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THE SALT RINGS

HEALING THE SCARS OF LAC ROSE

The Salt Rings is an architectural intervention at Lake Retba, Senegal, designed as a safe zone for salt harvesting workers, providing protective infrastructure to shield them from the health hazards of prolonged exposure to hyper-saline water, while integrating an eco-wellness retreat that transforms the site's mineral richness into a therapeutic landscape.

Therapeutic Saline Resort

Built from the salt ponds, a curved, multi-level structure that integrates salt harvesting, production, and storage into a continuous controlled system.

Salt Harvesting Ring

A circular enclosure that diverts floodwater around the perimeter, protecting the central pond and the salt while integrating evaporation, crystallization, and storage into one continuous controlled system.

Dual-Function Spine

An elevated spine bisects the site. With its upper level dedicated to salt logistics and its lower level hosting a leisure promenade of commercial and entertainment functions.

Controlled Saline Pond

A regulated shallow basin that accelerates evaporation and salt crystallization, producing about one-third of the lake's harvesting rate under controlled conditions.

Controlled Saline Inlet Gate

Regulates saline inflow to the central salt basin to its design volume, then closes to maintain a fixed water level and stable conditions.

Canoe Dock

A timber dock extends from the spine out over the lake, offering tourists direct access to traditional canoe rides across Lake Retba's iconic pink waters.

Local workers' thatch huts

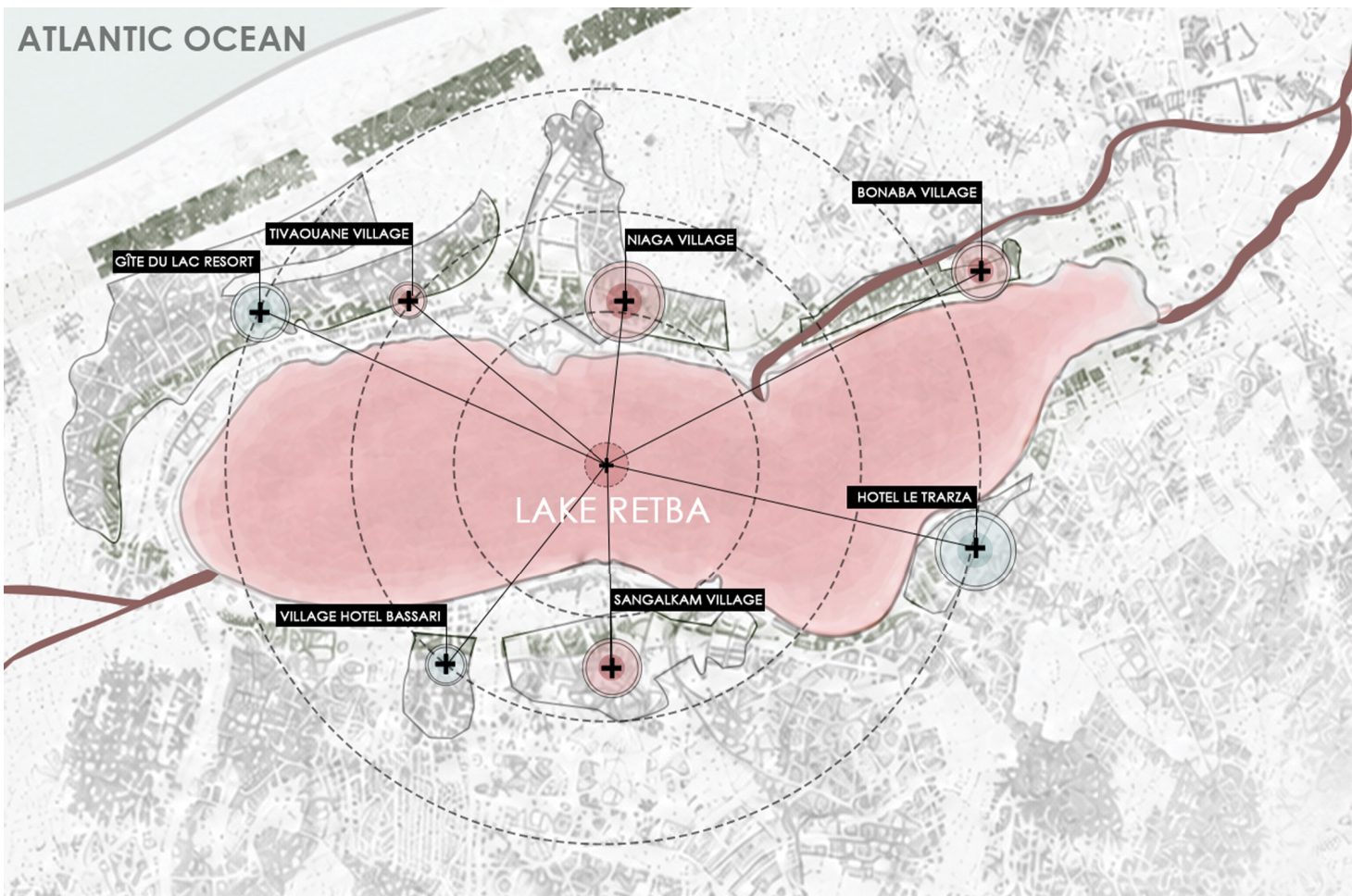
Salt workers live in basic thatched huts along the shoreline, offering little protection from the harsh sun, flooding, or corrosive salt air.

Thatch Roof Panels

Locally sourced thatch panels are designed to open and close, adapting to seasonal conditions and shielding workers from heavy rain while maintaining natural ventilation.

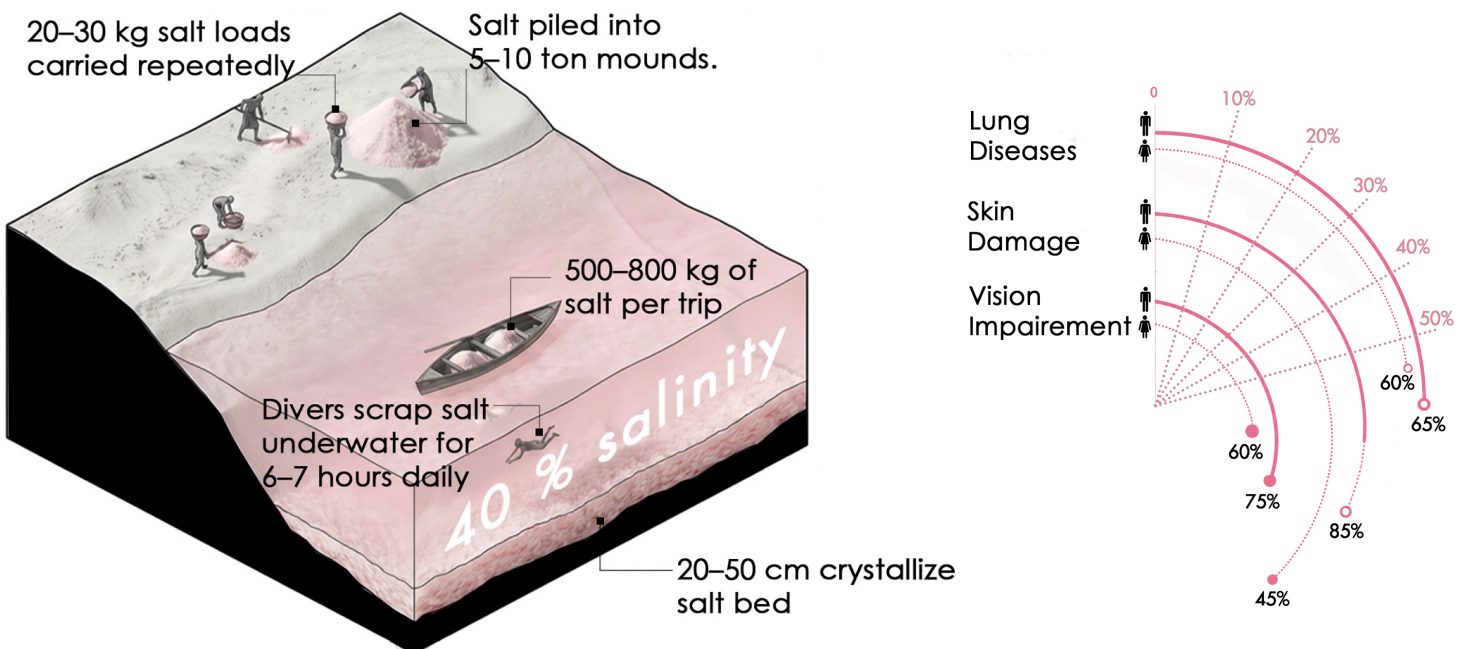
BACKGROUND

Lake Retba, or “Lac Rose,” is a UNESCO-listed pink lake near Dakar, Senegal, with a salinity of around 40% and an iconic pink color caused by *Dunaliella salina* algae. A hub for salt production and tourism, the lake’s highly corrosive water poses serious risks to workers, causing skin damage, open sores, and long-term health complications.



