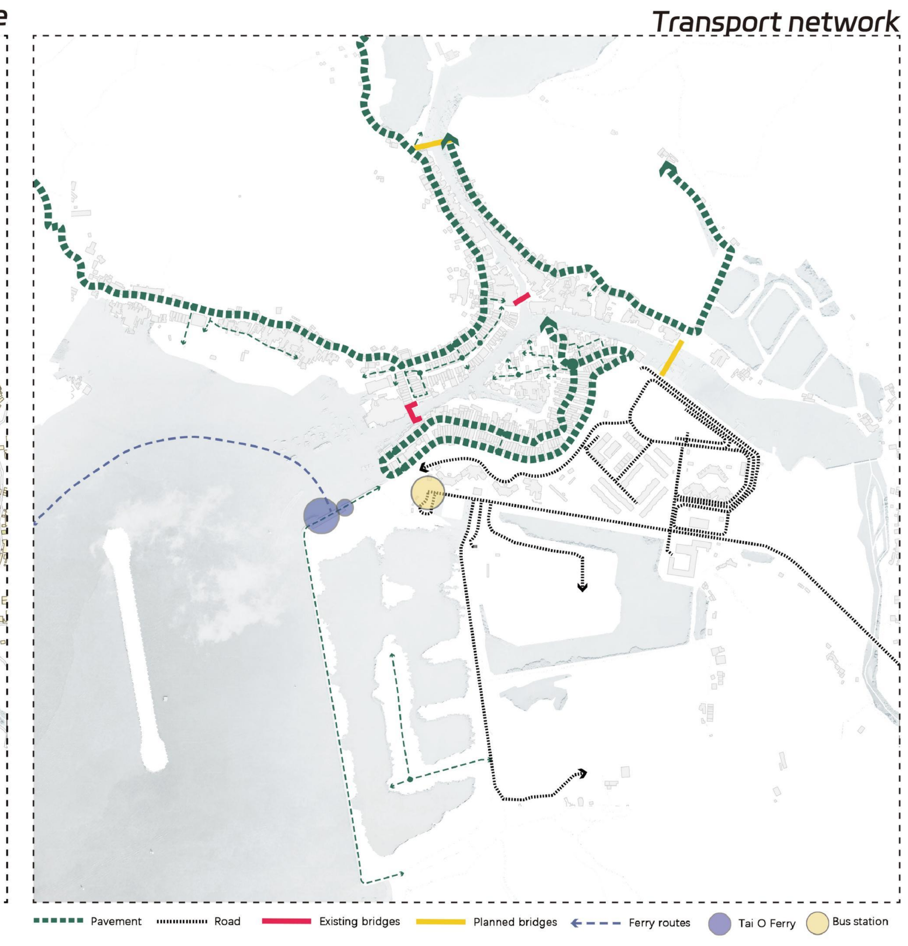


#Preliminary Analysis

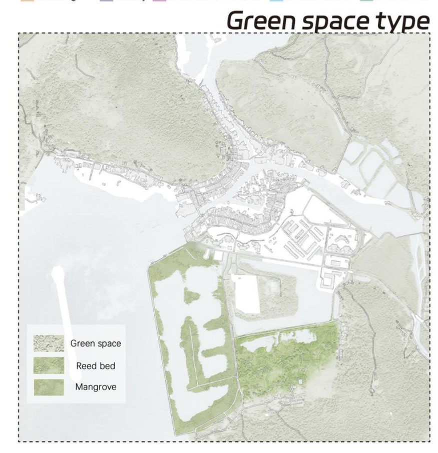
Building use



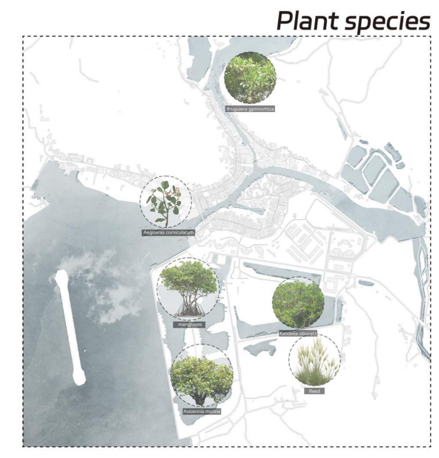
Transport network



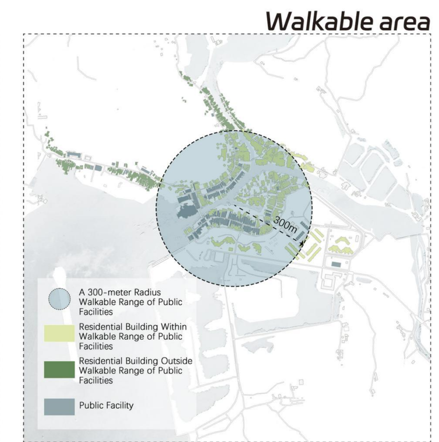
Green space type



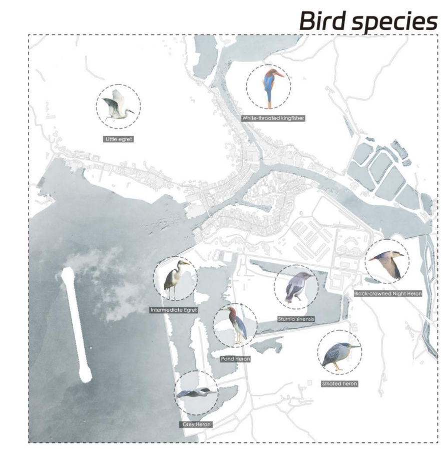
Plant species



Walkable area

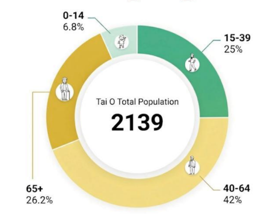


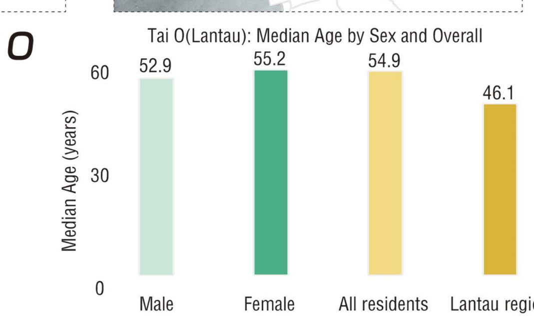
Bird species



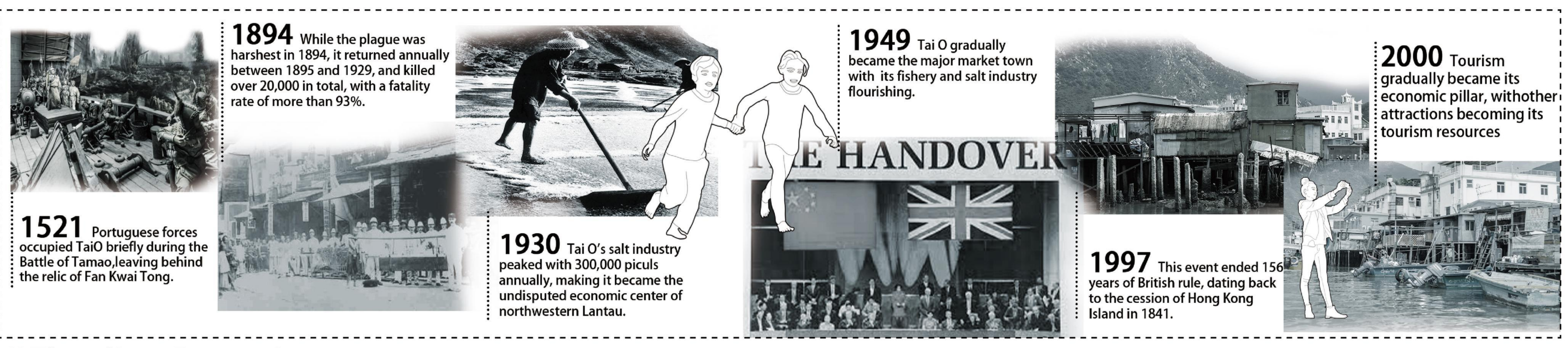
#Life Complaints

#An Aging Tai O





#From Salt Production to Tourism

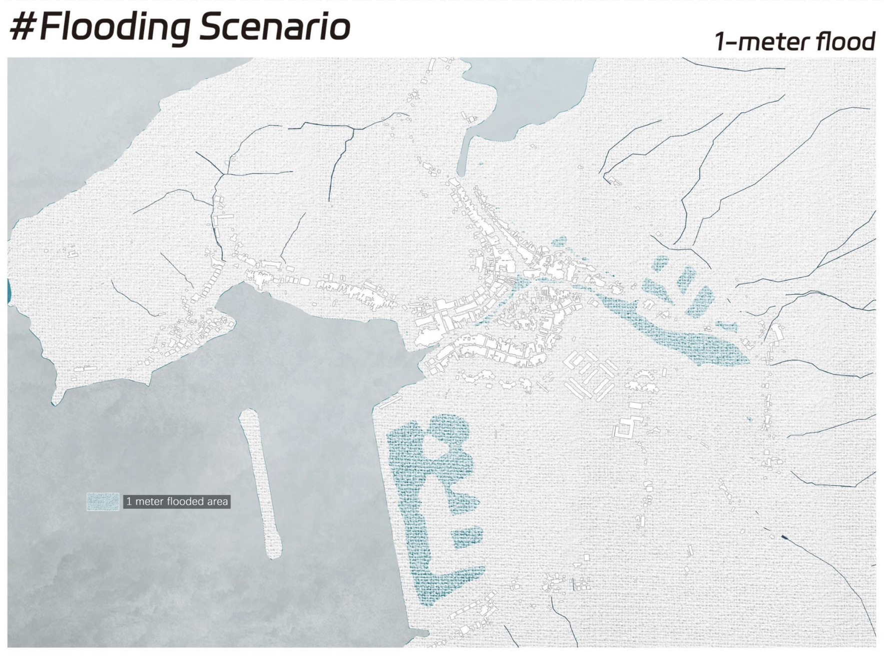


#Severe Flooding

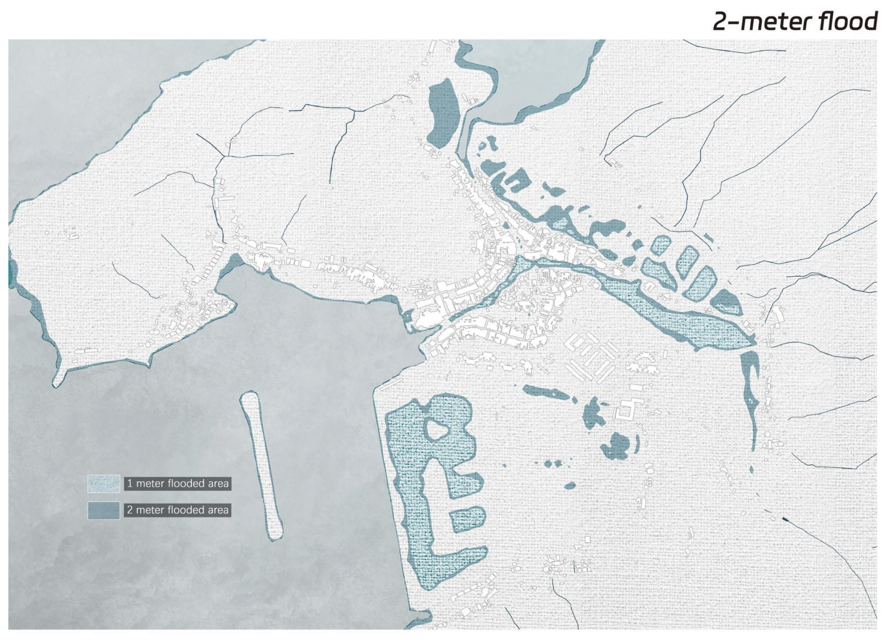


#Flooding Scenario

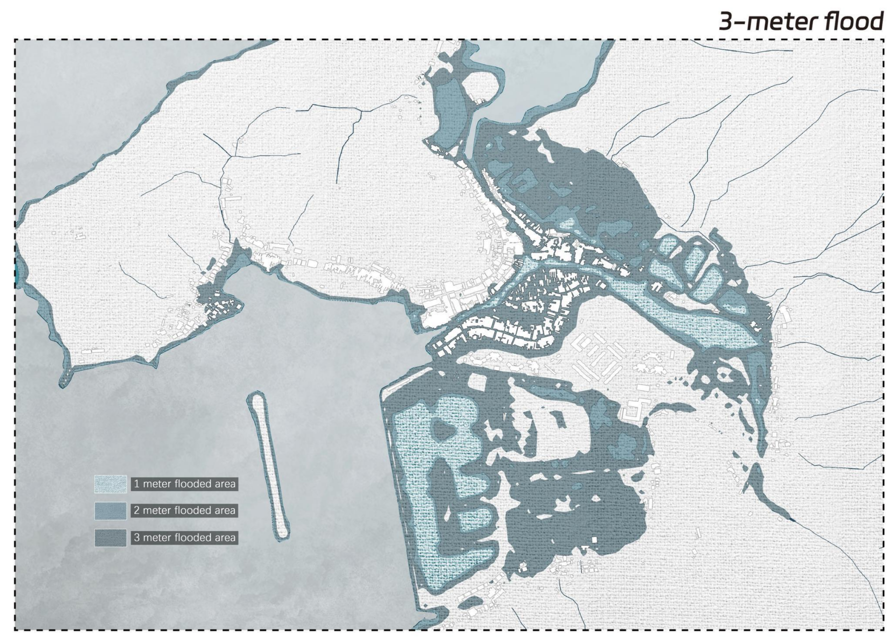
1-meter flood



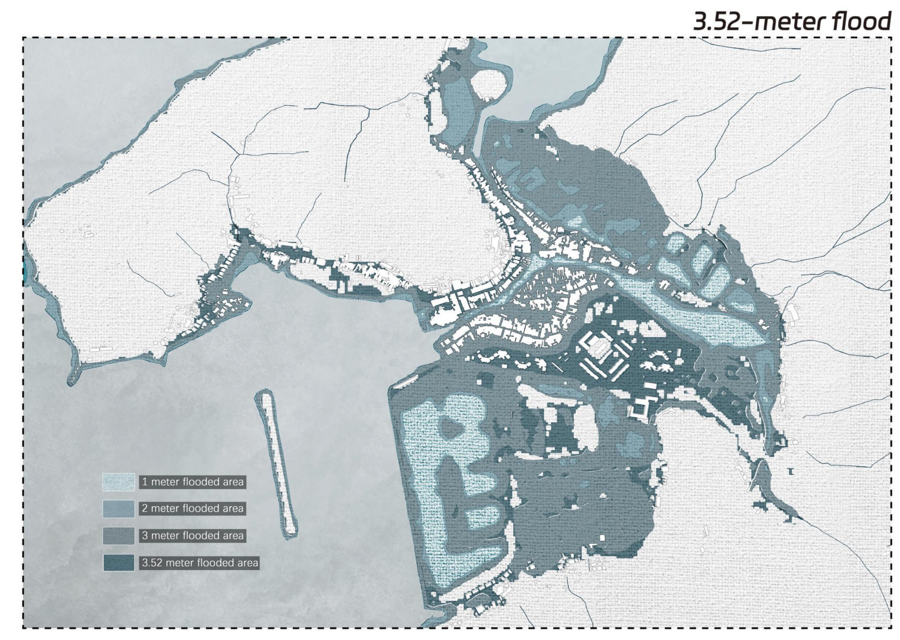
2-meter flood



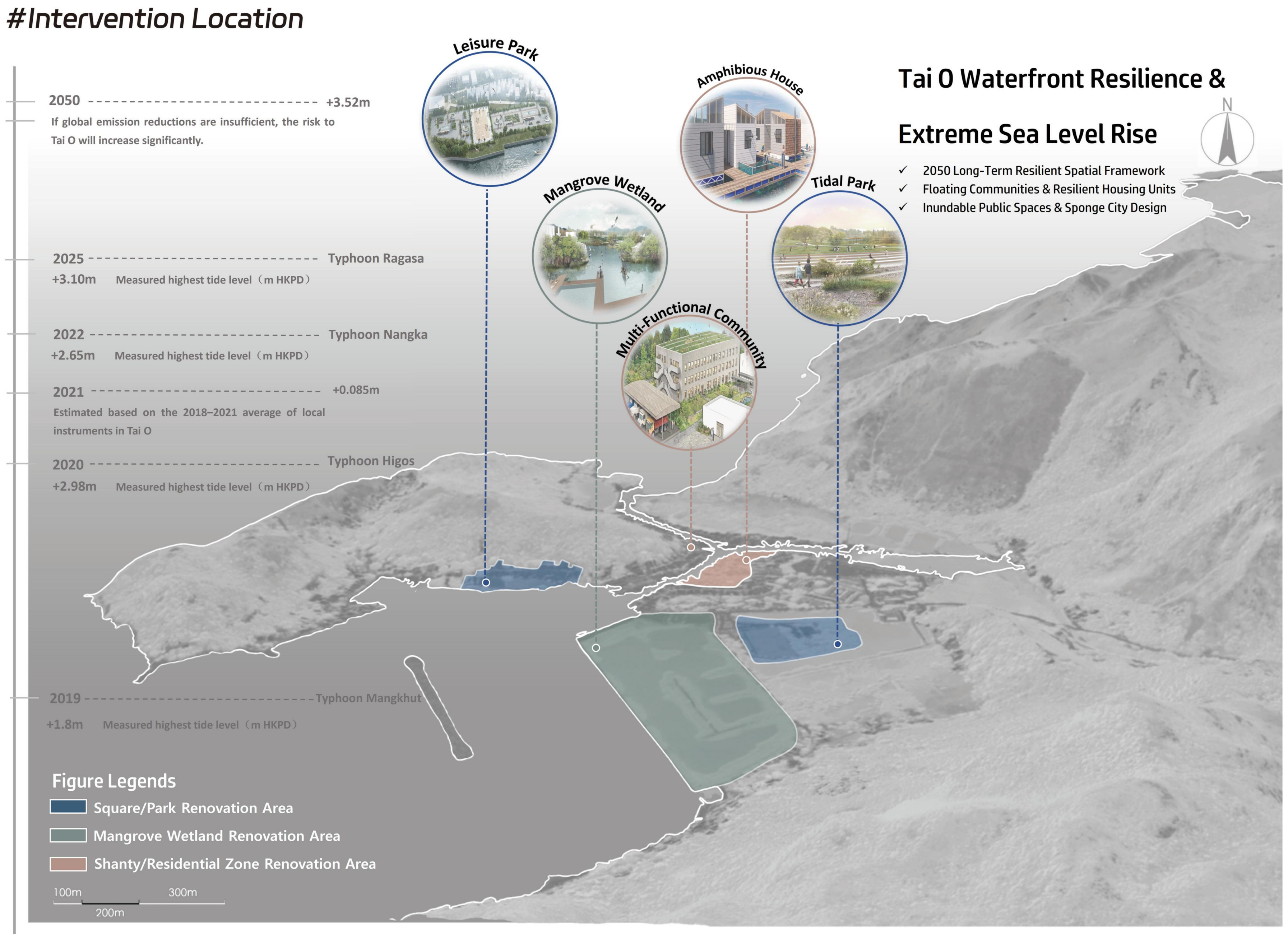
3-meter flood



3.52-meter flood

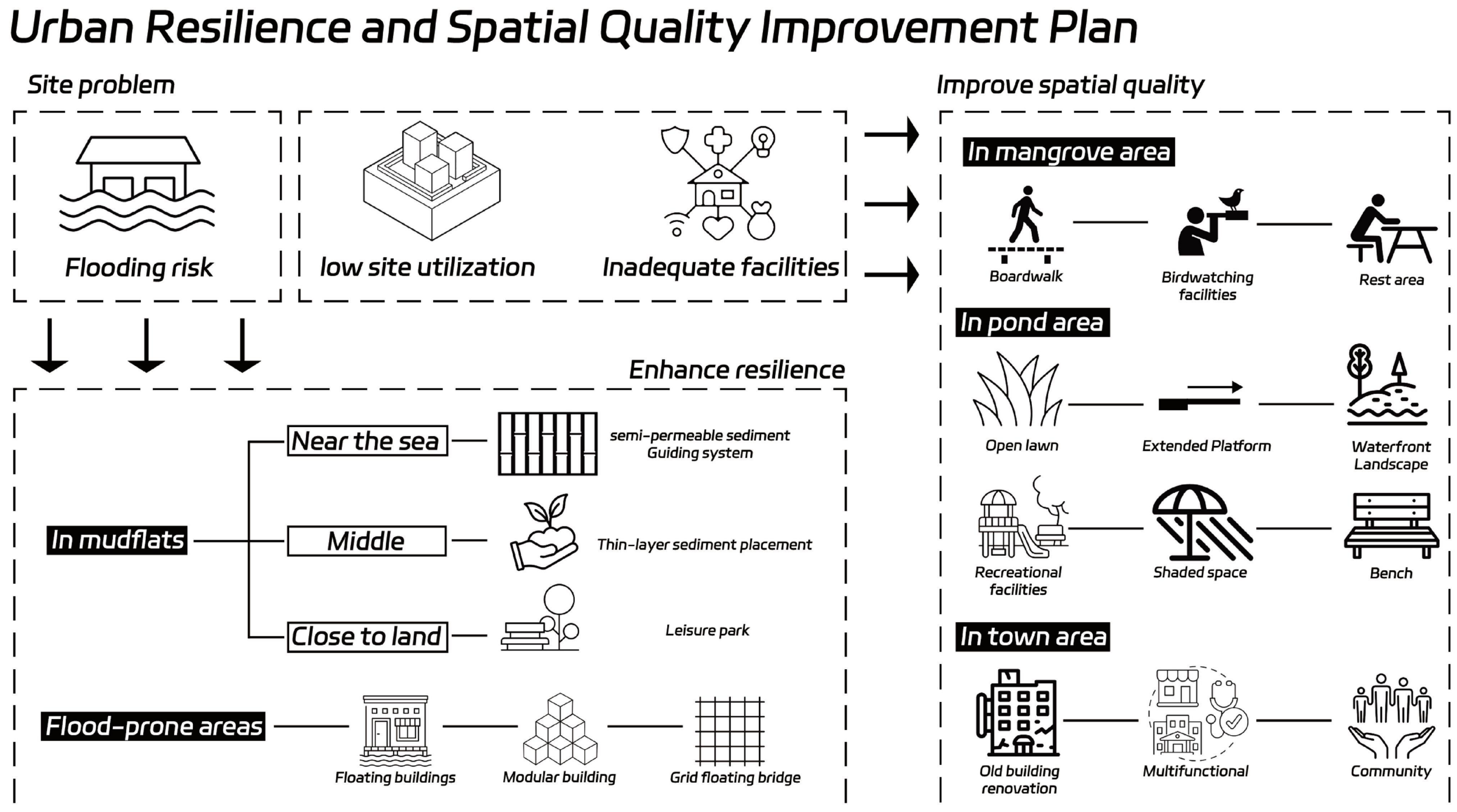


#Intervention Location



#Response Strategy

Urban Resilience and Spatial Quality Improvement Plan



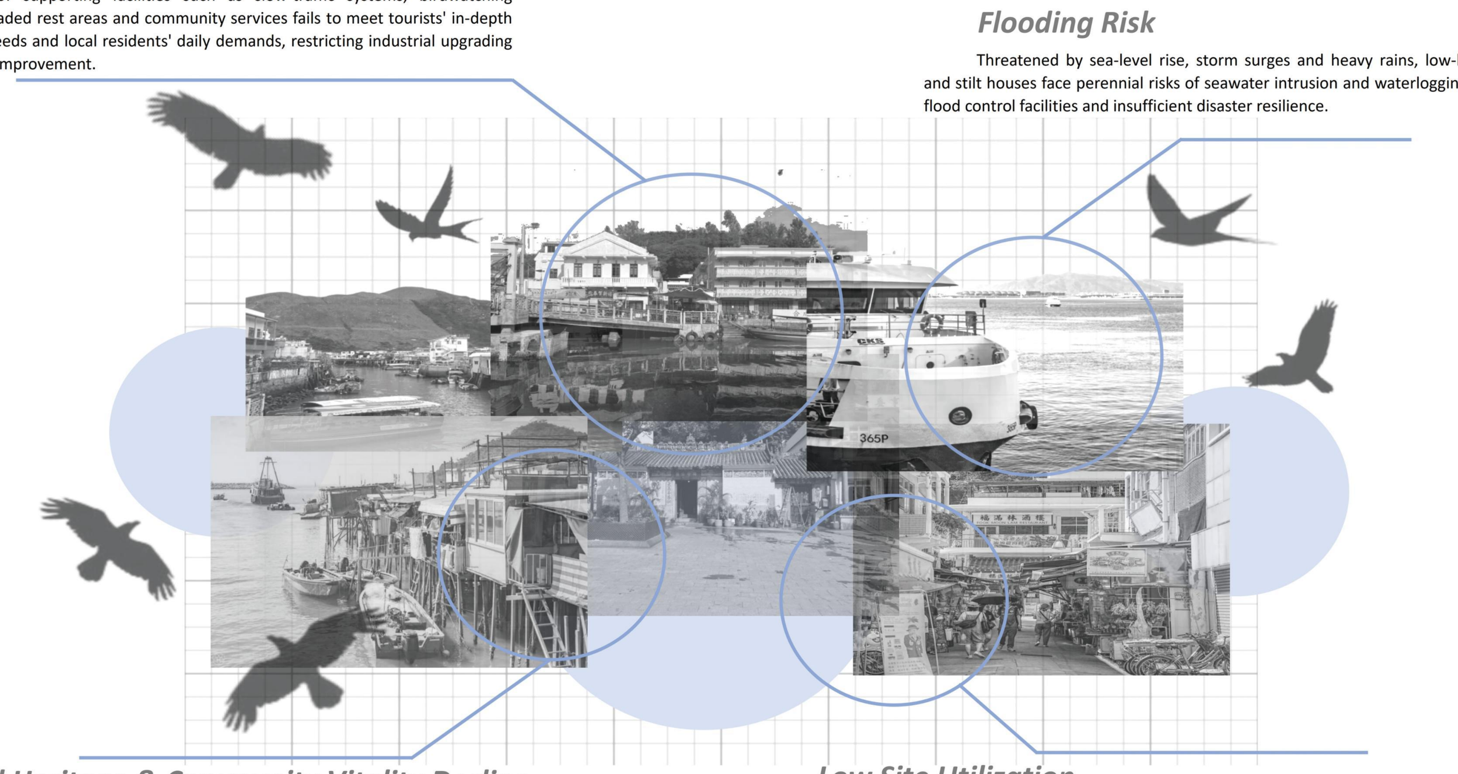
#Overview of Current Issues

Inadequate Facilities

Lack of supporting facilities such as slow-traffic systems, birdwatching amenities, shaded rest areas and community services fails to meet tourists' in-depth experience needs and local residents' daily demands, restricting industrial upgrading and livability improvement.

Flooding Risk

Threatened by sea-level rise, storm surges and heavy rains, low-lying town areas and stilt houses face perennial risks of seawater intrusion and waterlogging, with outdated flood control facilities and insufficient disaster resilience.



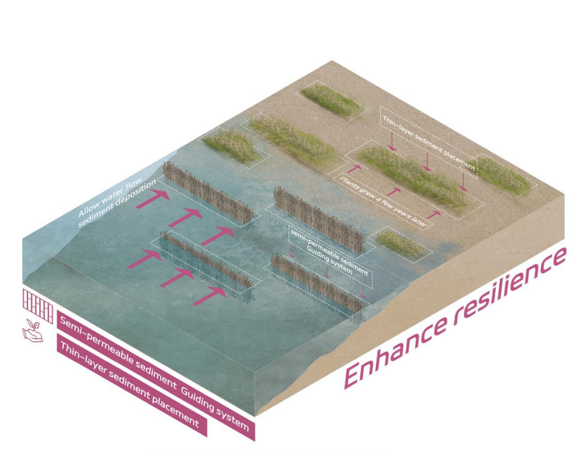
Cultural Heritage & Community Vitality Decline

Intangible cultural heritage such as traditional fishing culture and stilt house craftsmanship faces inheritance gaps, with severe youth outflow, aging population, insufficient community endogenous momentum, and the fishing village's authenticity eroded by commercialization.

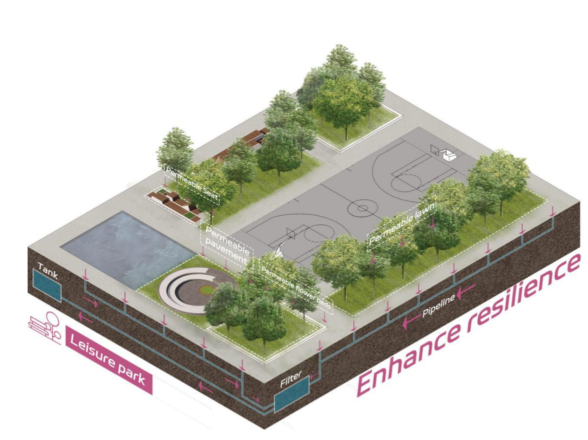
Low Site Utilization

A large number of idle mudflats, abandoned stilt houses and waterfront open spaces feature single functions and scattered layouts, with underutilized waterfront resources failing to support diversified development needs.