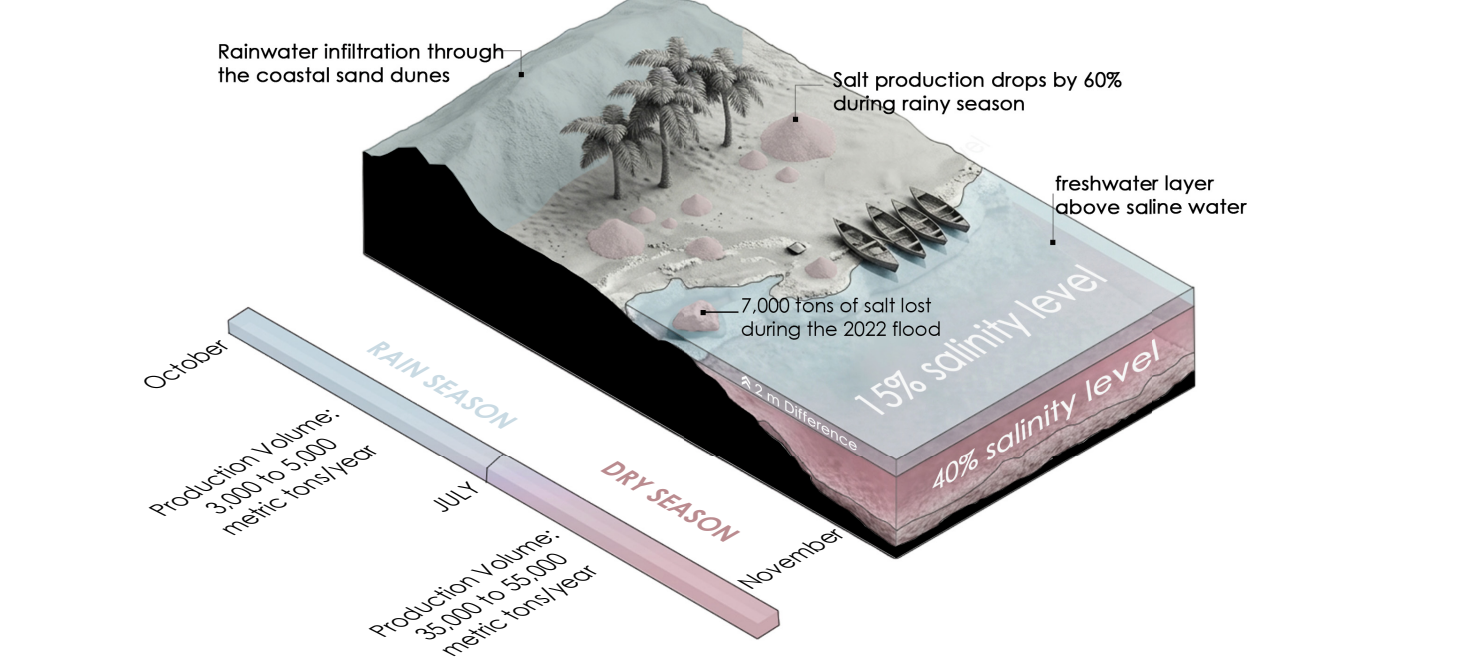
PROBLEM DEFINITION

01 FATIGUE & HEALTH



Salt harvesting causes severe physical strain and chronic fatigue. Prolonged exposure to hyper-saline water leads to skin irritation, cracking, and eye problems, while intense sun and salt glare cause heat stress, dehydration, and visual fatigue.

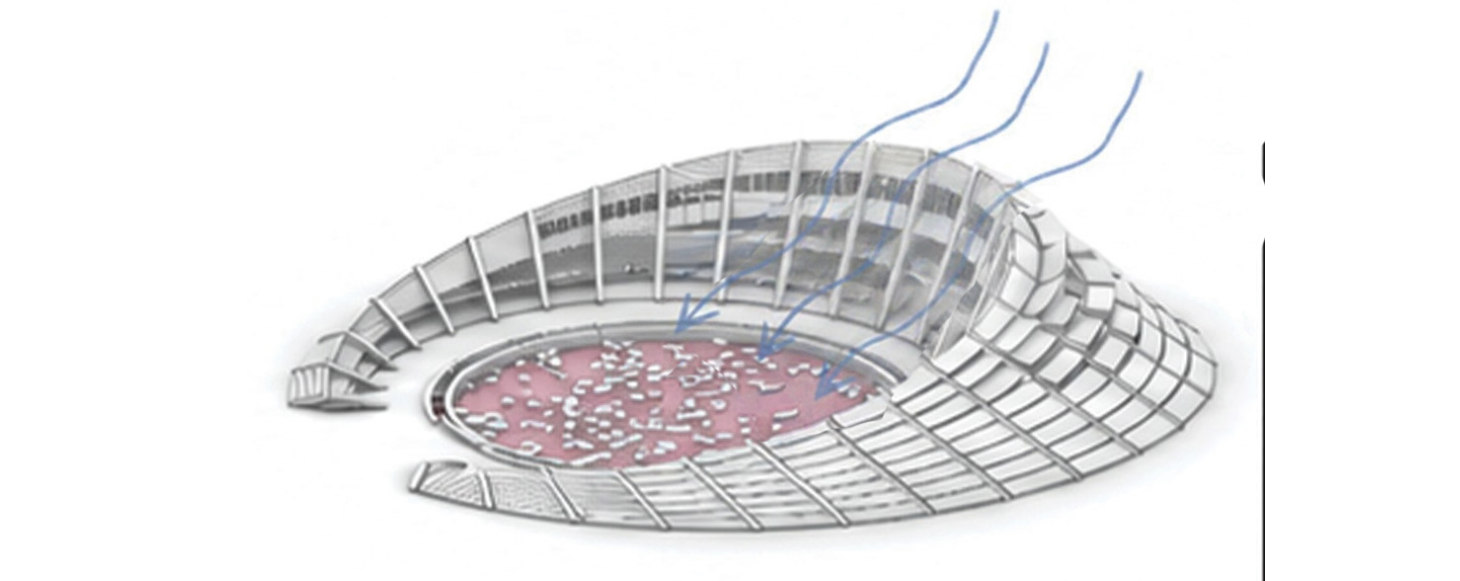
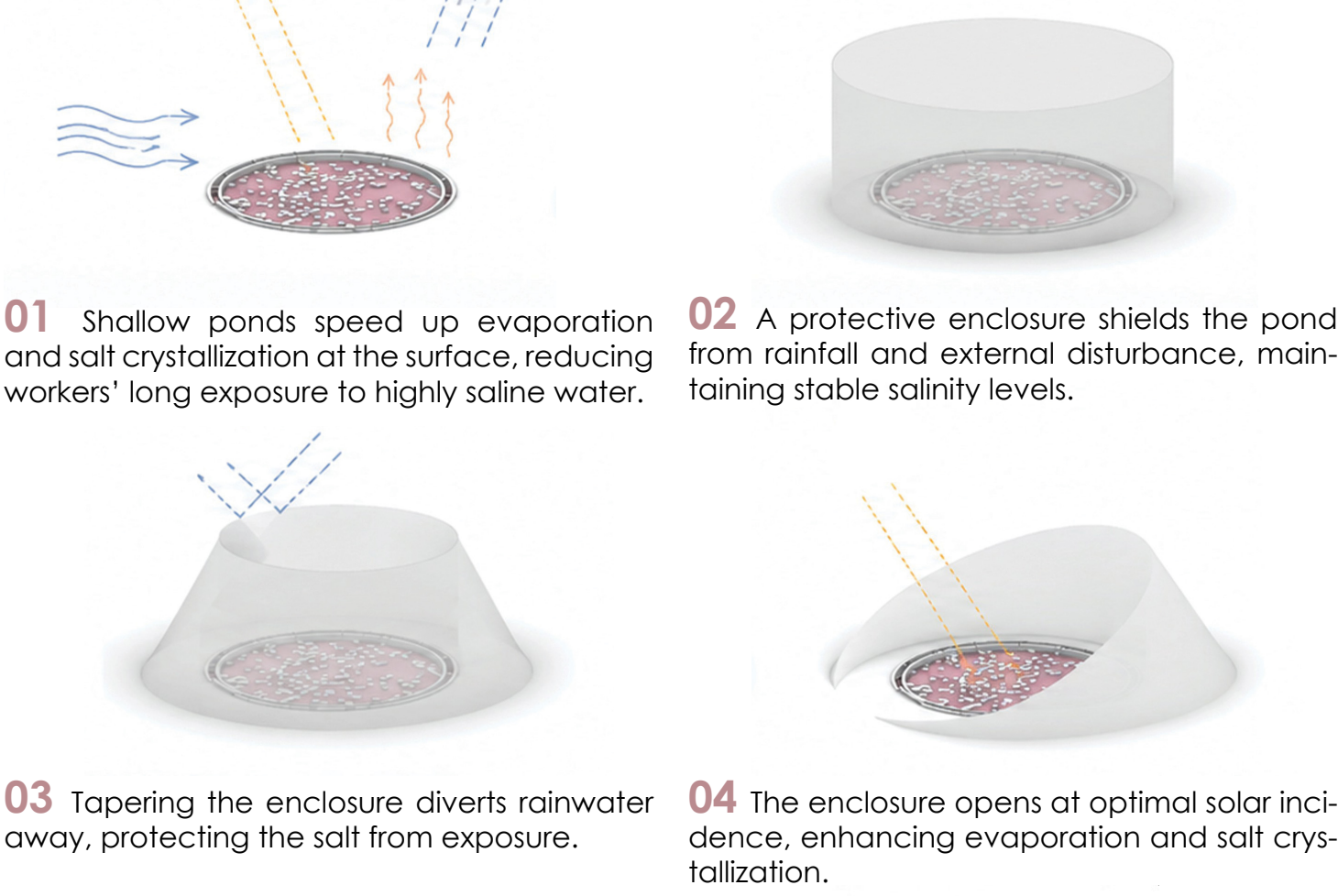
02 FLOOD IMPACT



The 2022 floods doubled Lake Retba’s depth from 3 to 6 meters, diluted its salinity, erased its pink color for nearly three years, and dissolved 7,000 tons of salt, disrupting the livelihoods of 3,000 families. By 2026, the water had receded, salt crystallization resumed, and the lake’s pink hue returned.

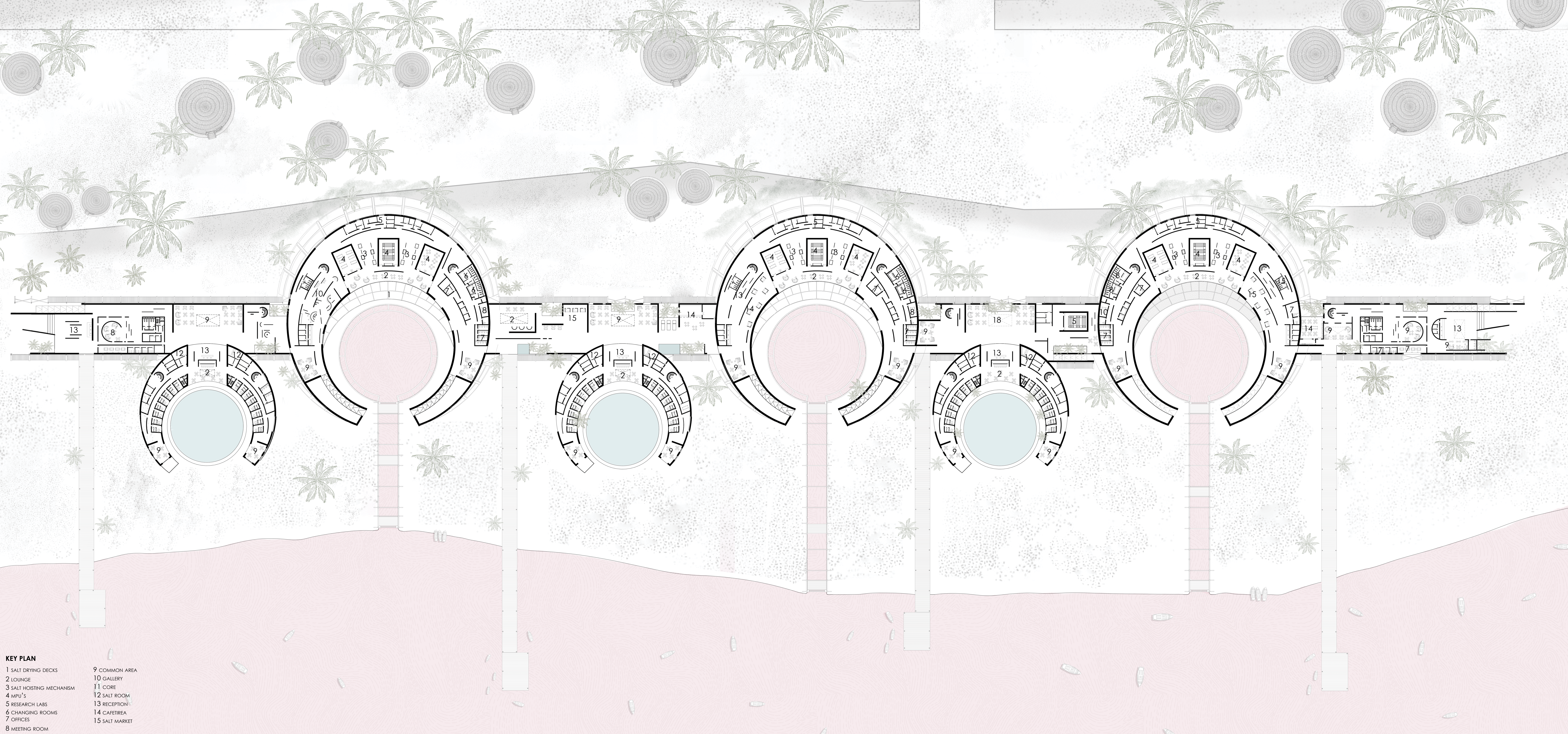
PROTECTED EVAPORATION SYSTEM

A safe working zone is established to protect salt workers from the previous harvesting method. From this need, the form evolves as an environmental response, providing a sheltered space that reduces direct contact with the lake while addressing sun, wind, and evaporation conditions on site.

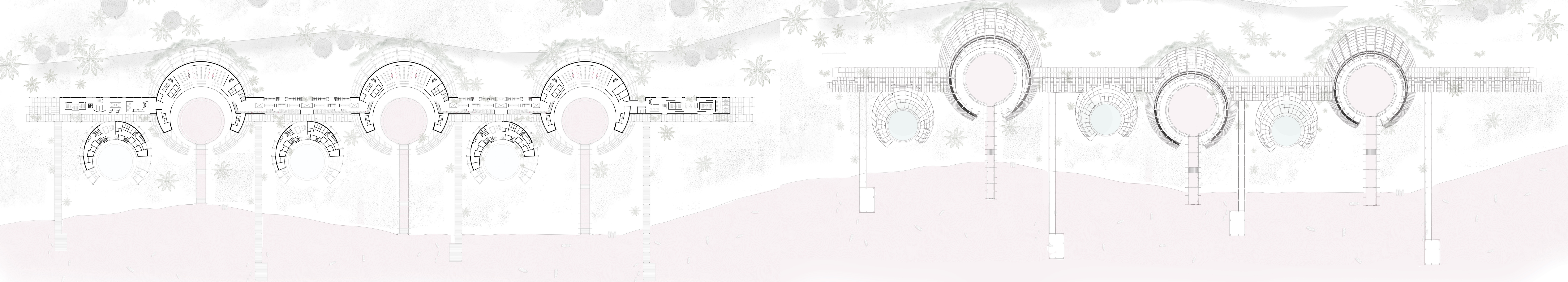


Wind-responsive openings channel prevailing breezes through the pond to boost evaporation, ventilate the space, and aid drying of harvested salt while maintaining worker protection.

FIRST FLOOR PLAN



SECOND FLOOR PLAN



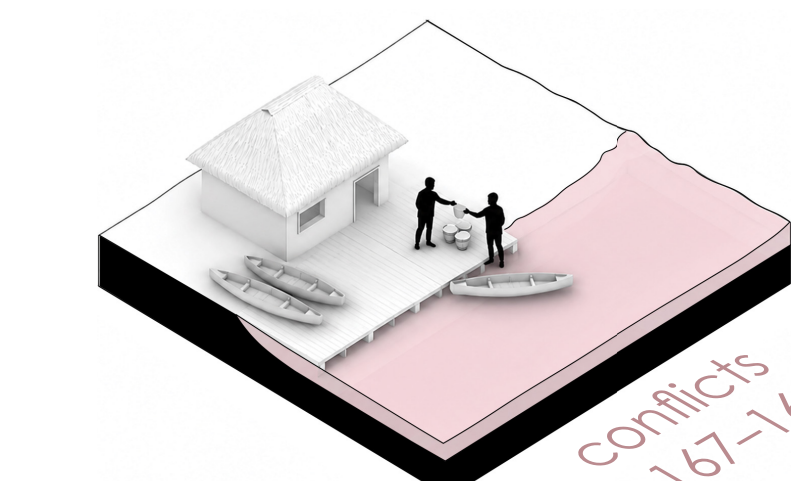
ELEVATION



CURRENT OPERATIONAL SEQUENCE

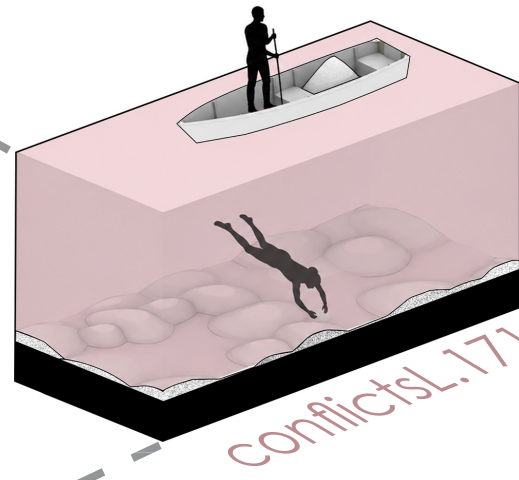
01 canoe Rental Exchange

Salt access is mediated through rented pirogues, where extraction capacity is tied to limited purchased volumes.



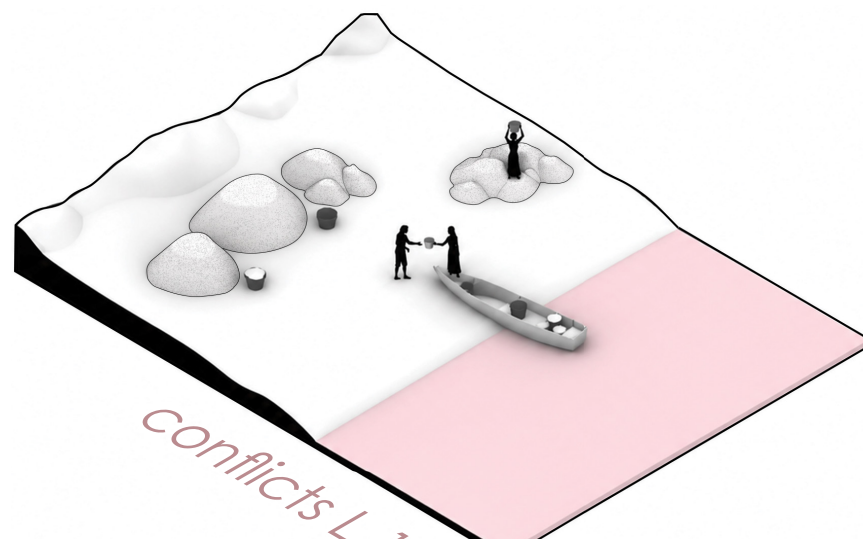
02 Long-Duration Salt Harvesting

workers remain submerged in hypersaline water for 7-8 hours daily, manually scraping crystallized salt.



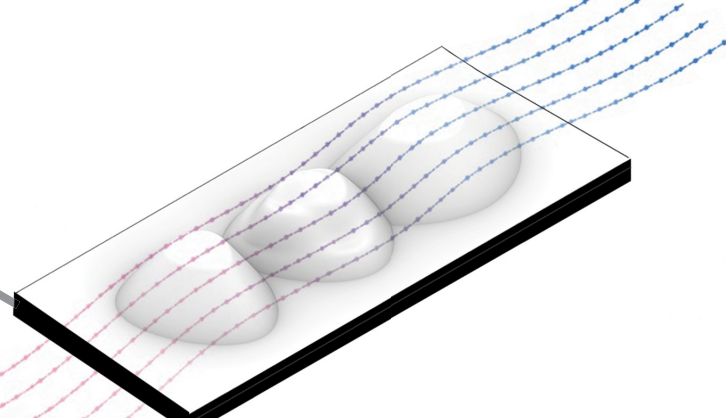
03 Salt Carrying and Piling

Salt is transported to shore and formed into piles through repetitive head-loading and manual stacking.