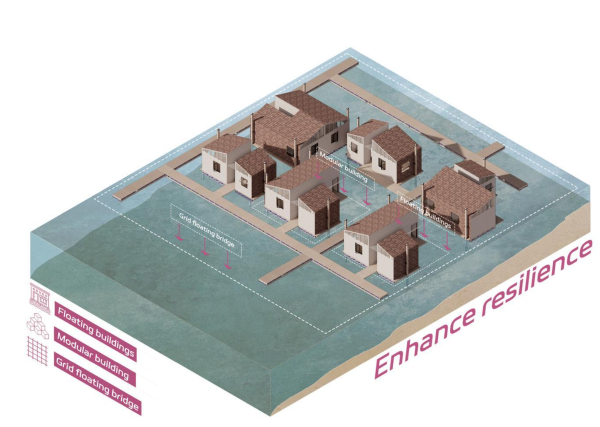
Enhance resilience



In mudflat

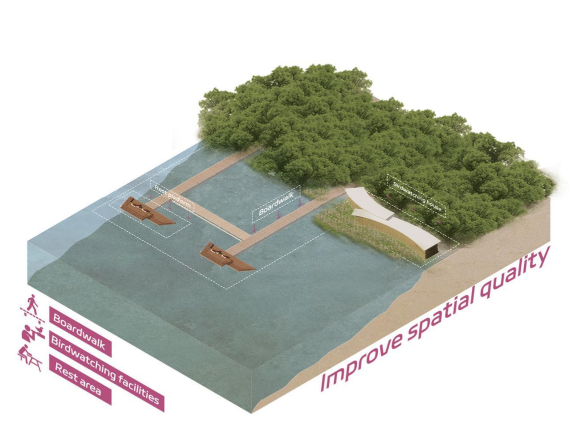


In mudflat

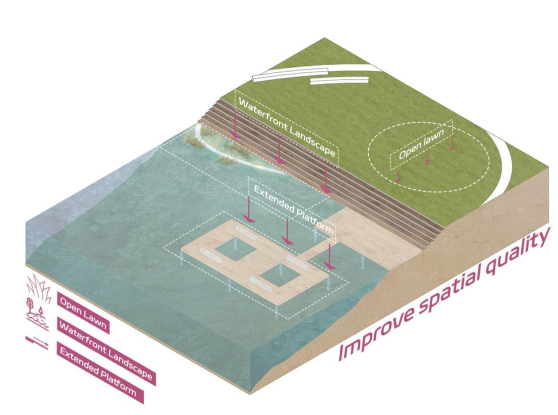


Flood-prone area

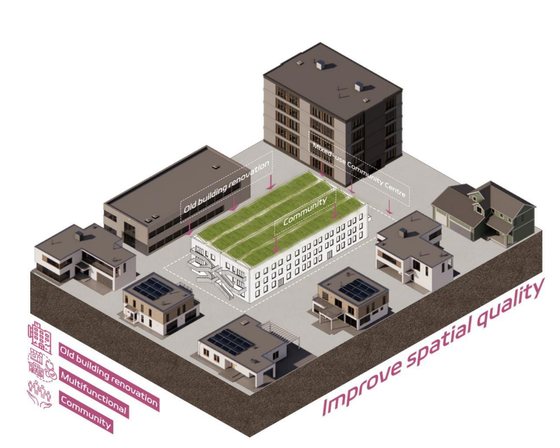
Improve spatial quality



In mangrove area



In pond area

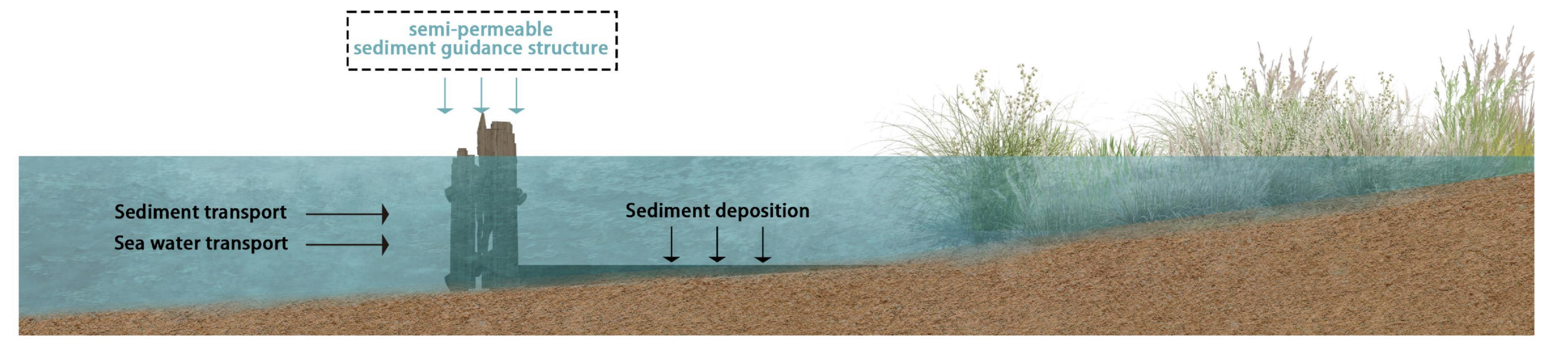


In town area

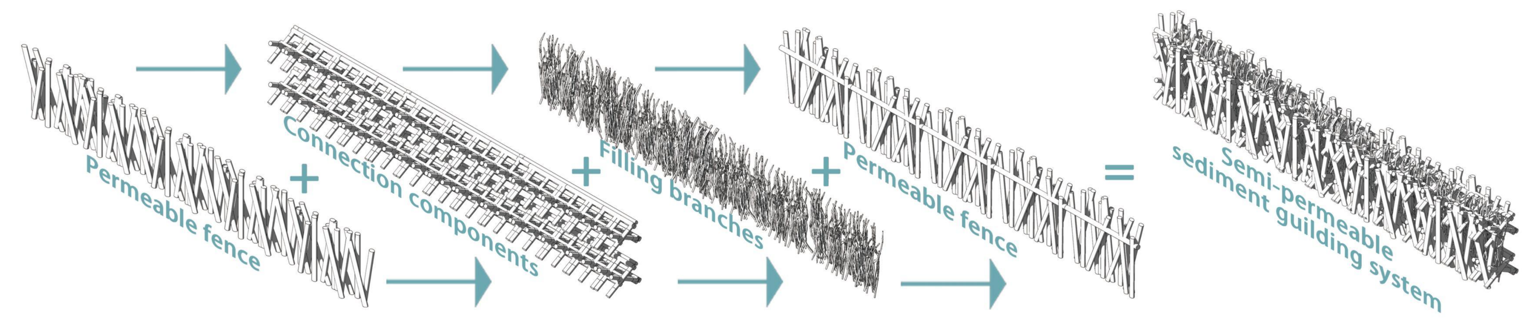
#Master Plan

#Sediment Guide & Layer

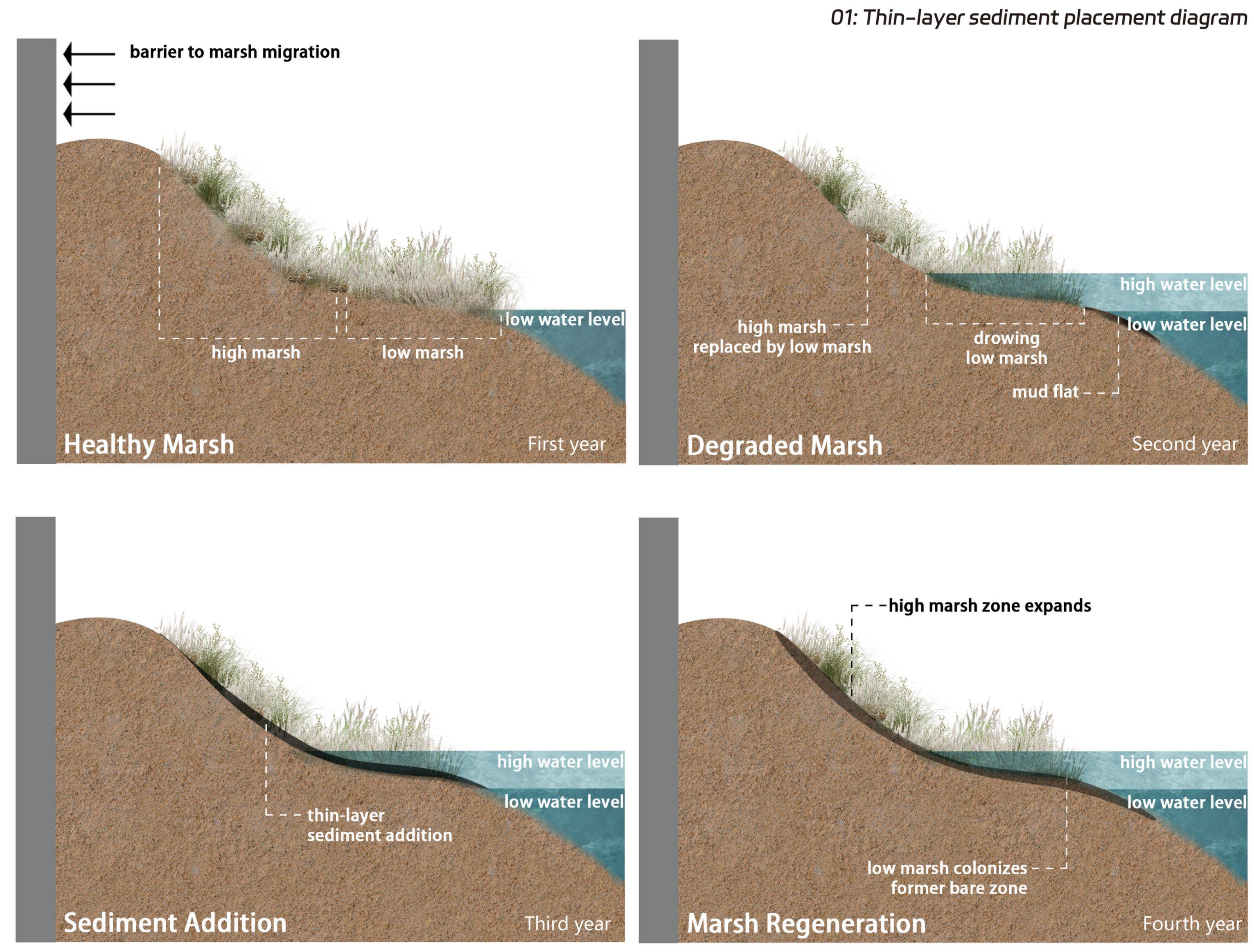
01: Semi-permeable sediment guiding system diagram



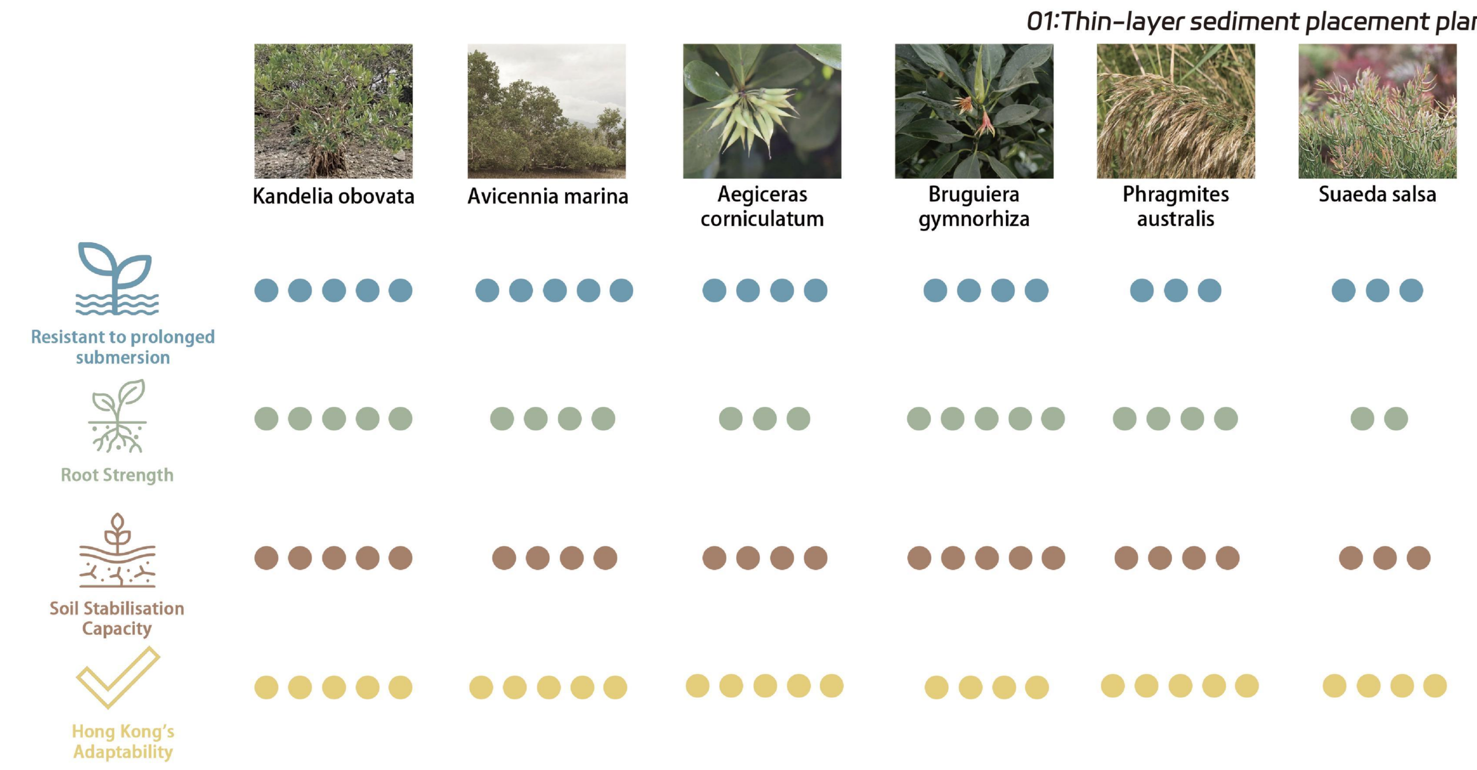
01: Semi-permeable sediment guiding system composition diagram



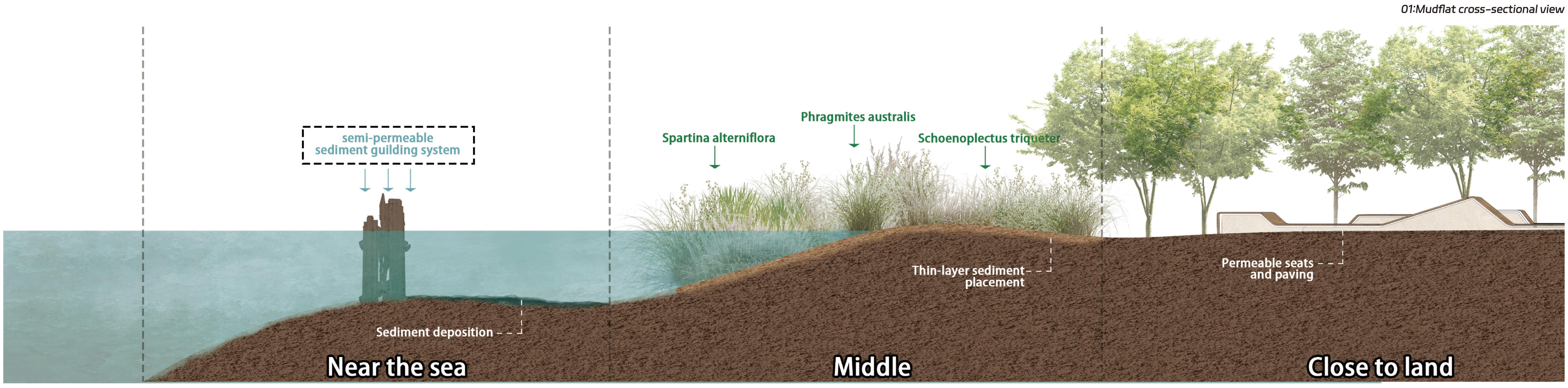
01: Thin-layer sediment placement diagram