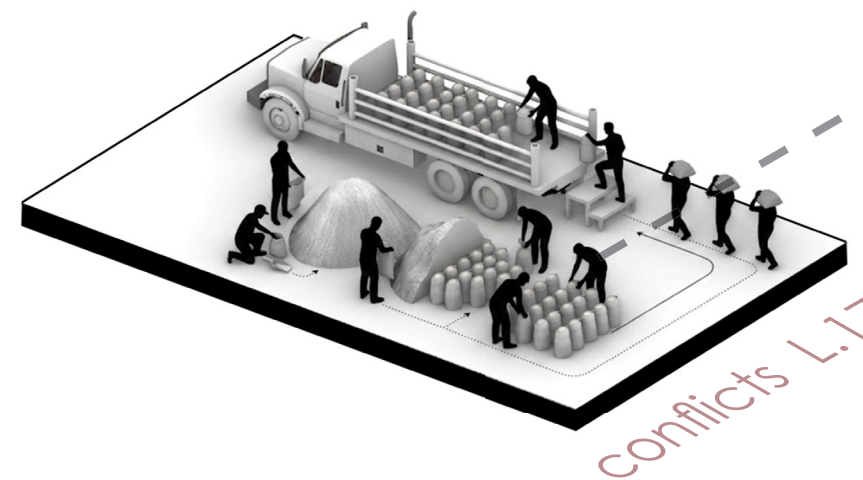
04 Solar-Wind Crystallization

Natural evaporation driven by wind and sun continues the drying process within open salt fields.



05 Manual Truck Loading

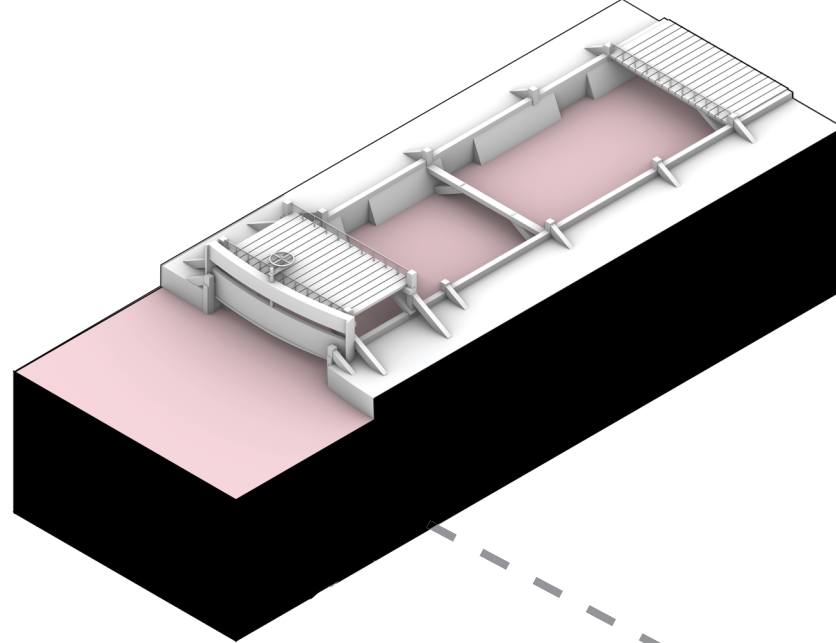
Finished salt is hand-loaded into trucks for distribution toward industrial processing facilities.



ENHANCED OPERATIONAL SEQUENCE

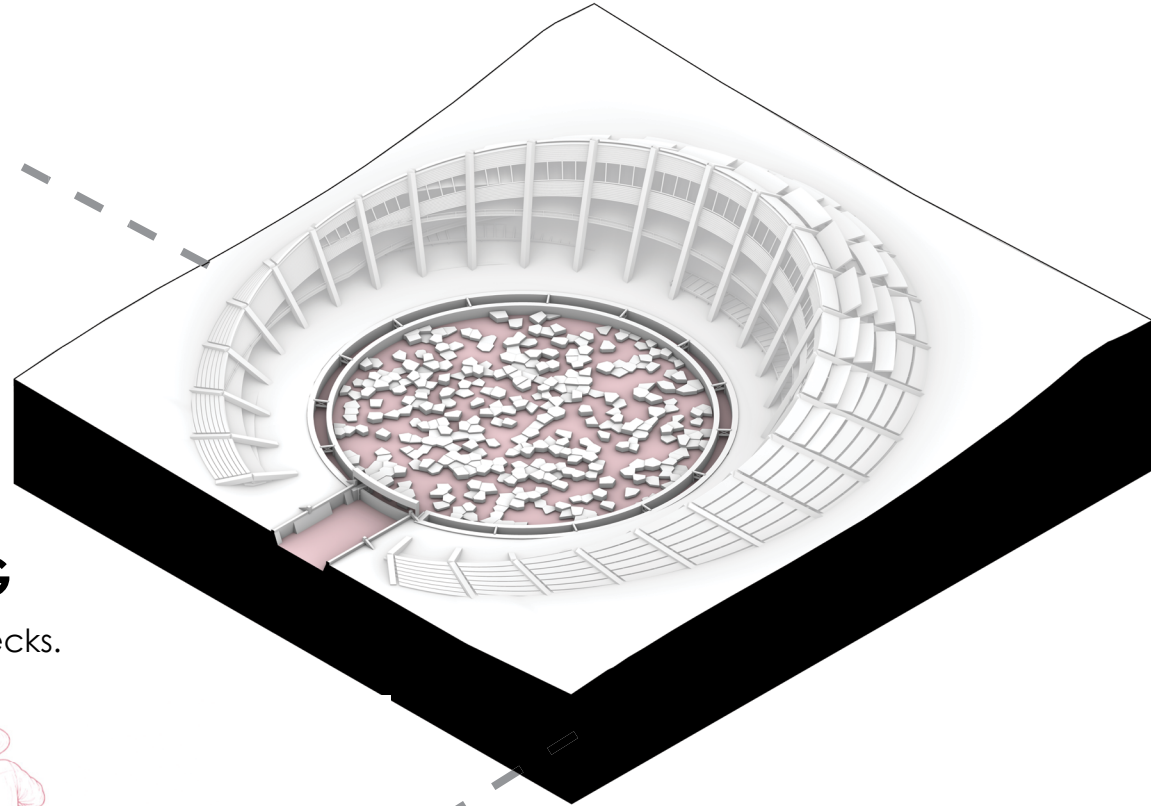
01 CONTROLLED WATER INTAKE

First step where the gate opens to let saline water enter and start the system's cycle.



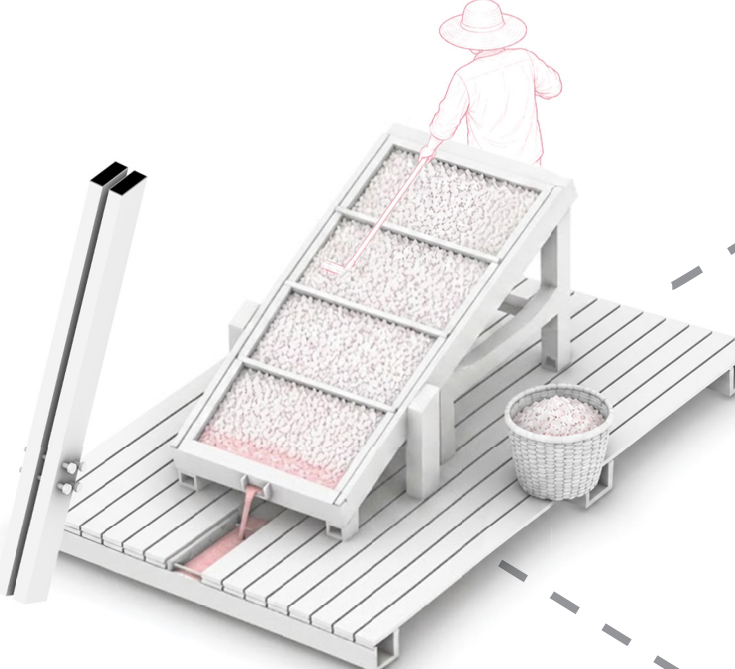
02 SOLAR CRYSTALLIZATION

Evaporation concentrates brine, saturating the pond with salt.



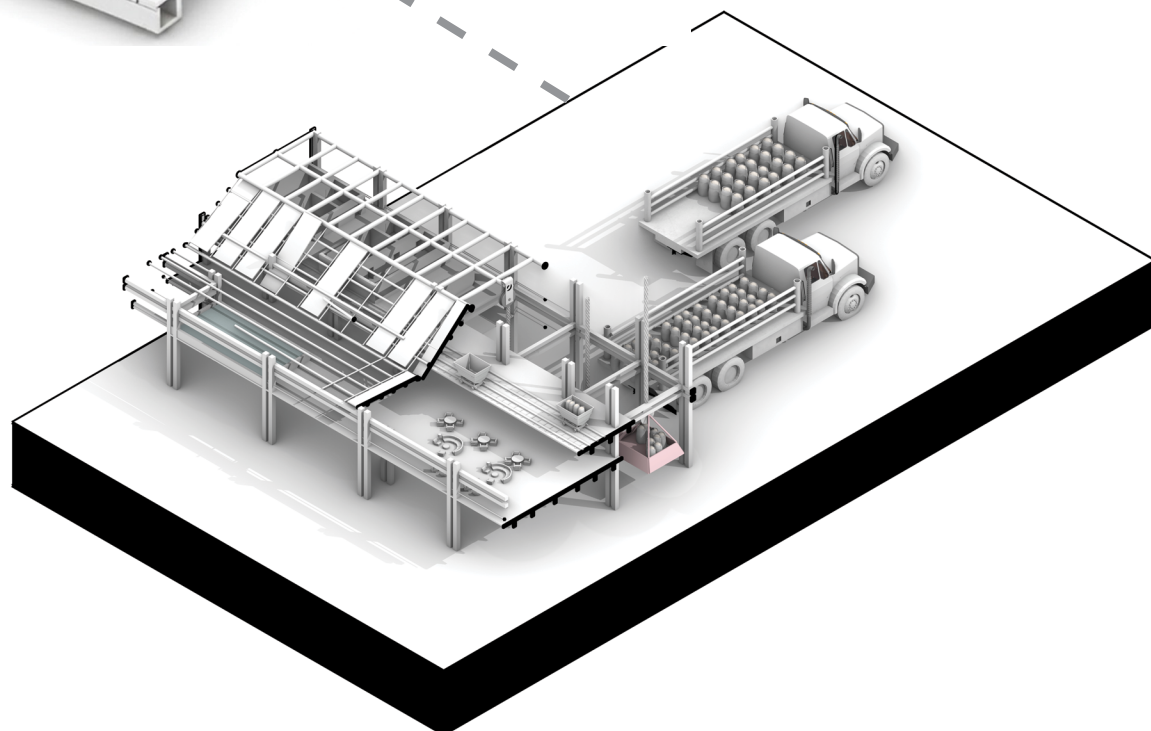
03 HARVESTING & DRYING

Collected salt dries on inclined timber decks.



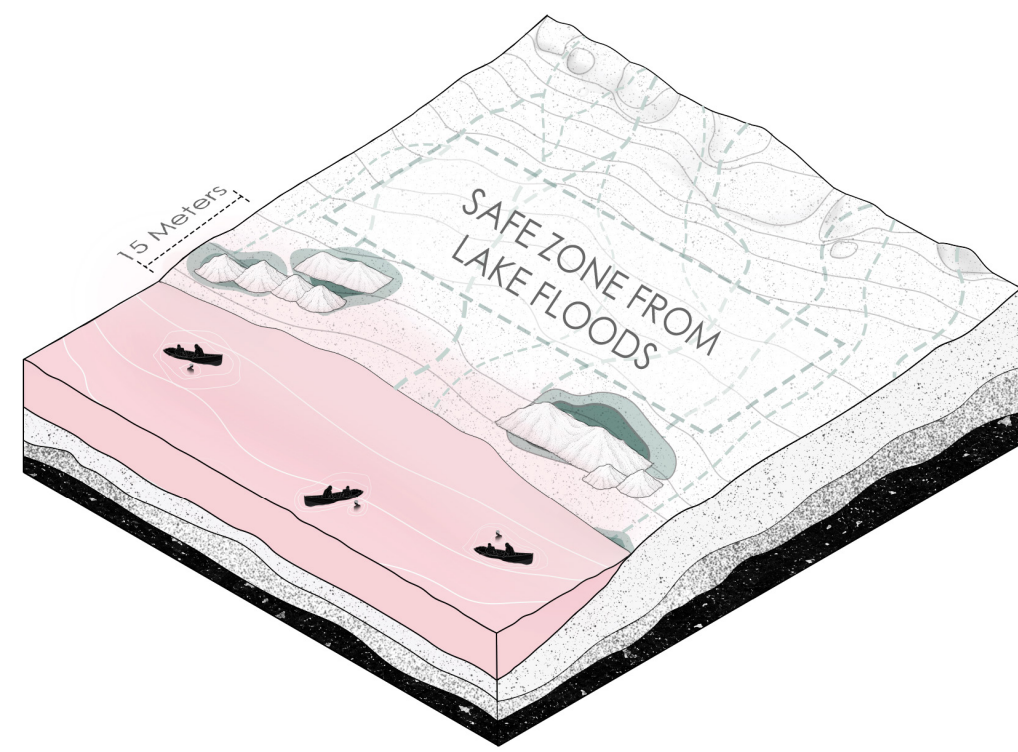
04 TRANSPORT & PROCESSING

Processed salt travels along the spine and is loaded onto trucks by pulley.



SOLUTION DEVELOPMENT

01 SITE CONSTRAINTS



Seasonal lake overflow destroys exposed salt hills, making the area beyond 15 m from the shore the minimum safe zone.

POND RETAINING WALL DETAIL

01 TIMBER CAP BEAM & FASTENERS

150x150 mm treated hardwood cap beam fixed to posts with galvanized steel dowels.

02 STRUCTURAL TIMBER LAGGING

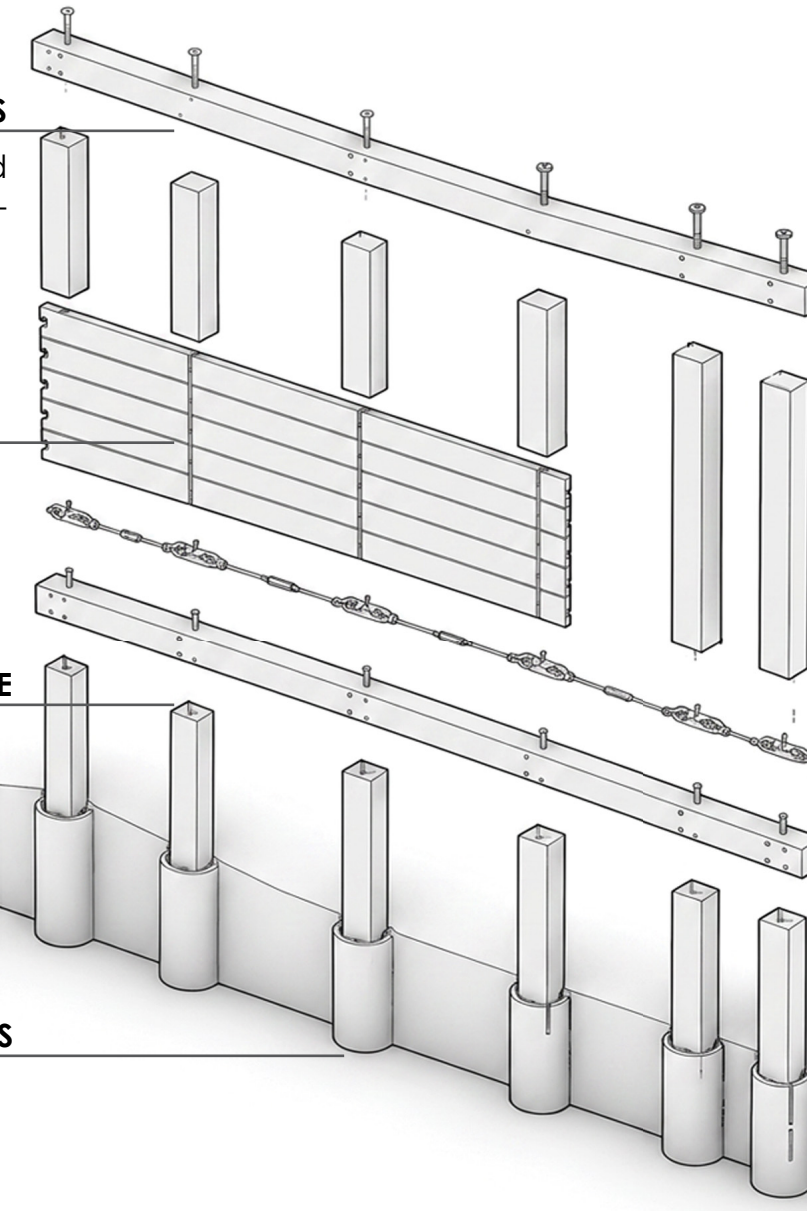
75x200 mm tongue-and-groove timber lagging planks transferring earth loads to posts.

03 MID-LEVEL WATER & GEOTEXTILE

Continuous water beam for lateral support and filter connection, with geotextile layer for drainage and soil filtration.

04 CAISSON FOUNDATION SLEEVES

Deep concrete caissons socketing timber piers for stability and overturning resistance.



02 SAFE HARVESTING ENVIRONMENT



Each controlled saline pond yields approximately 16 tonnes of salt per year, providing a safer alternative to lake harvesting.

GATE DETAIL

01 HEADFRAME & UPPER TIE BEAM

Primary cross-beam tying guide posts, providing lateral stability and a stop for the fully open gate.

02 ACTUATION YOKE & CONTROL ROD

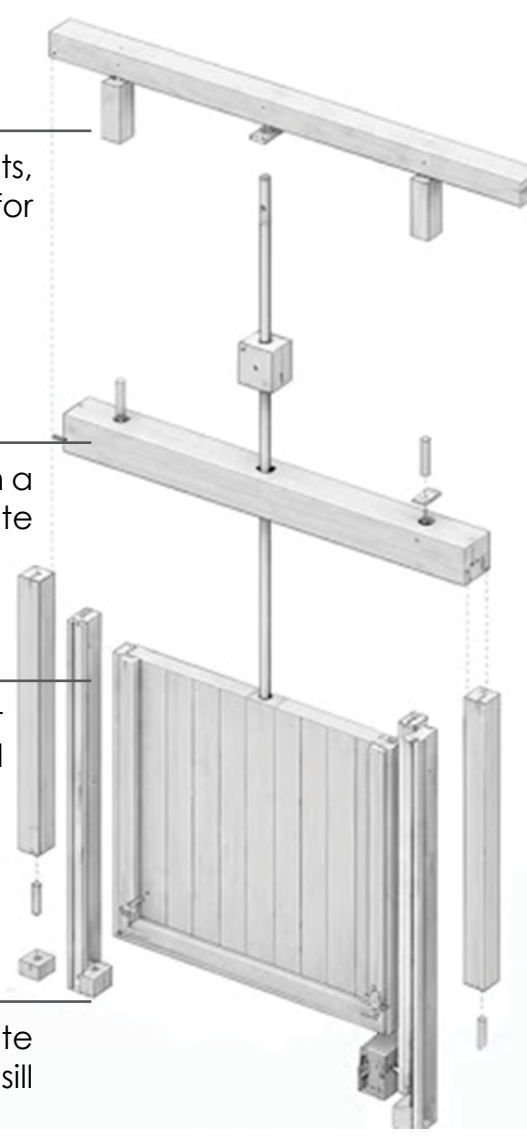
Central housing for the control rod, with a pin-lock mechanism for adjustable gate control.