01:Thin-layer sediment placement plant



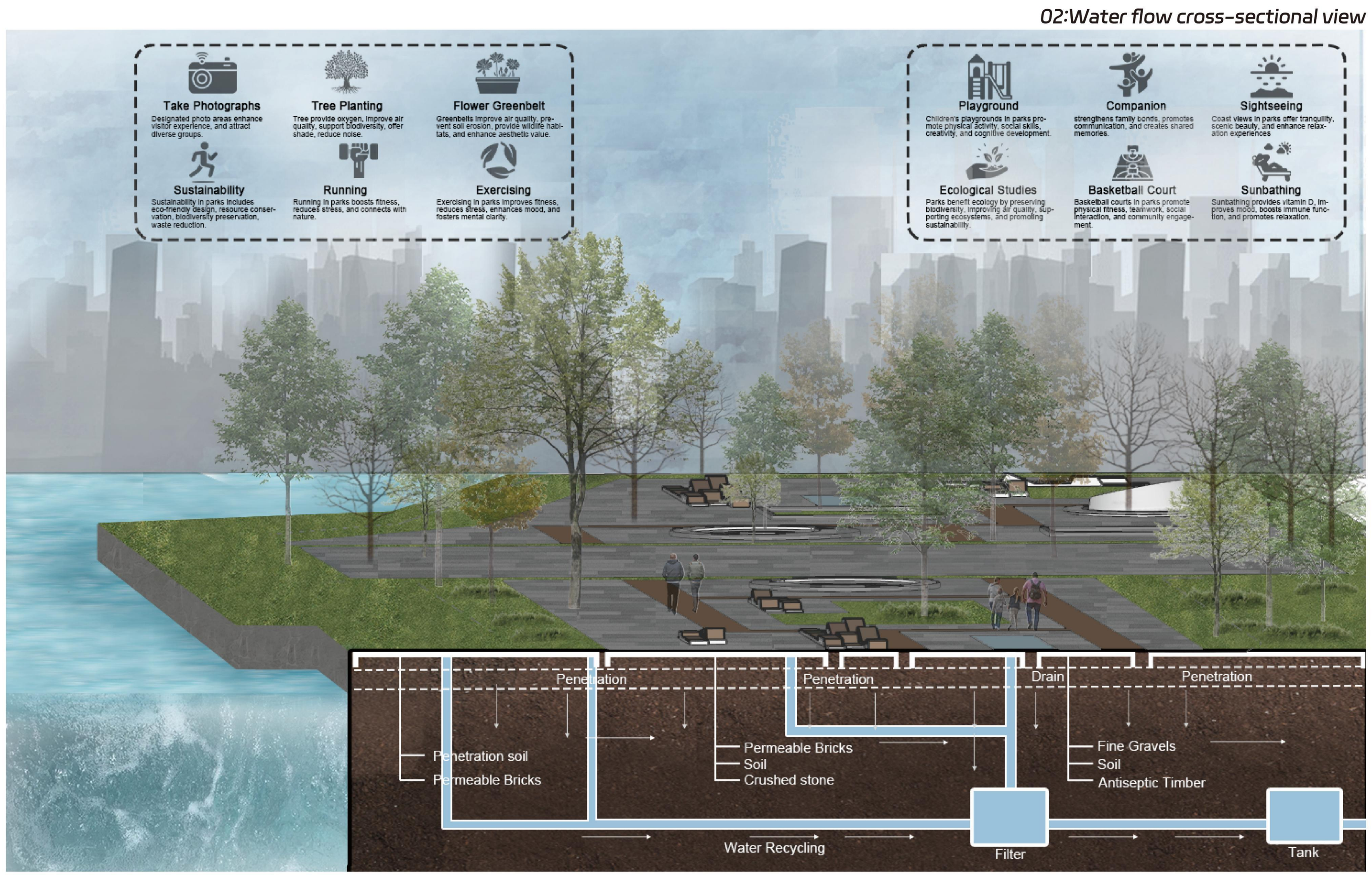
01:Mudflat cross-sectional view



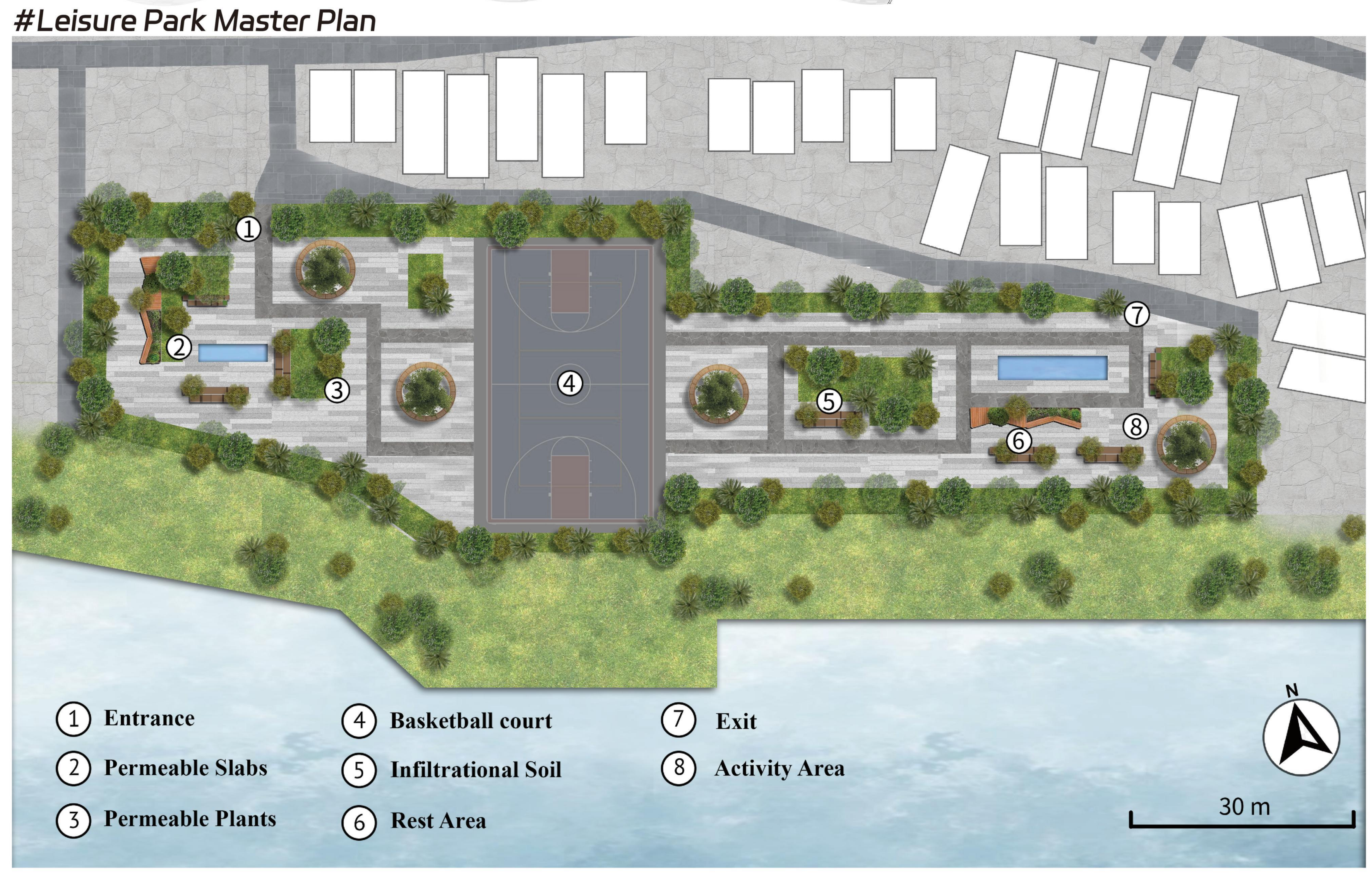
#Leisure Park

02:Scene nodes

02:Water flow cross-sectional view



#Leisure Park Master Plan



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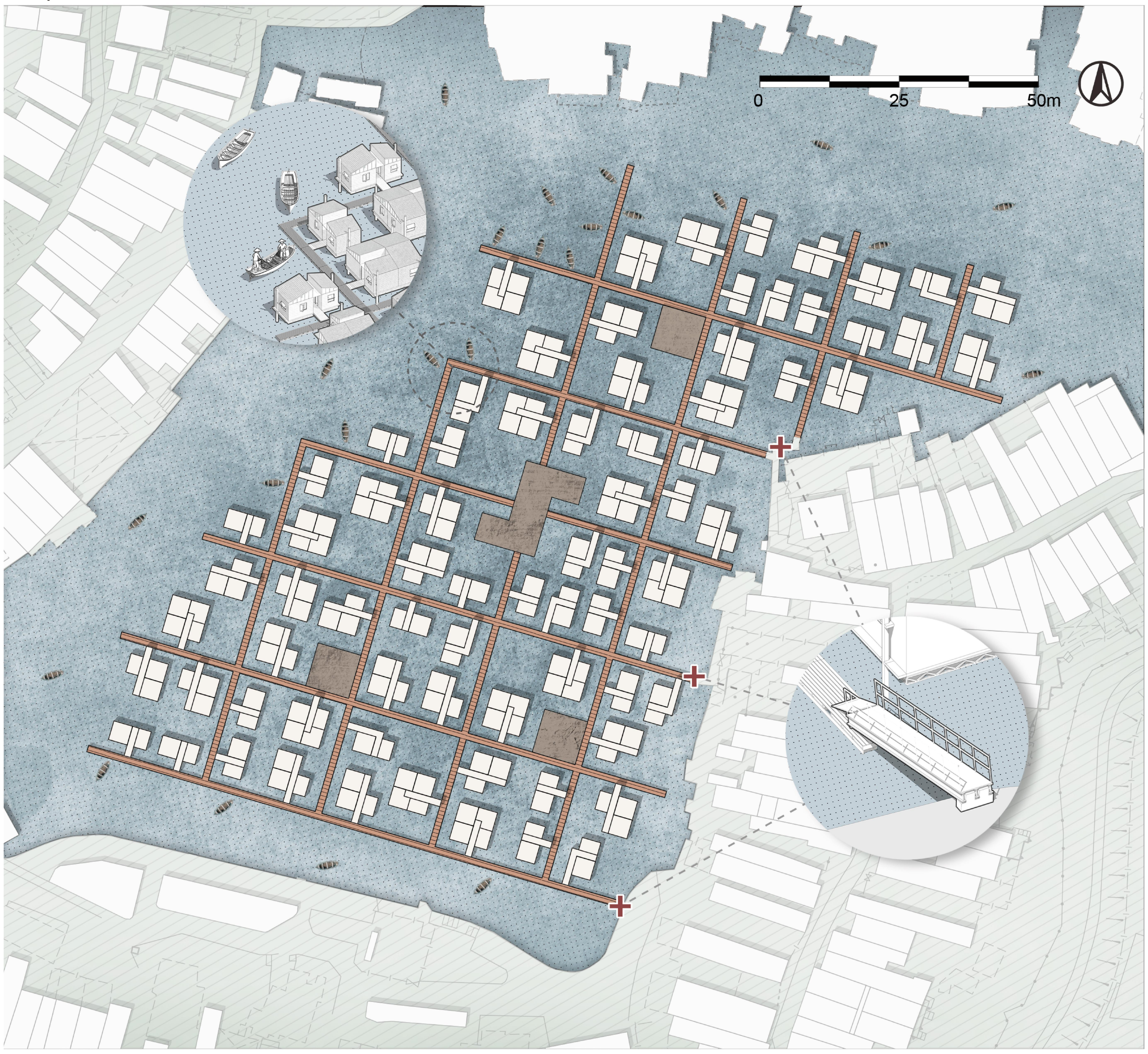
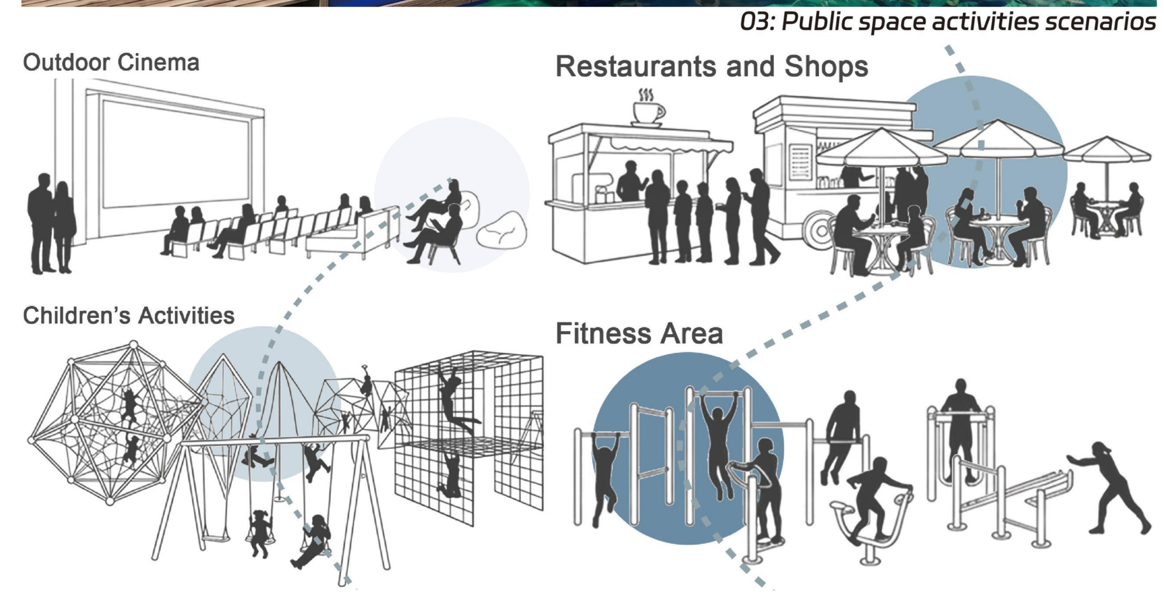
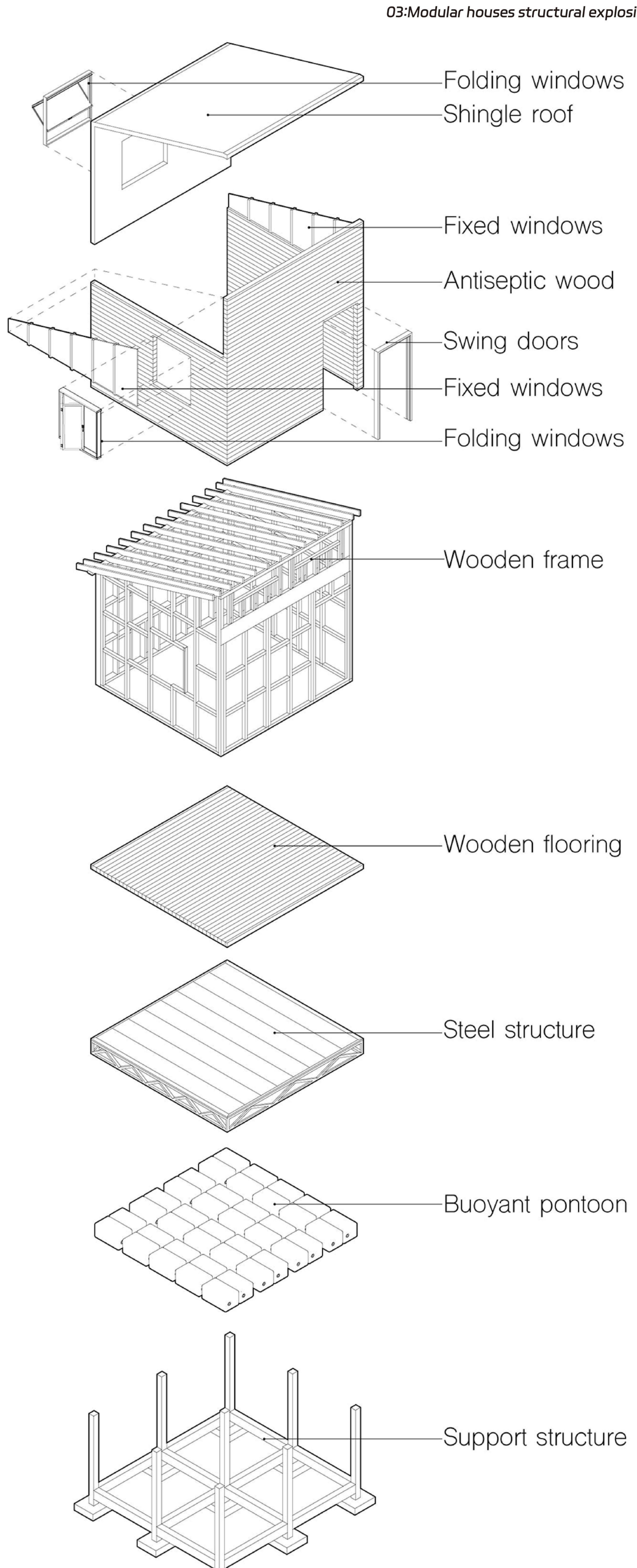
#Amphibious Houses Master Plan