03 SLIDING GATE LEAF (SHUTTER)

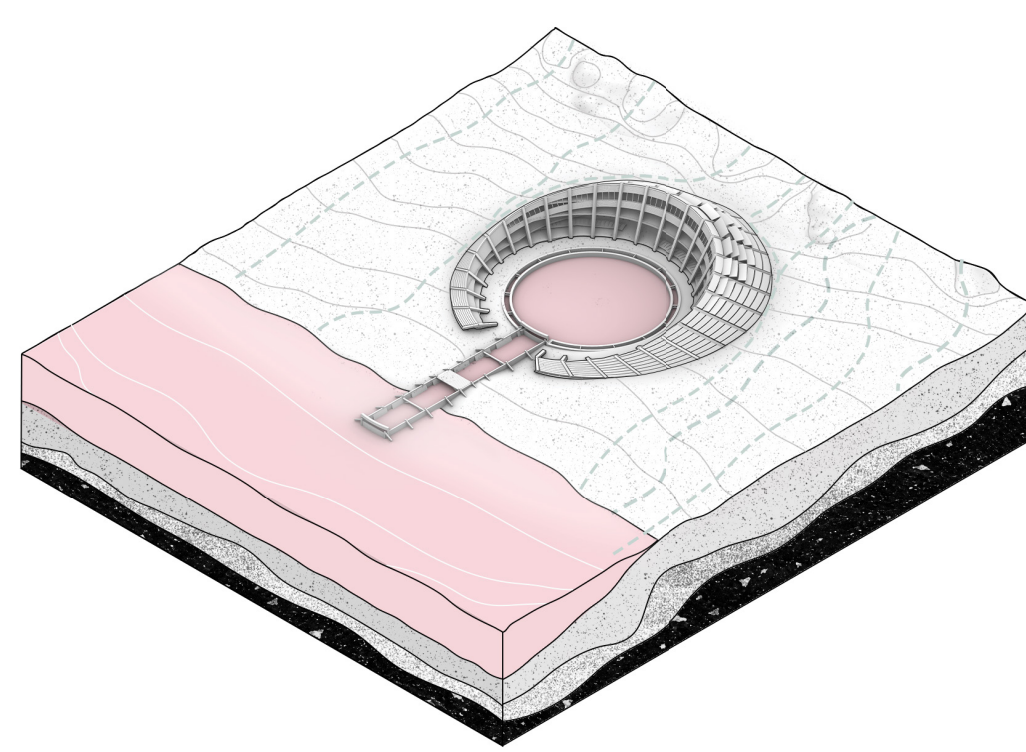
Vertical timber plank gate with a tight hydraulic seal, sliding within lateral guides.

04 CHANNEL GUIDE TRACK & SILL

Grooved guide posts directing gate movement, integrated with the canal sill for sealing.

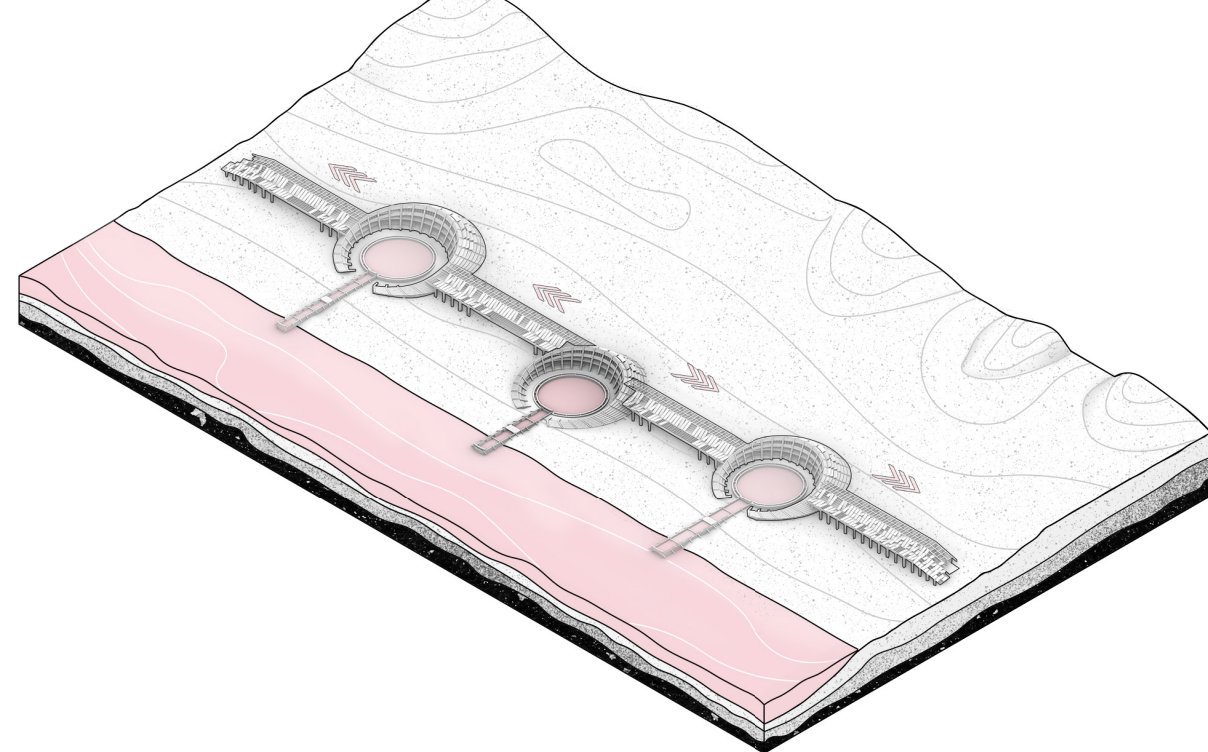


03 SALT PROTECTION RING



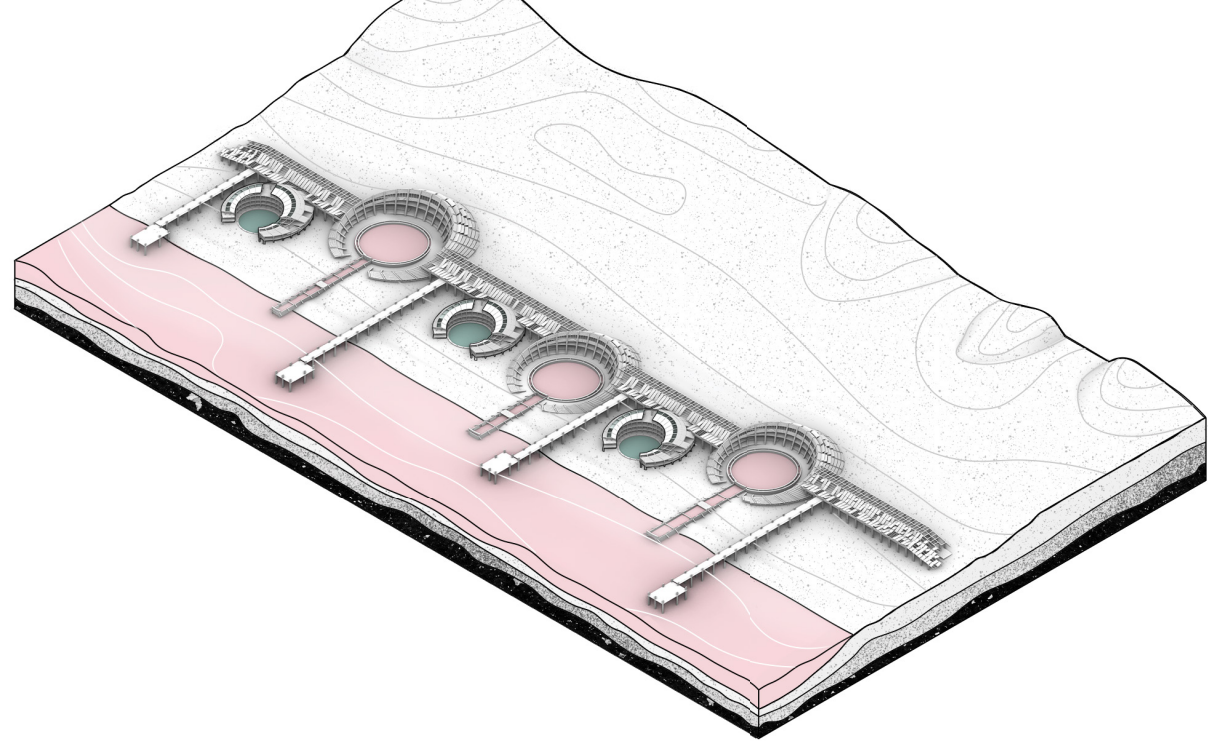
The building surrounds the pond, protecting salt production from rainfall and surface runoff.

04 PRODUCTION EXPANSION



To match the lake's annual salt yield, expanding into three harvesting rings, each contributing one-third of the total production.

05 TOURISM EXPANSION



Three therapeutic retreat buildings utilize the remaining brine to create healing salt pools.

Dual-Function Spine

01 THATCH ROOF SKIN

Modular thatch panels provide shading and rain protection, while allowing natural ventilation.