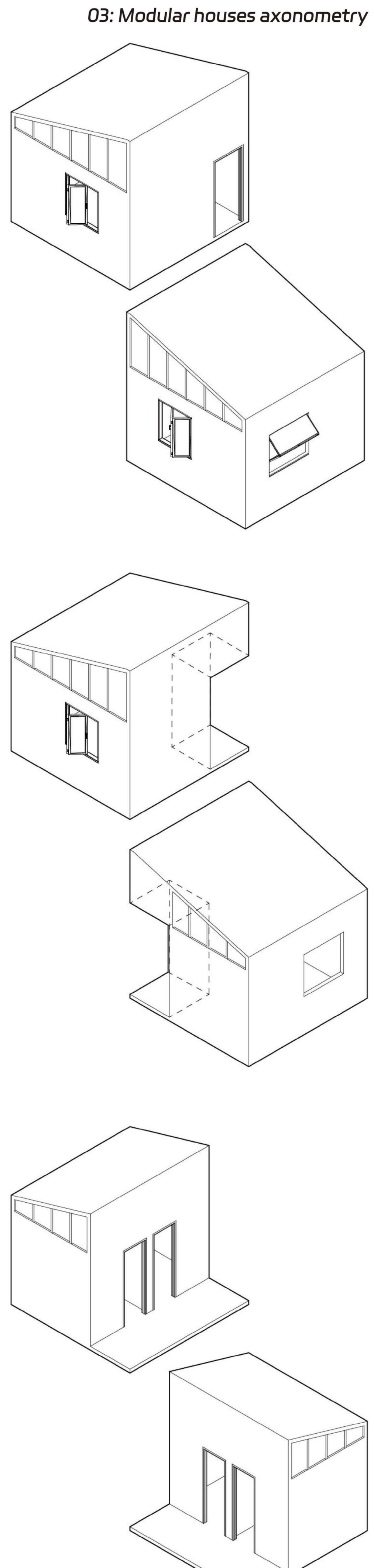
03: Public space activities scenarios



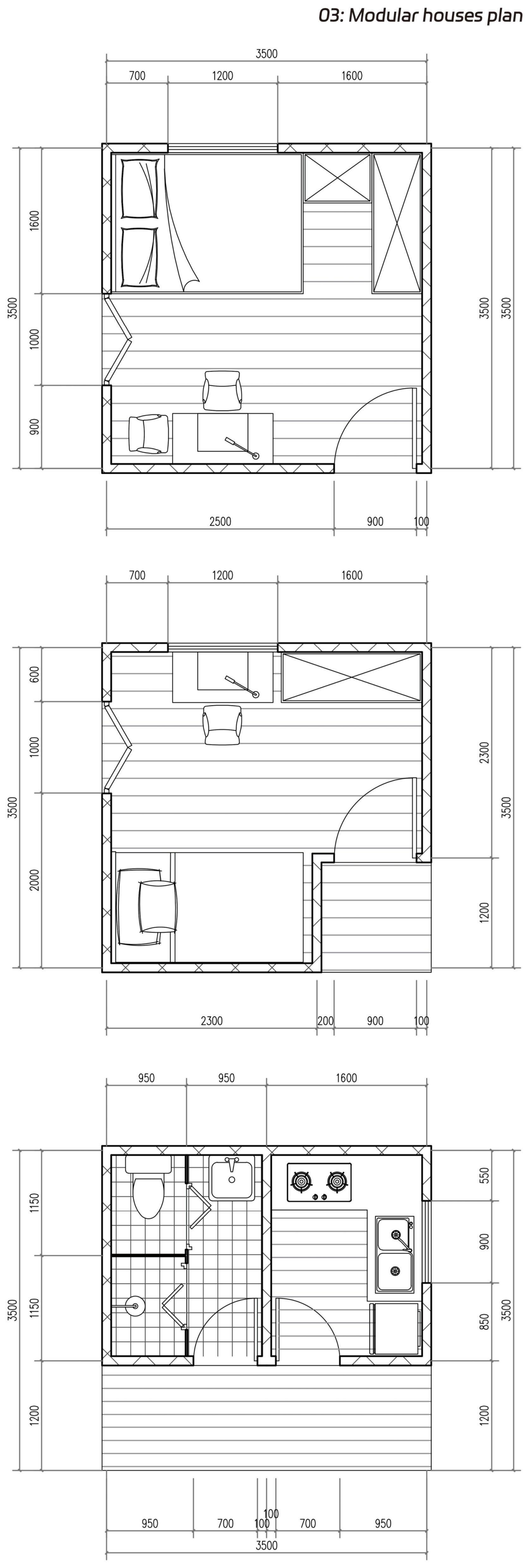
03:Modular houses structural explosion



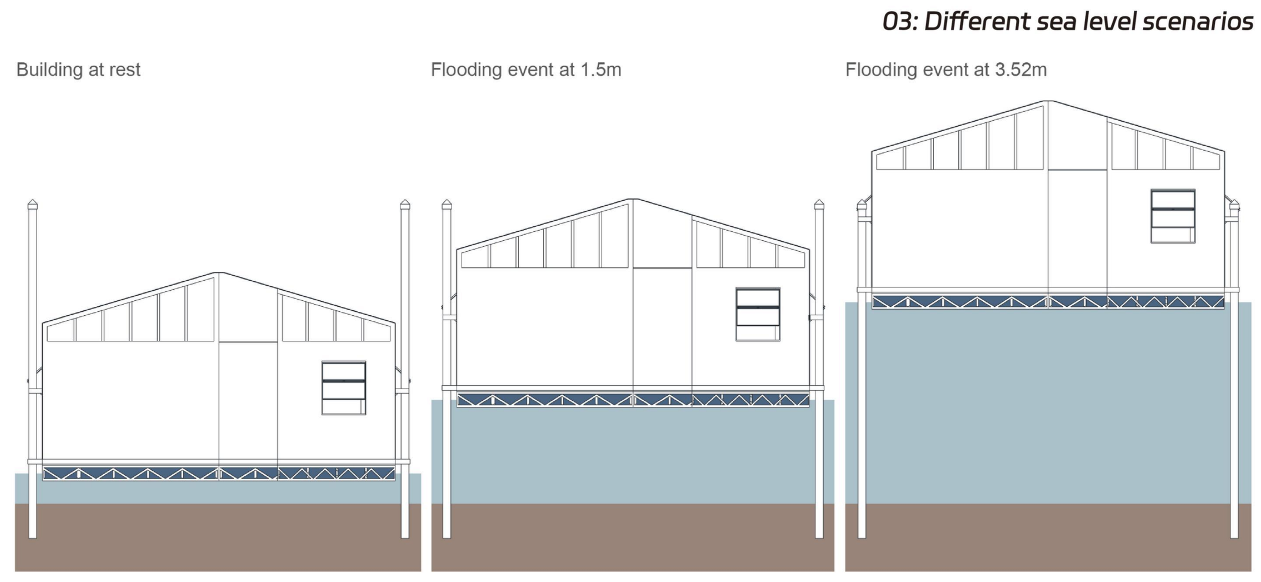
03: Modular houses axonometry



03: Modular houses plan

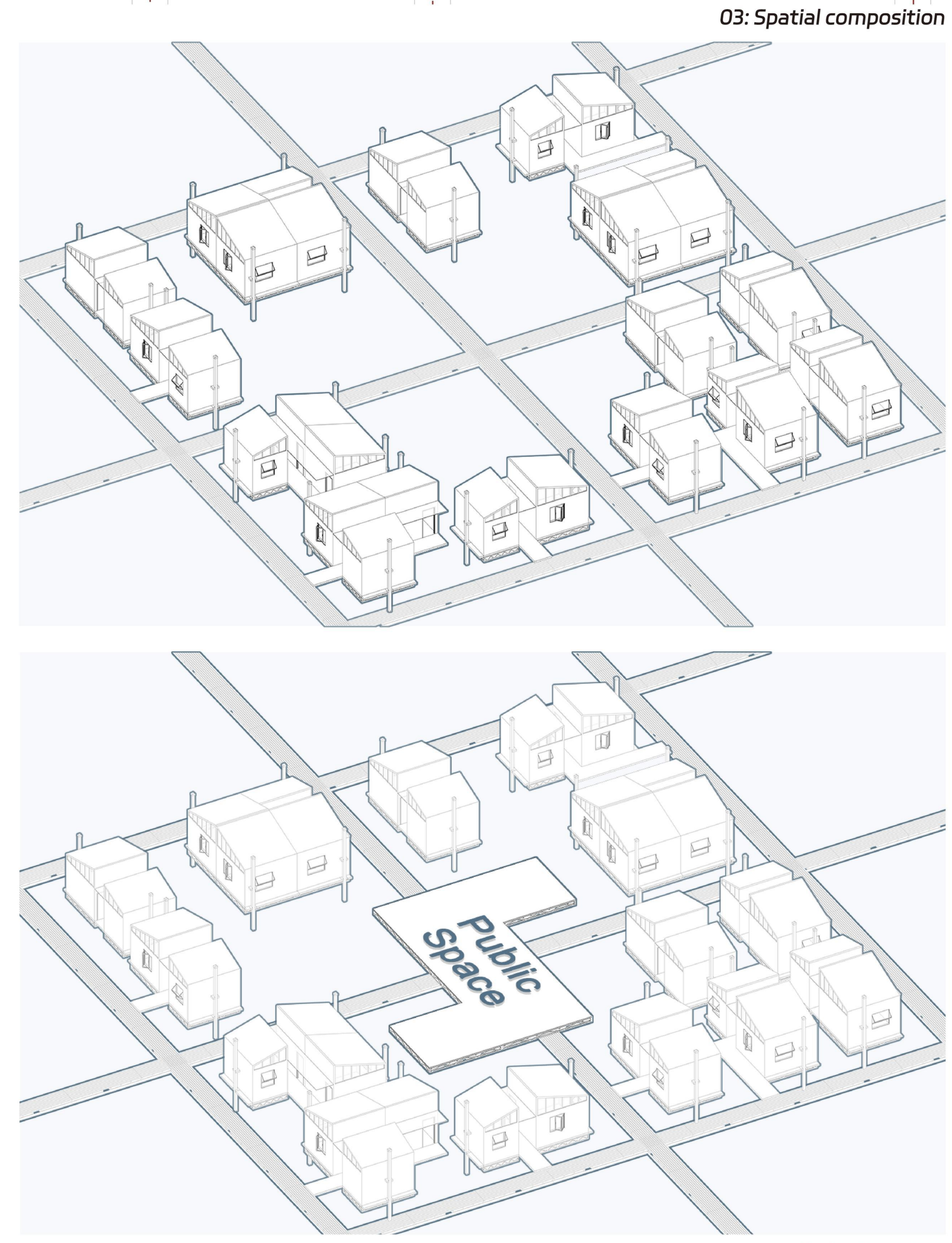


03: Different sea level scenarios

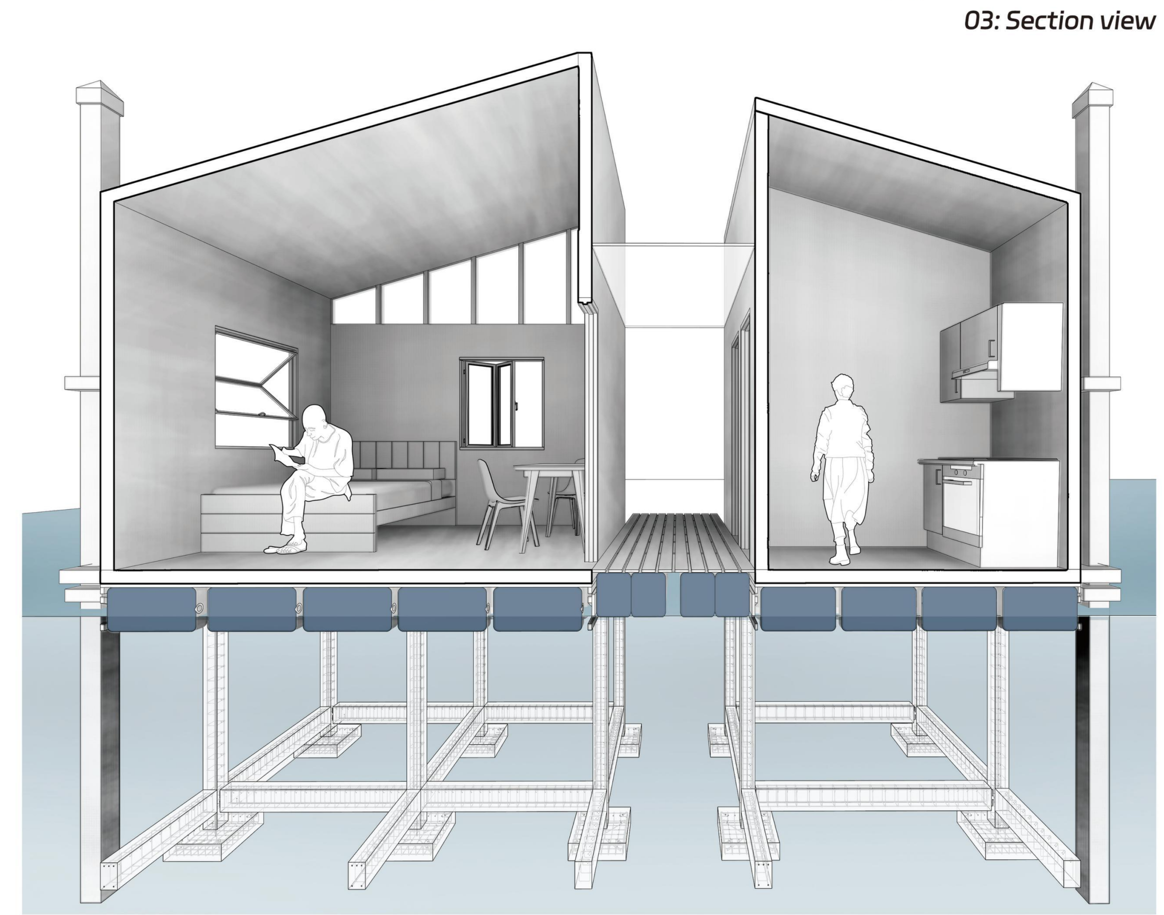


03: 4 types of dwelling units

03: Spatial composition



03: Section view



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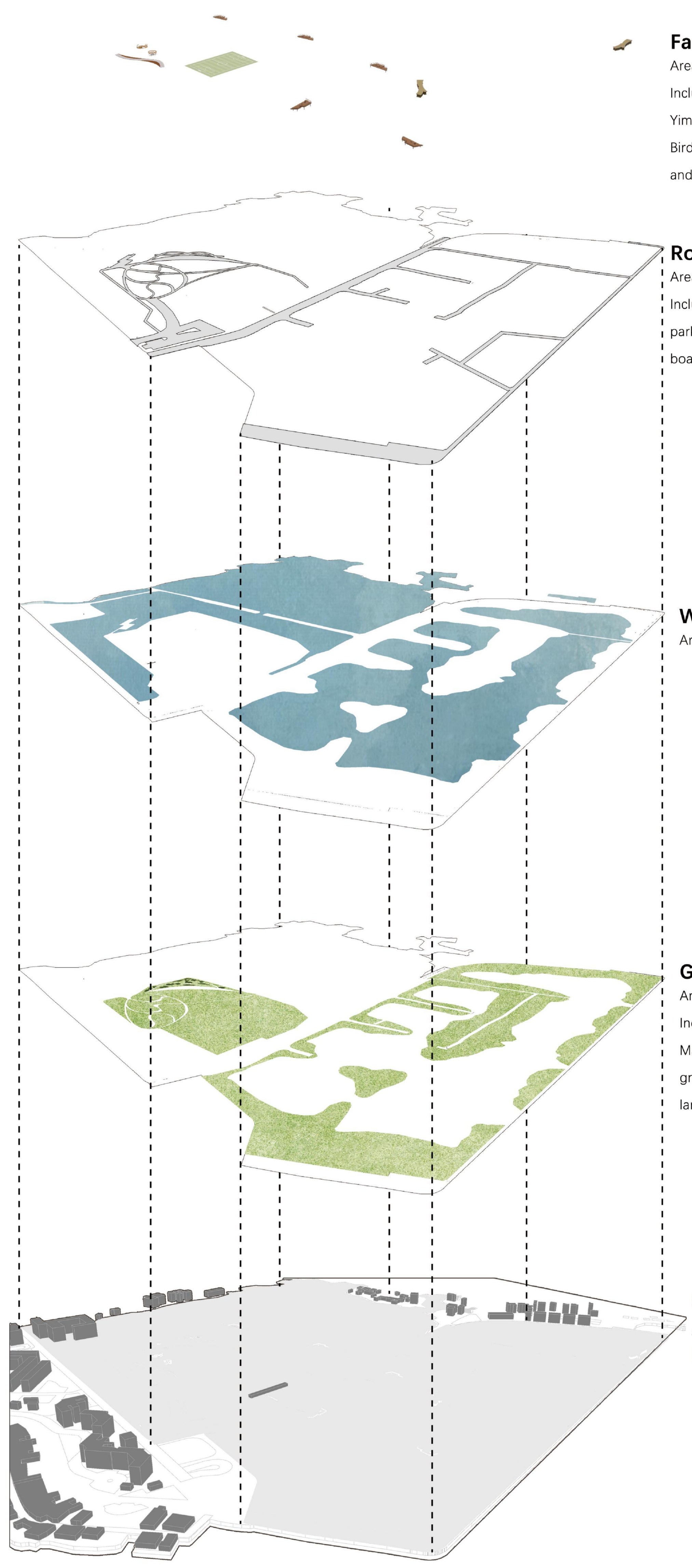
#Mangrove Tidal Park

04:Explosion diagram



Facility layer
Area:21250.17 m²
Includes
Yim Tin Playground, Wooden Platform, Bird-watching Hourse, Shaded Corridor and Recreational Facilitie.

Road layer
Area:21250.17 m²
Includes
park roads, Tiered Seating and wooden boardwalks

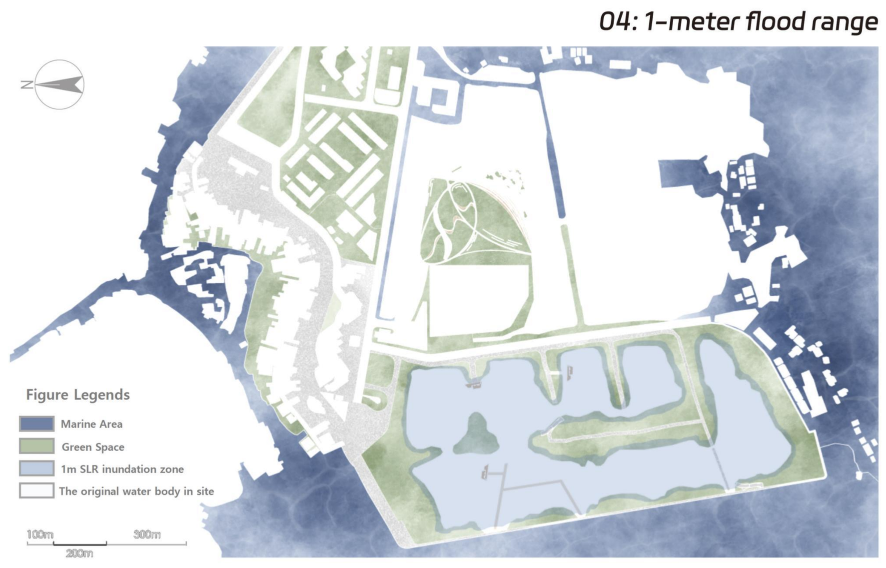
Water layer
Area:193542.89 m²

Green layer
Area:76883.99 m²
Includes
Mangroves area, Open lawns, Park green space and Submerged beach landscape

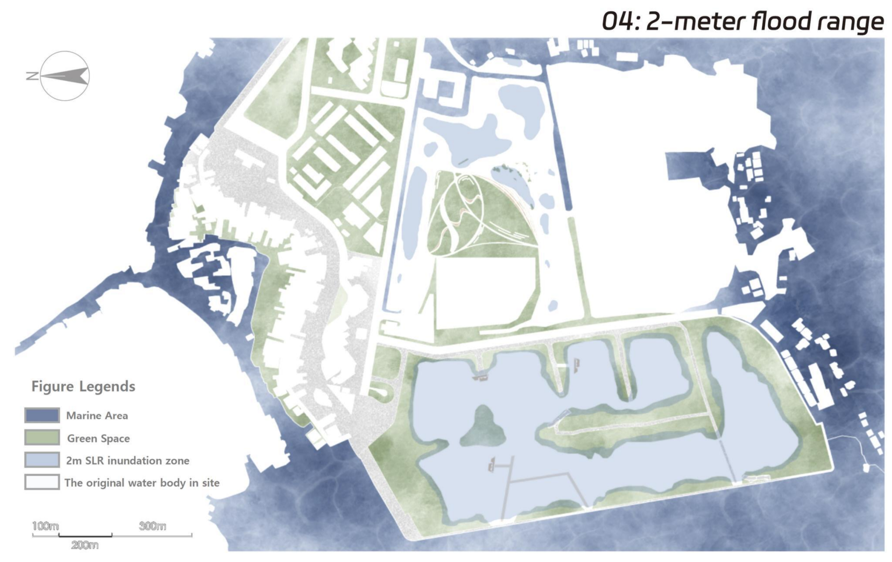
Site layer
Area:313264.97 m²
Mangroves tidal park

#Mangrove Tidal Park Master Plan

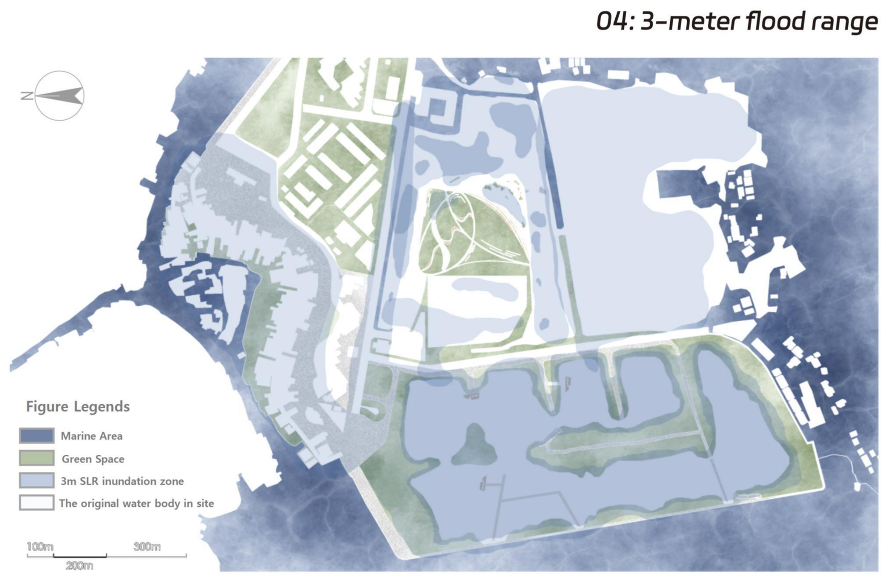
04: 1-meter flood range



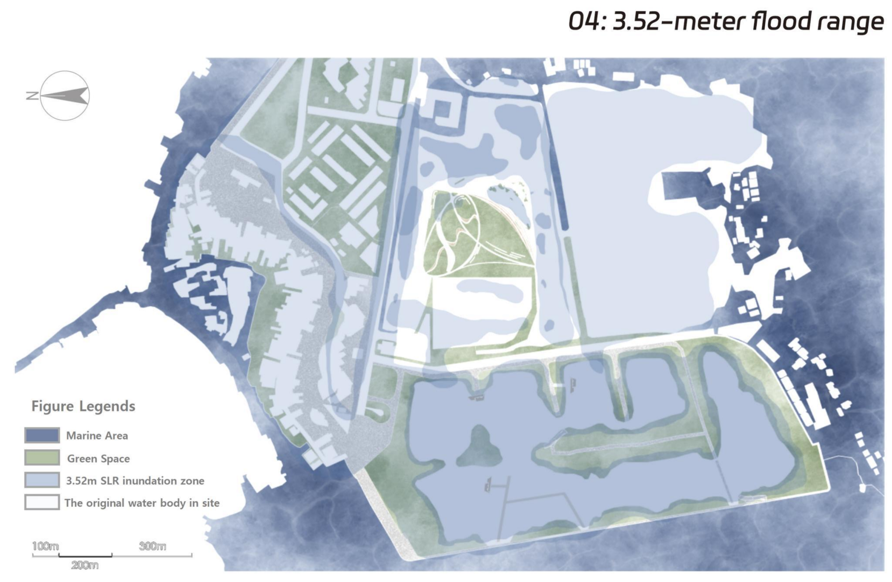
04: 2-meter flood range



04: 3-meter flood range

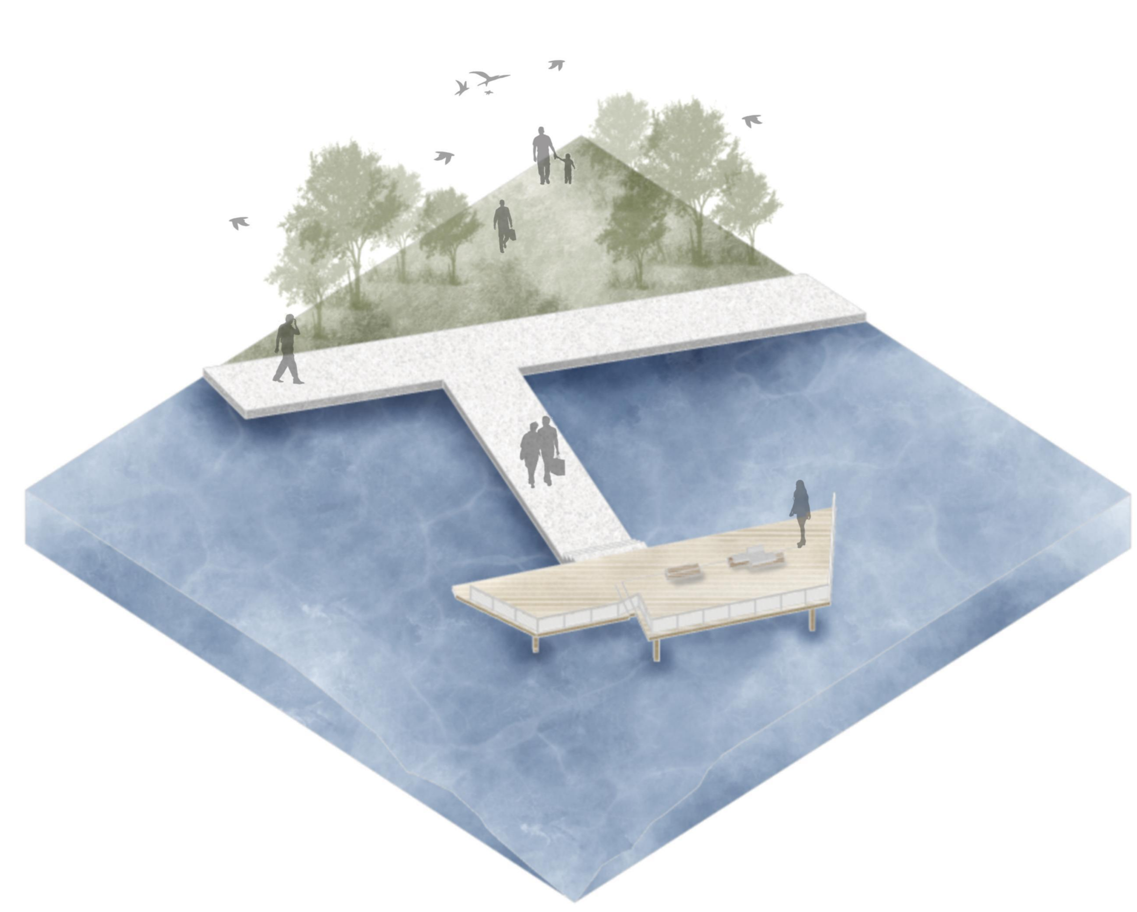


04: 3.52-meter flood range

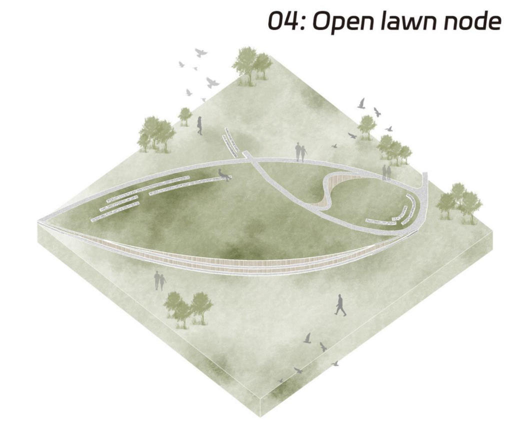


04: Birdwatching horse node

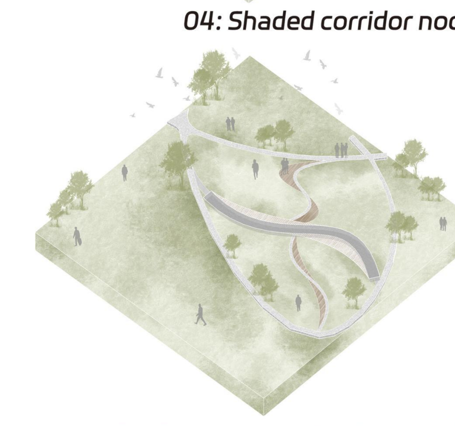
04: Recreational facilities nodes



04: Open lawn node

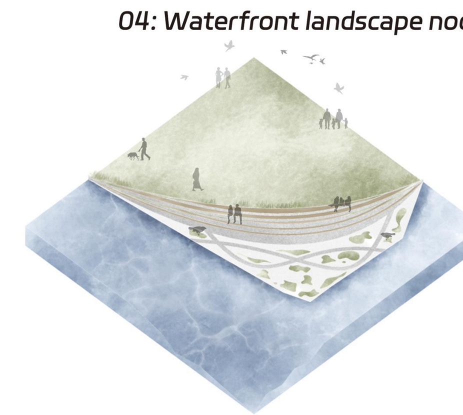


04: Shaded corridor nodes

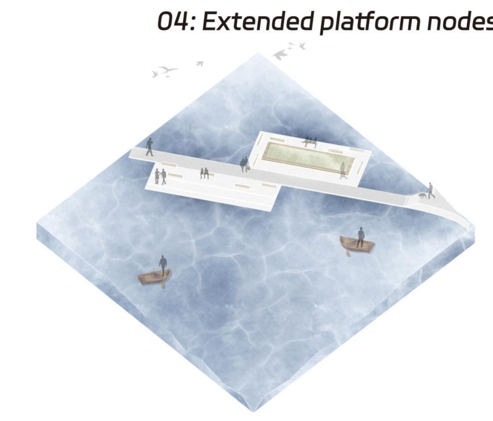


04: Recreational facilities nodes

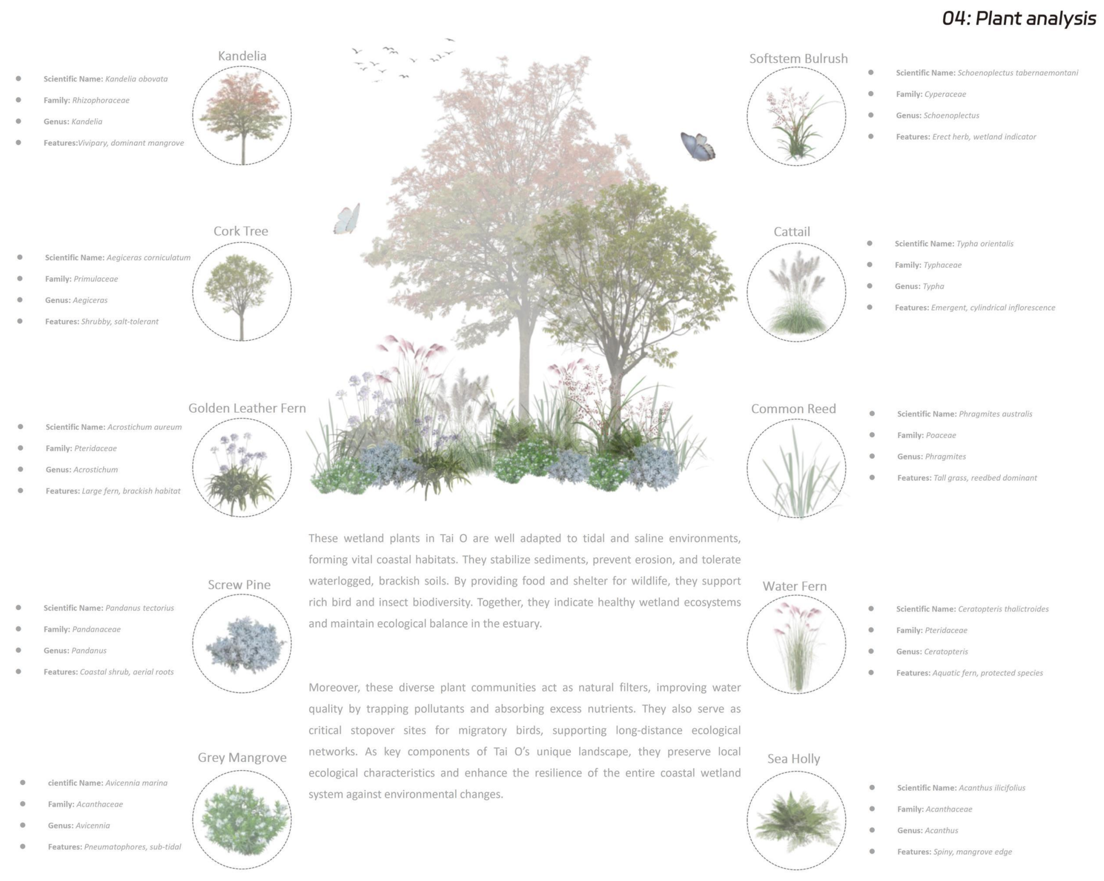
04: Waterfront landscape nodes



04: Extended platform nodes



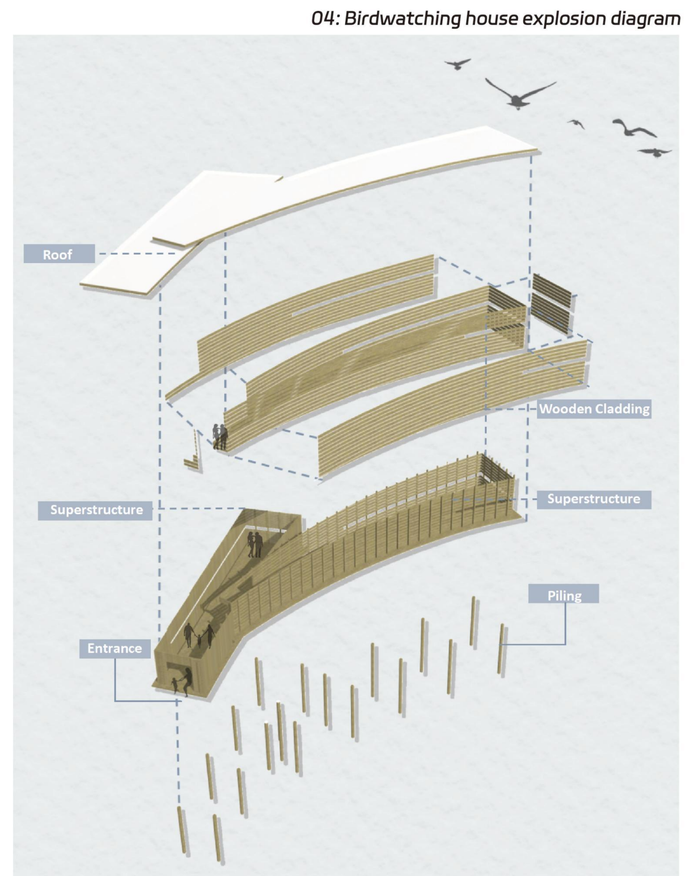
04: Plant analysis



These wetland plants in Tai O are well adapted to tidal and saline environments, forming vital coastal habitats. They stabilize sediments, prevent erosion, and tolerate waterlogged, brackish soils. By providing food and shelter for wildlife, they support rich bird and insect biodiversity. Together, they indicate healthy wetland ecosystems and maintain ecological balance in the estuary.

Moreover, these diverse plant communities act as natural filters, improving water quality by trapping pollutants and absorbing excess nutrients. They also serve as critical stopover sites for migratory birds, supporting long-distance ecological networks. As key components of Tai O's unique landscape, they preserve local ecological characteristics and enhance the resilience of the entire coastal wetland system against environmental changes.