02 PRIMARY TIMBER SUB-STRUCTURE

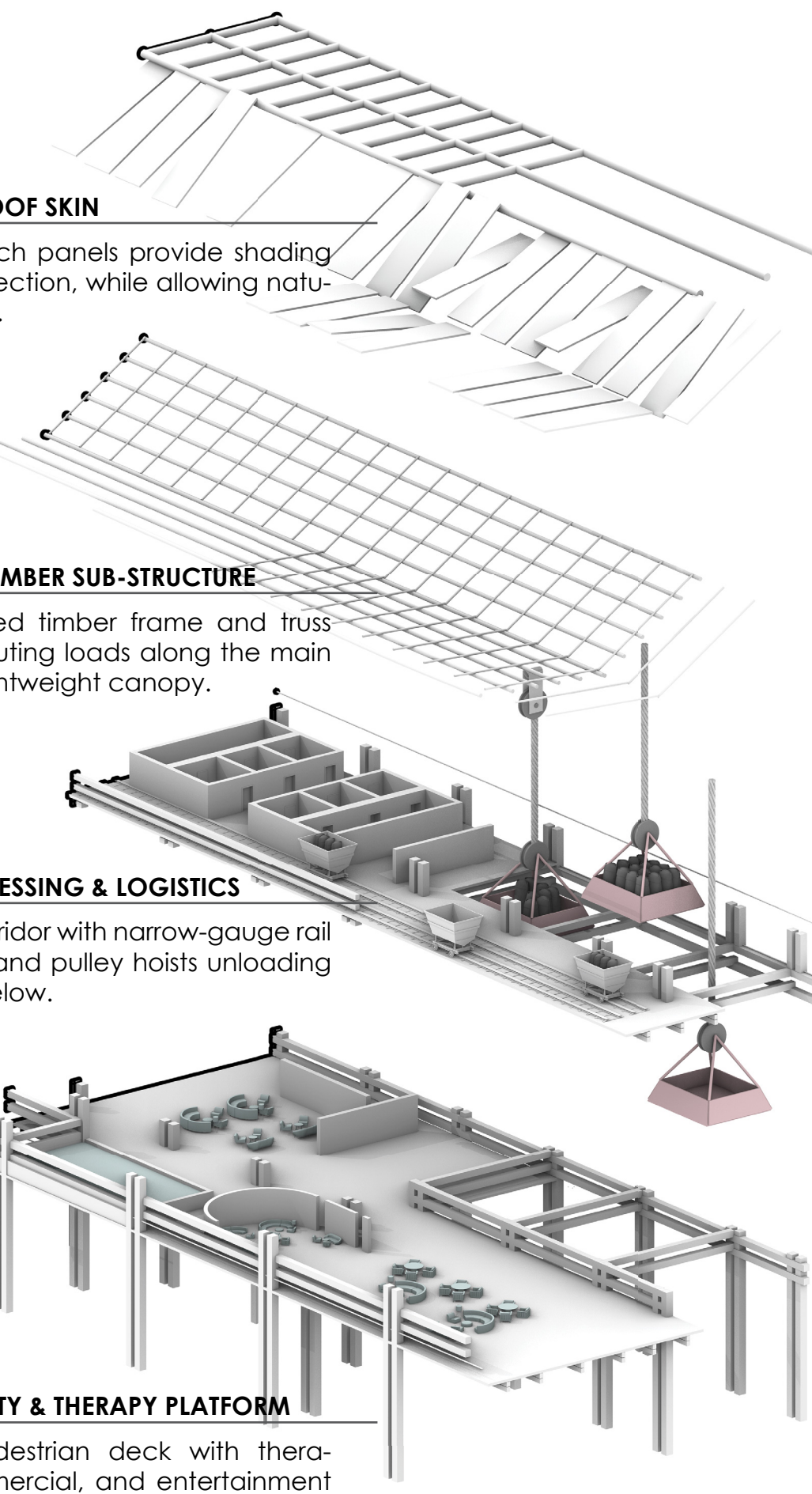
Interconnected timber frame and truss system distributing loads along the main spine for a lightweight canopy.

03 SALT PROCESSING & LOGISTICS

Technical corridor with narrow-gauge rail for salt carts and pulley hoists unloading to vehicles below.

04 COMMUNITY & THERAPY PLATFORM

Elevated pedestrian deck with therapeutic, commercial, and entertainment zones.



RING DETAIL

01 ROOF STRUCTURE

Curved timber roof framing protecting the production line from external elements.

02 Adaptive Skin

A skin designed to block rainfall while dynamically modulating panels to let in natural sunlight and fresh air circulation.

03 STORAGE DECK

Dedicated storage zone for refined, packaged salt at the final production stage.

04 PROCESSING FLOOR

Main processing zone with pulley systems transporting salt vertically through refinement stages.

05 MEZZANINE & EDUCATION

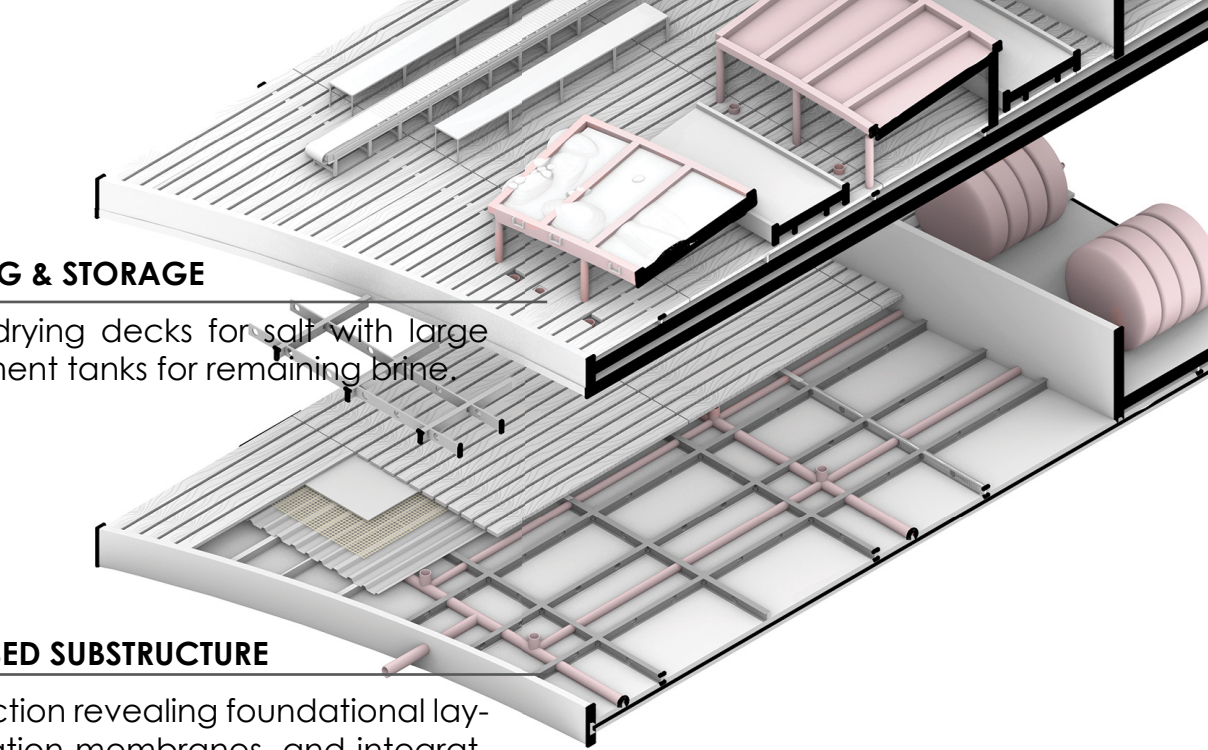
Elevated visitor mezzanine providing clear observation points and interactive educational areas to view the complete salt manufacturing process.

06 DRYING & STORAGE

Slanted drying decks for salt with large containment tanks for remaining brine.

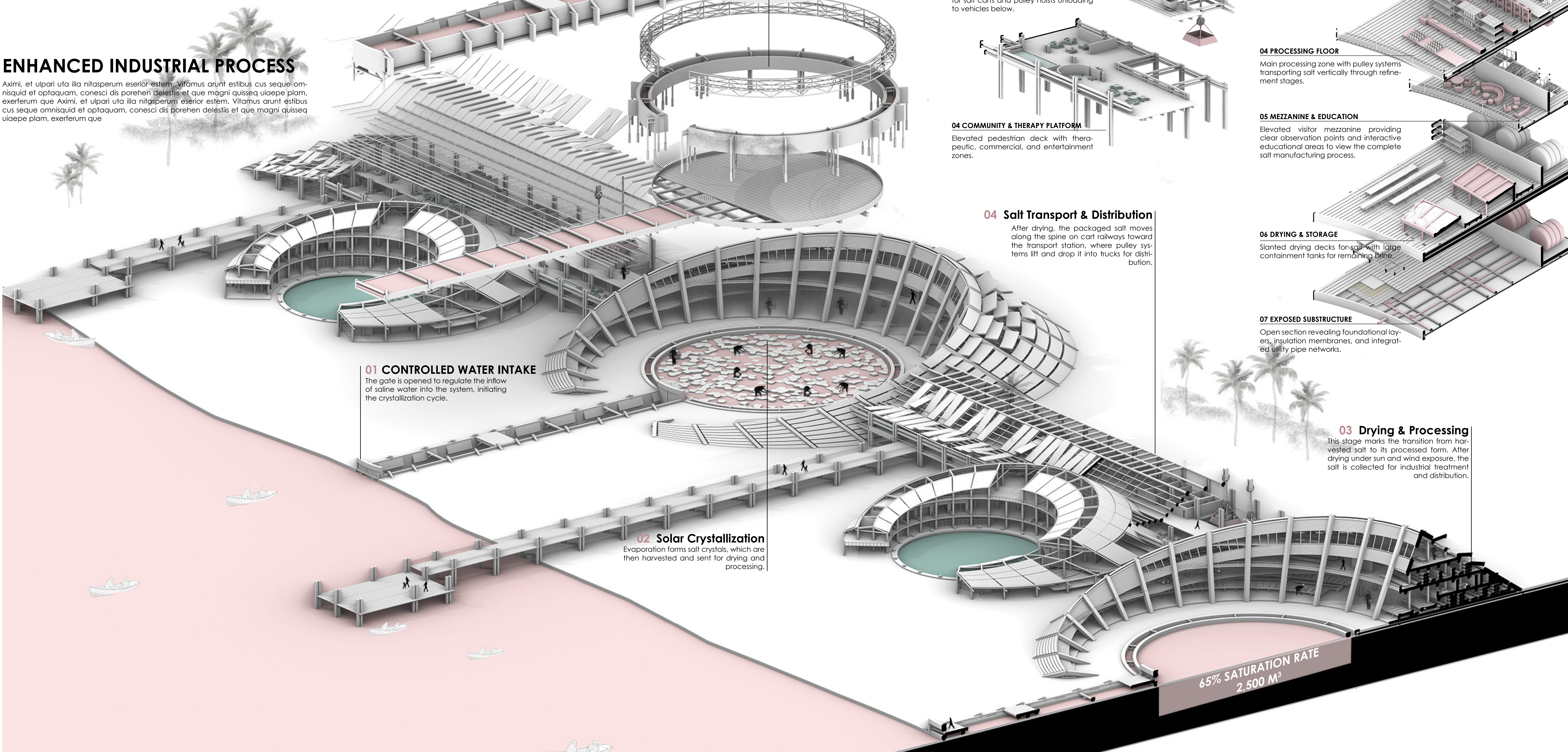
07 EXPOSED SUBSTRUCTURE

Open section revealing foundational layers, insulation membranes, and integrated utility pipe networks.