04: Birdwatching house explosion diagram



#Mangrove Tidal Park Sectional View

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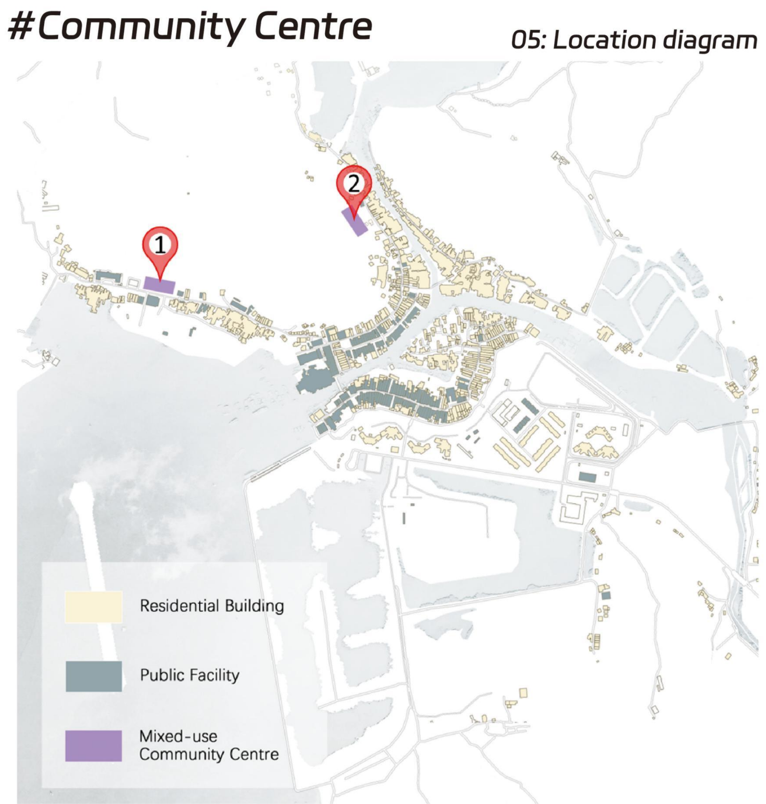
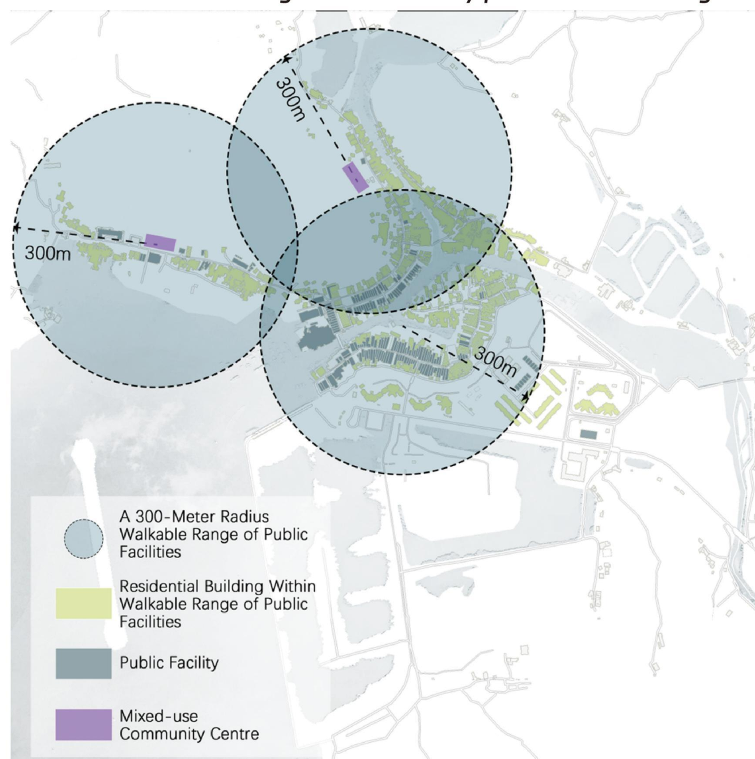
Community Centre

05: Location diagram



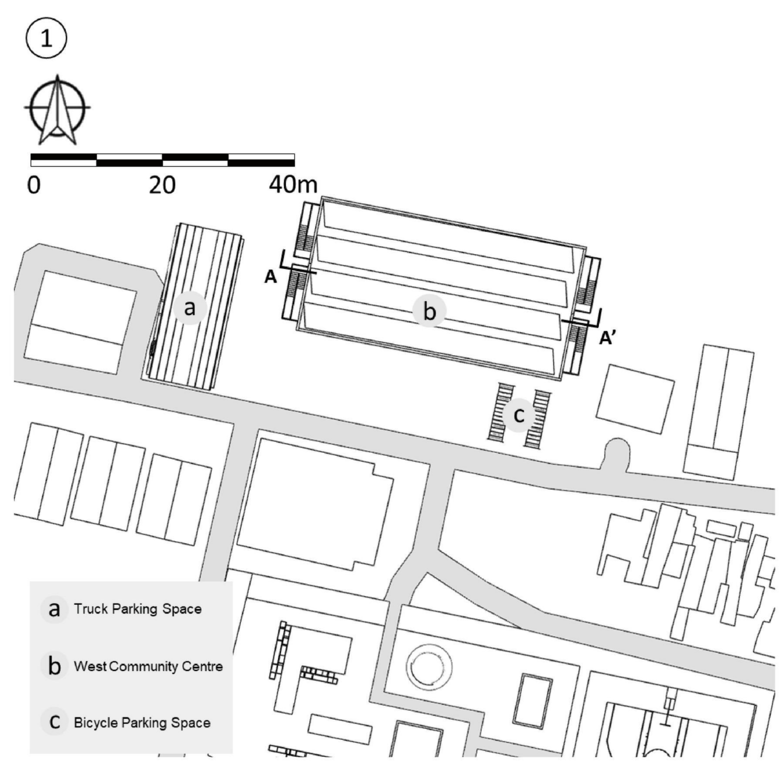
(1) West Tai O Mixed-use Community Centre
(2) North Tai O Mixed-use Community Centre

05: Walkable range of community public facilities diagram

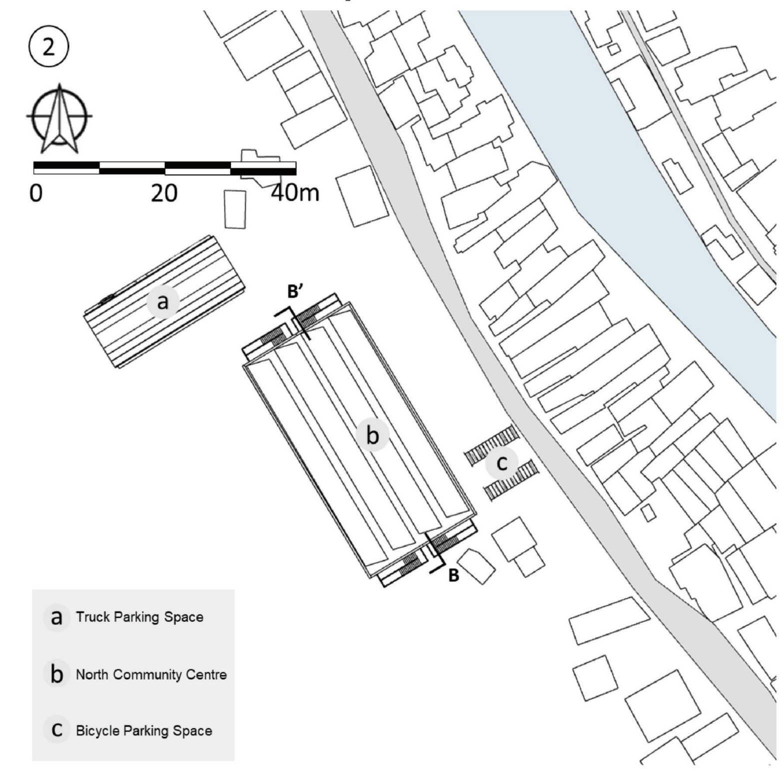


After Planning Mixed-use Community Centre

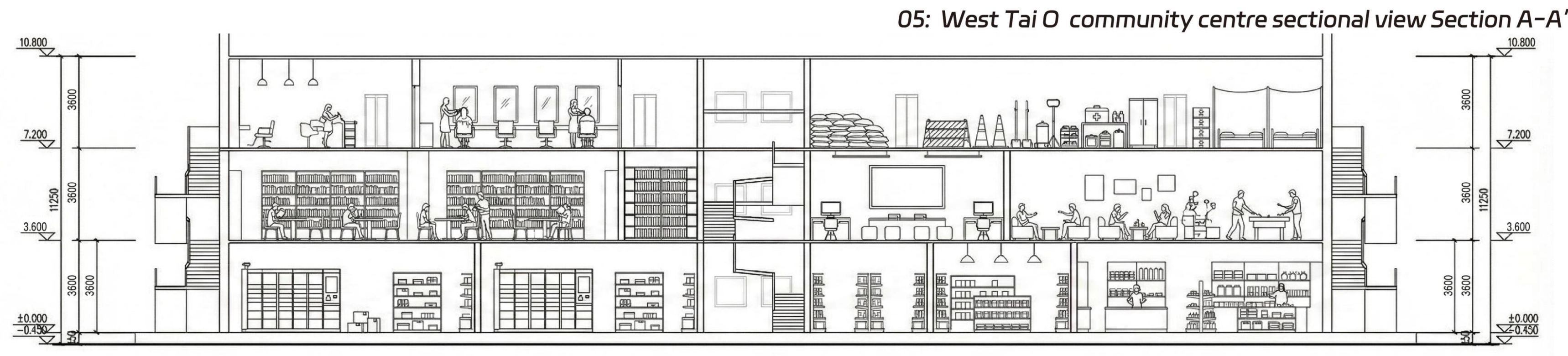
West Community Centre Master Plan



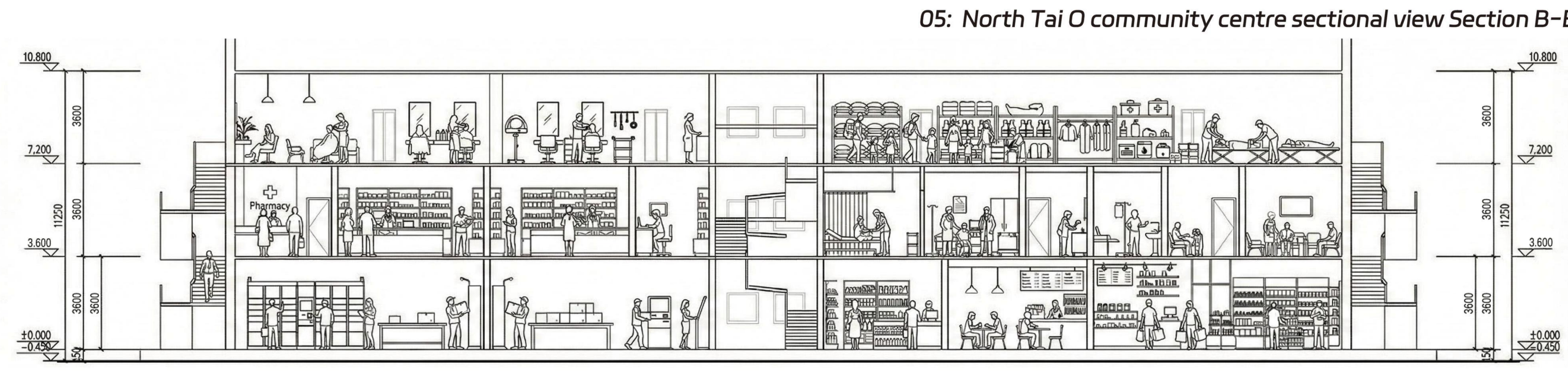
North Community Centre Master Plan



05: West Tai O community centre sectional view Section A-A'

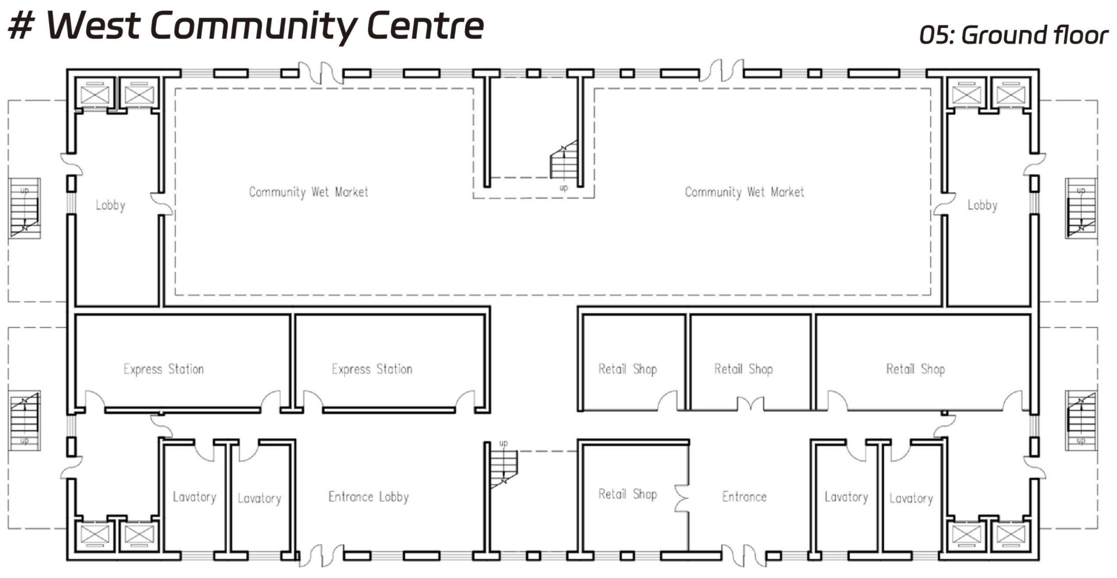


05: North Tai O community centre sectional view Section B-B'