ENHANCED INDUSTRIAL PROCESS

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01 CONTROLLED WATER INTAKE

The gate is opened to regulate the inflow of saline water into the system, initiating the crystallization cycle.

02 Solar Crystallization

Evaporation forms salt crystals, which are then harvested and sent for drying and processing.

04 Salt Transport & Distribution

After drying, the packaged salt moves along the spine on cart railways toward the transport station, where pulley systems lift and drop it into trucks for distribution.

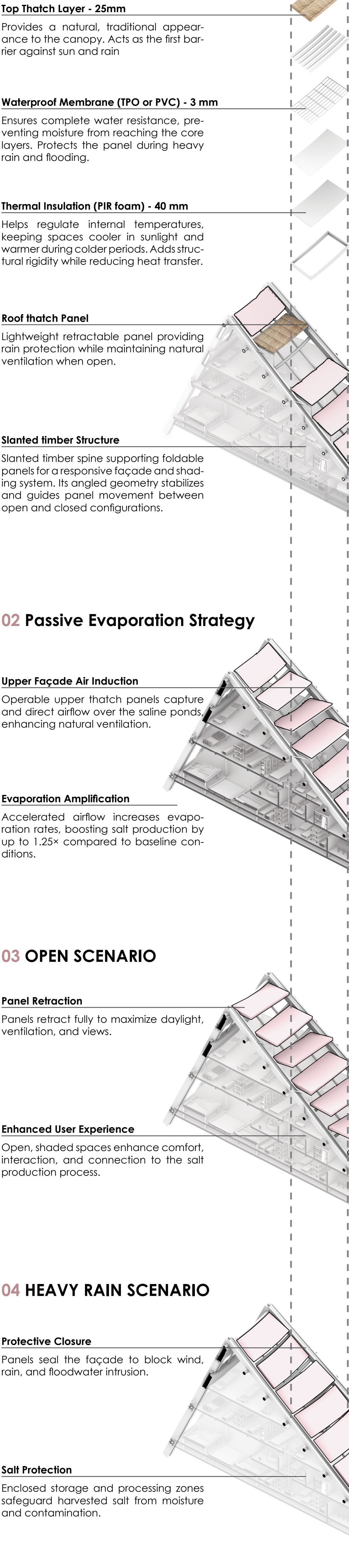
03 Drying & Processing

This stage marks the transition from harvested salt to its processed form. After drying under sun and wind exposure, the salt is collected for industrial treatment and distribution.

65% SATURATION RATE
2,500 M³

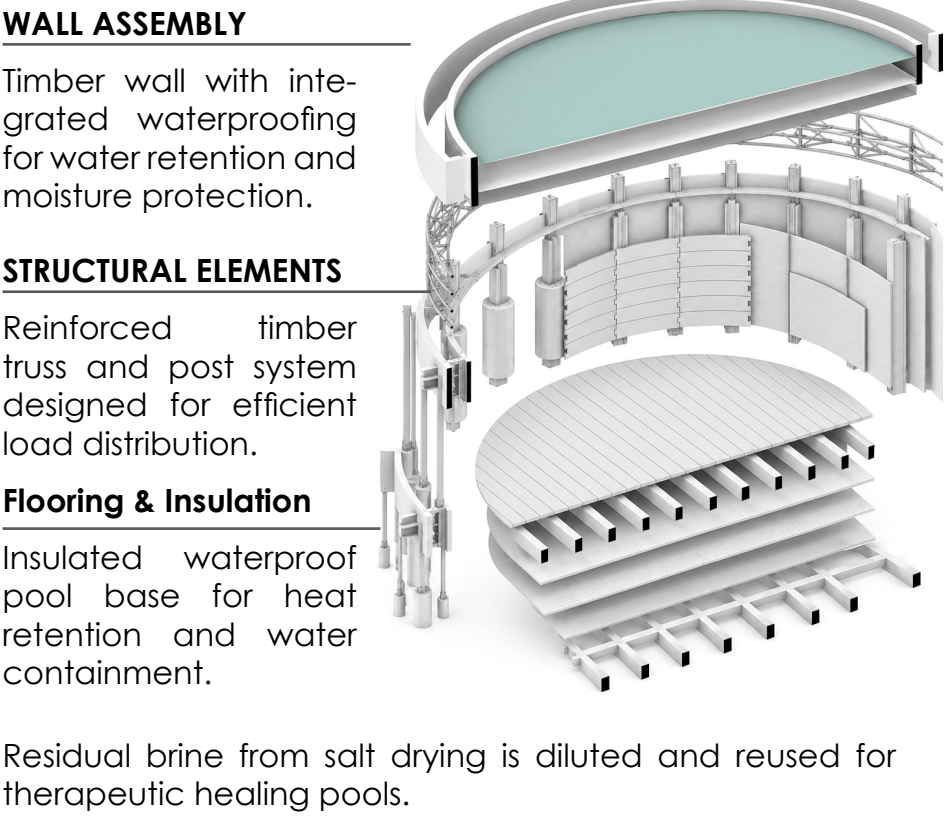
ADAPTIVE FACADE SCENARIO

FACADE LAYERS



VISITORS MODULE

01 THERAPEUTIC POOL



02 THERAPUTIC HEALING

A split-level sanctuary featuring an elongated flotation pool for effortless buoyancy and a raised basin for low-impact walking therapy.

02 RESORT SUITE

An efficiently zoned suite transitioning from a service core to an open bedroom, featuring vertical louvers and full-height glazing for privacy and shading.

03 SALT ROOM

A primitive, meditative halotherapy chamber lined with rough-hewn pink salt blocks that passively regulate the microclimate.

SALT ROOM THERAPY

Salt room therapy uses saline air to create a calm, mineral-rich environment for relaxation and respiratory comfort.

THERAPEUTIC POOLS

Therapeutic saline water uses diluted brine to create mineral-rich pools that support relaxation and wellness.

VISITORS RESORT SUITES

Resort suites provide visitor accommodation with views of the salt landscape, integrating comfort with the site's therapeutic and ecological setting.

CENTRAL SALINE POND

The main saline pond acts as the focal point of the resort, organizing the spatial layout while serving as the core ecological and therapeutic element of the design.

WORKERS MODULE

FACADE STRUCTURE

Curved timber facade framing protecting the production line from external elements.

STORAGE DECK

Dedicated storage zone for refined, packaged salt at the final production stage.

PROCESSING FLOOR

Main processing zone with pulley systems transporting salt vertically through refinement stages.

MEZZANINE & EDUCATION

Elevated visitor mezzanine providing clear observation points and interactive educational areas to view the complete salt manufacturing process.

DRYING & STORAGE

Slanted drying decks for salt with large containment tanks for remaining brine.

FOUNDATION SYSTEM

Foundation system designed for sandy beach conditions, using elevated concrete footings to prevent erosion impact, manage shifting soils, and protect the timber structure from constant moisture exposure.

ROOF DETAIL

OUTER GLASS – UV PROTECTION

UV-protective outer glass layer shielding the skylight from solar exposure.

SOLAR ENERGY LAYER – TRANSPARENT PV LAMINATE

Transparent photovoltaic layer generating energy while allowing daylight transmission.

INNER GLASS – LAMINATED SAFETY GLASS

Laminated inner glass providing impact resistance and structural safety.

SKYLIGHT FRAME – WOODEN FRAME

Structural wooden frame supporting and securing the skylight assembly.

GASKET / SEAL – EPDM WEATHER SEAL

EPDM gasket ensuring airtight and watertight sealing against weather infiltration.

VERTICAL STRUCTURAL ELEMENTS

Primary timber posts transferring loads vertically to the foundation and stabilizing the overall structure.

LATERAL STRUCTURAL ELEMENTS

Horizontal timber members bracing the structure and distributing loads across the frame for lateral stability.

STRUCTURE DETAIL

FLOORING & INSULATION ASSEMBLY

Multi-layer timber flooring over corrugated sub-layers and rigid insulation within an exposed joist frame integrating services.

SLANTED STRUCTURAL ELEMENT

Angled timber brace transferring vertical and lateral loads directly to the foundation.

FOUNDATION FOOTING

Stepped concrete footings anchoring columns and elevating the structure for moisture protection and load stability.



Inside the thatched structure, diluted saline pools are integrated into the public spaces, allowing visitors to experience the restorative properties of Lake Batur's waters throughout the building.



From the mezzanine, visitors overlook the entire salt cycle, from saline collection and drying to the lifting systems that transfer salt into the next stages of processing.

SECTION