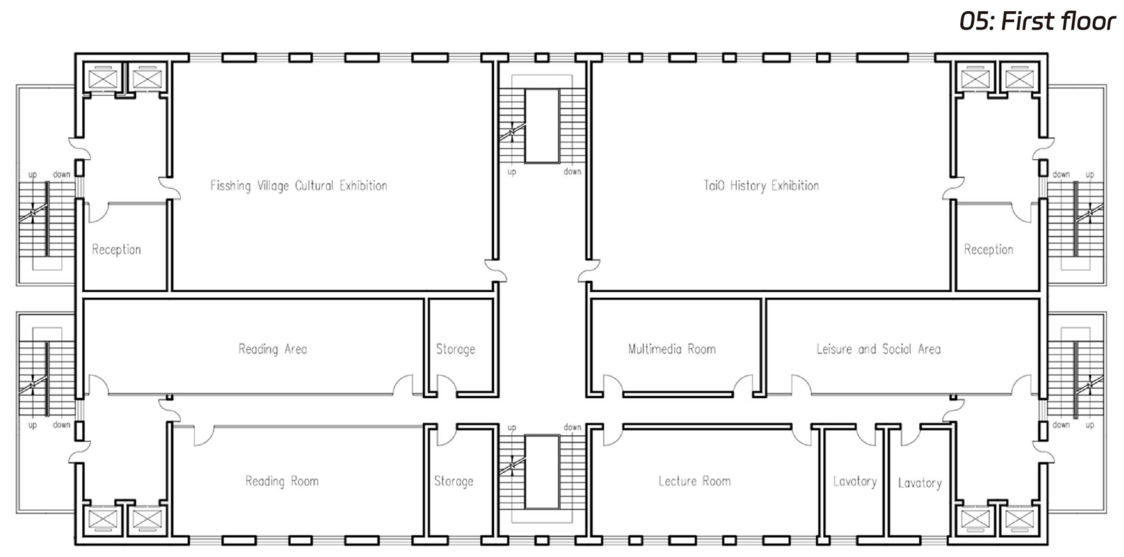


West Community Centre

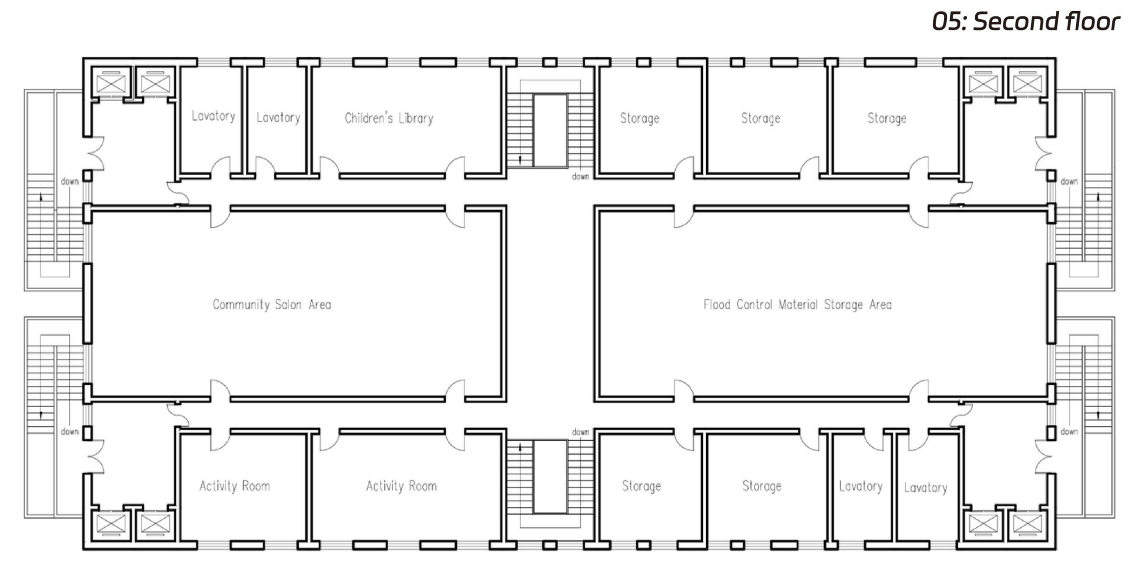
05: Ground floor



05: First floor

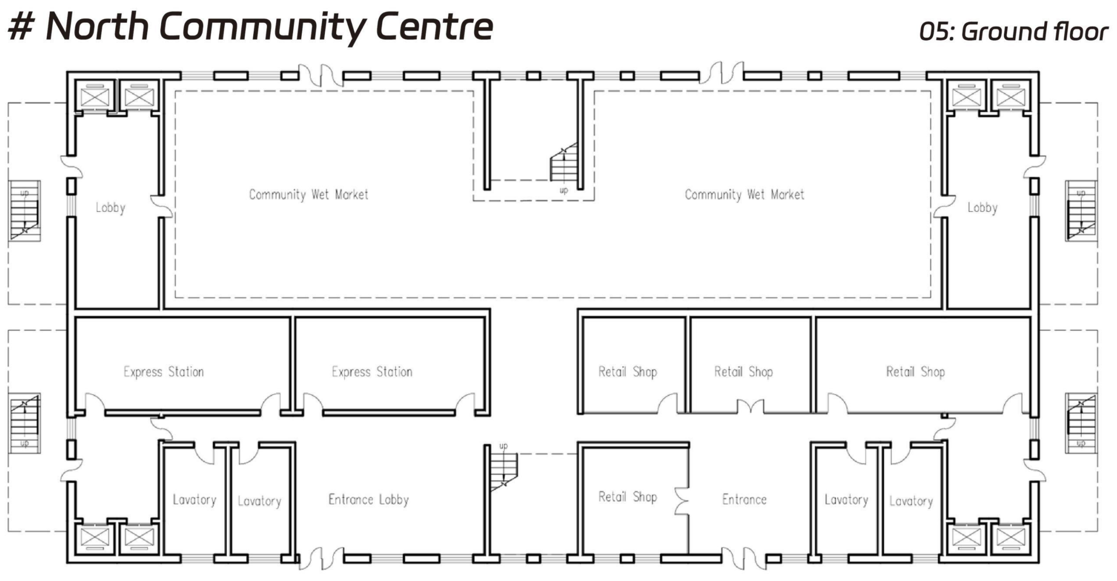


05: Second floor

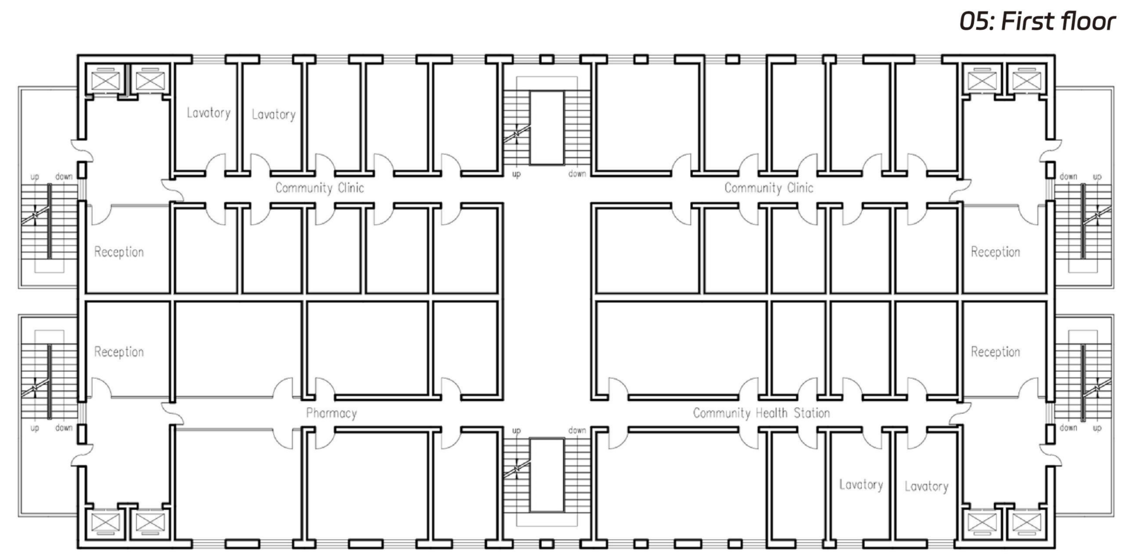


North Community Centre

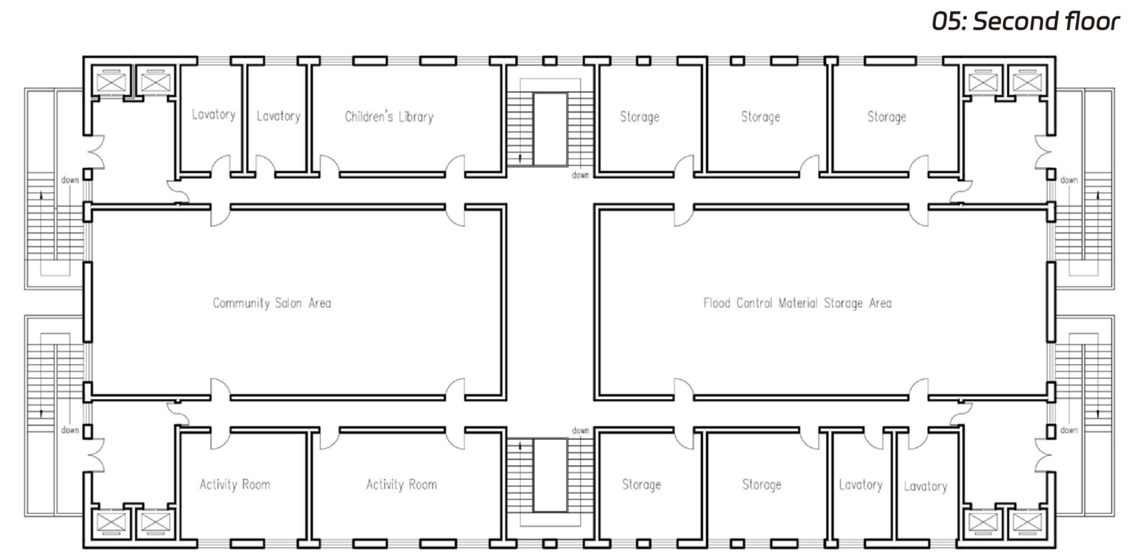
05: Ground floor



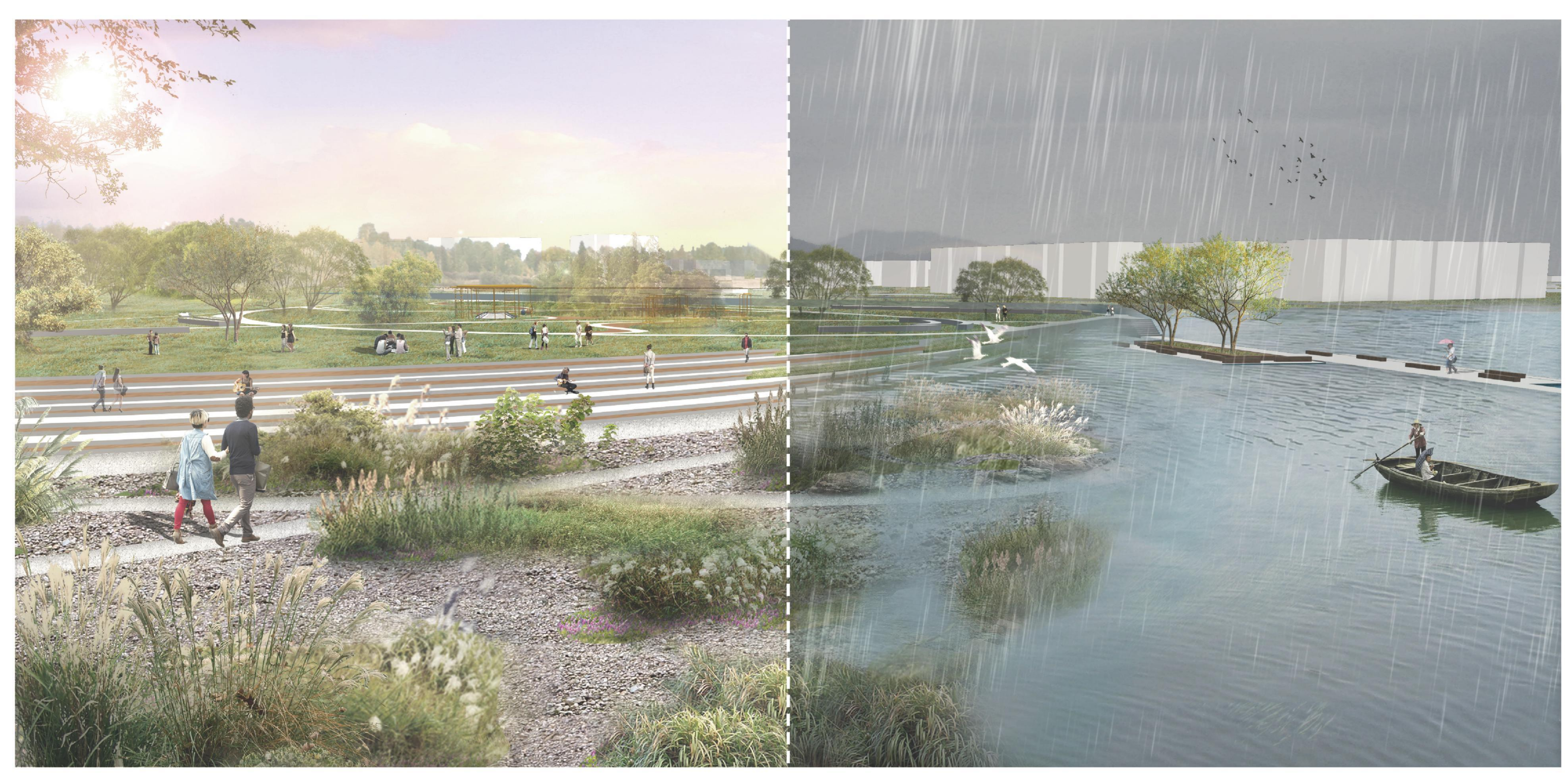
05: First floor

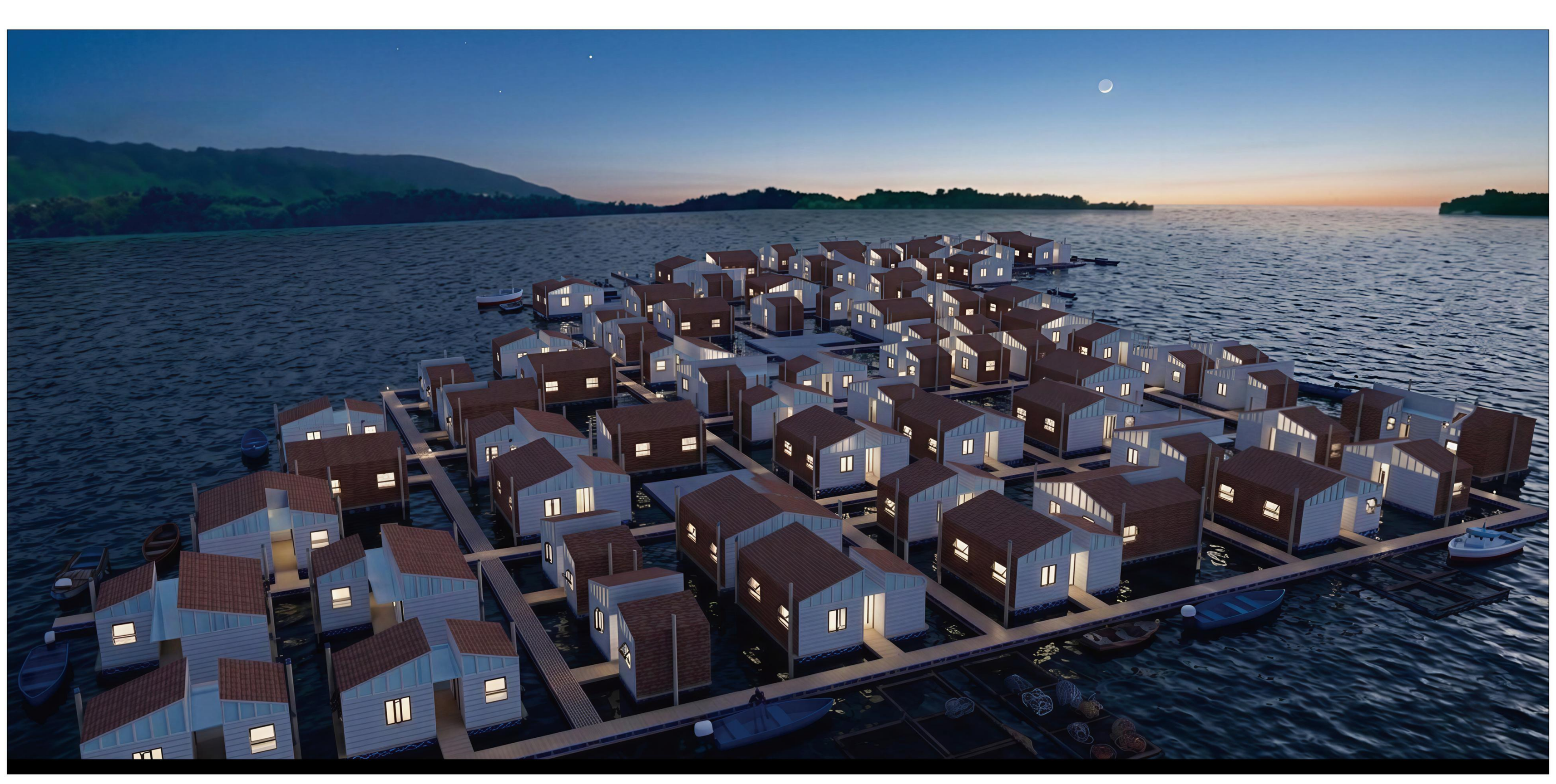


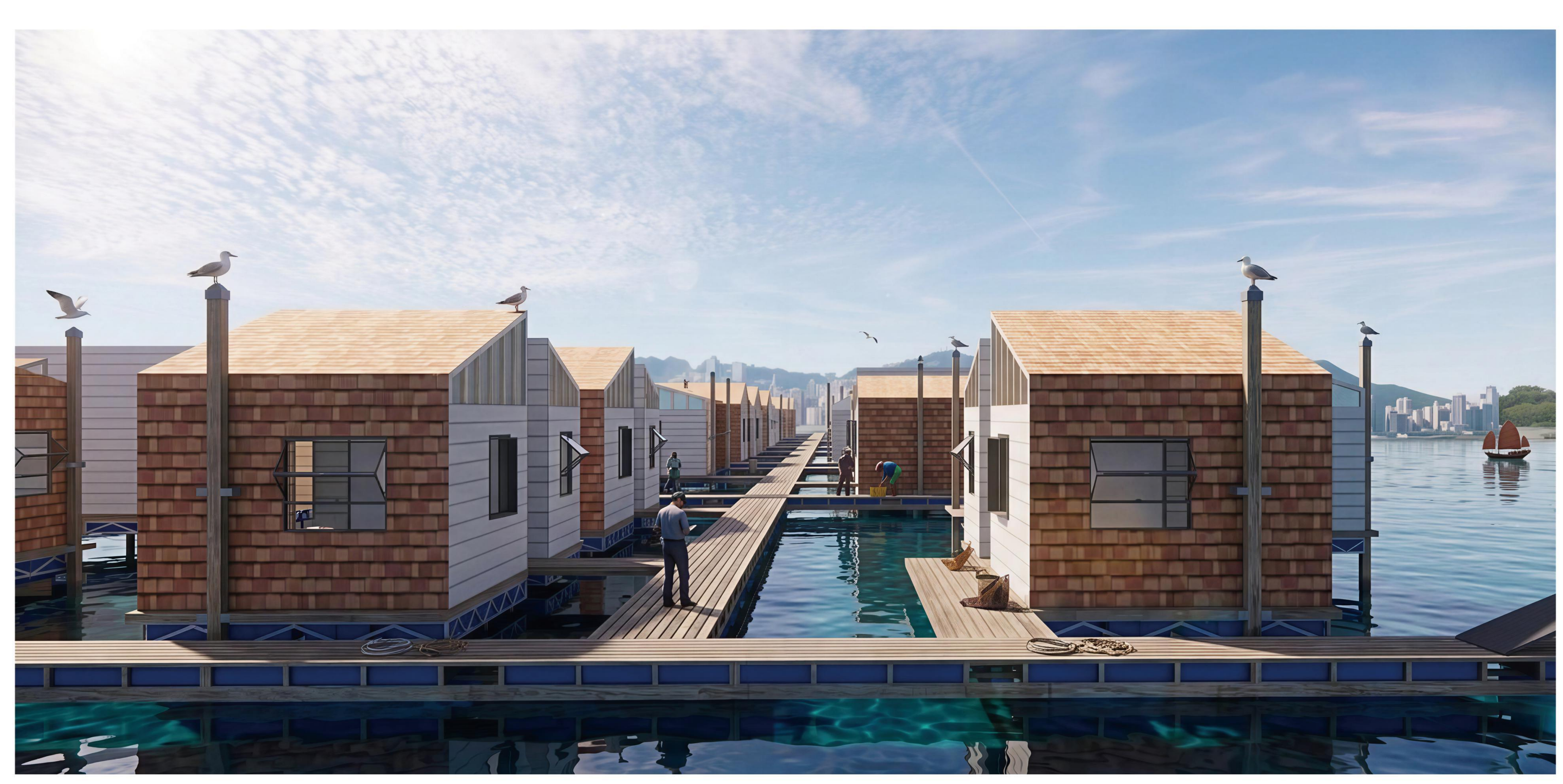
05: Second floor



Rendering







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