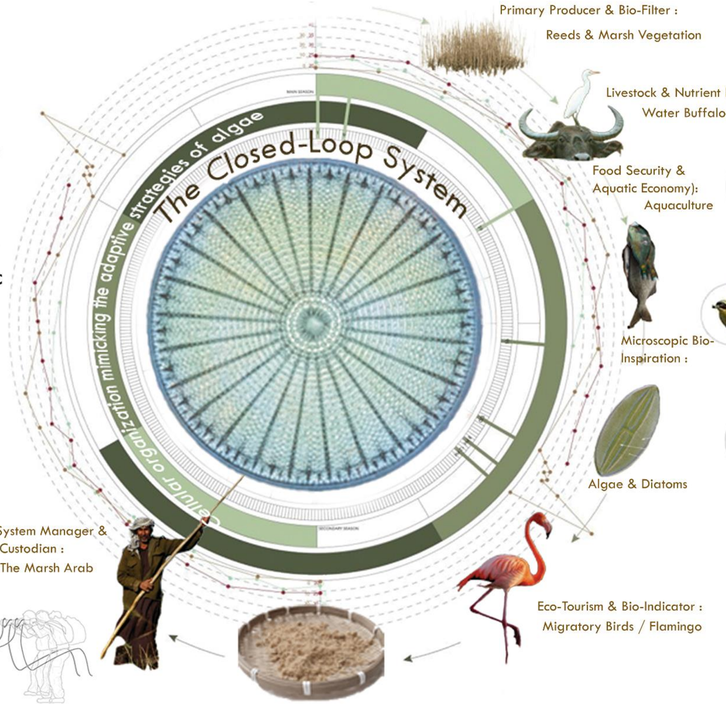
RE-GENERATOR EDEN

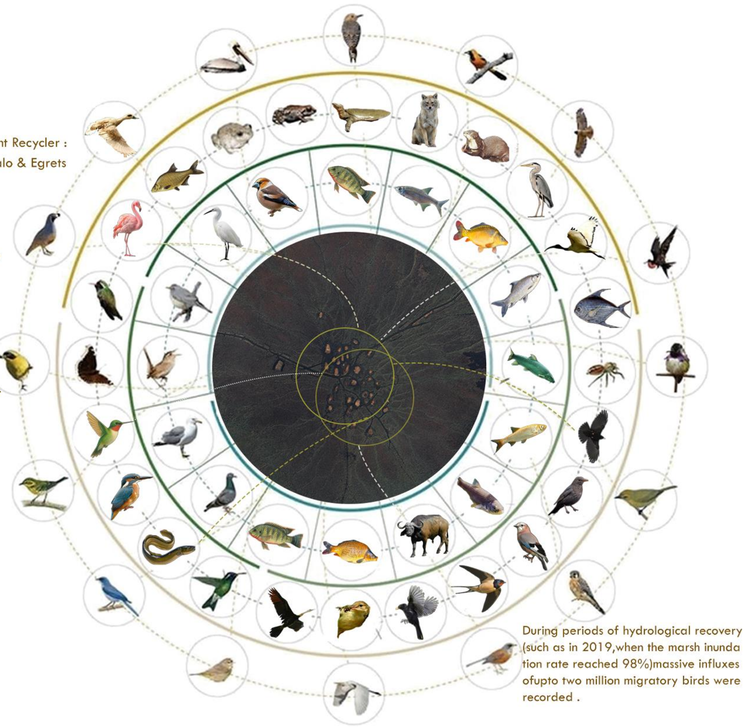
A regenerative urban system that replaces rigid architecture with flexible, inhabited "bio-cells" across Al-Ishan mounds.Guided by "biological memory," these cells dynamically adapt their structural and functional identity to seasonal wet-dry extremes, mimicking the evolutionary resilience of algae

DUAL CYCLE TO REGENERATE THE MARSHES OF IRAQ

The "Re-Animating Eden" project is a regenerative architectural and urban planning system grounded in biomimicry and closed -loop cellular organization. It aims to confront the challenges of desertification and hydrological disruption in the Western Al-Hammar Marshes by introducing sustainable islands composed of resilient, inhabited bio - cells. Rather than opposing drought through rigid resistance , these cells adapt through metabolic transformation and seasonalflexibility , redefining residential units as l iving organisms capable of recycling their own resources and securing their environment. This symbiotic approach ensures the continuity of local production and restores the natural equilibrium of the rich marshland heritage.

The enviroment possesses a biological memory ,allowing it to shift its functional and structural identify across two seasons





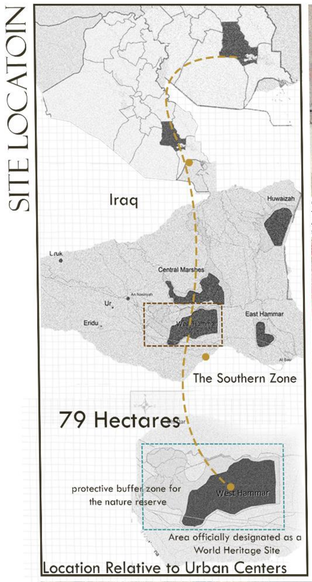
During periods of hydrological recovery (such as in 2019,when the marsh inunda tion rate reached 98%)massive influxes ofupto two million migratory birds were recorded .

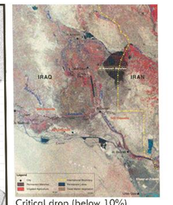
ENDANGERED ENDEMIC FAUNA
- Critically Endangered Endemic
- Vulnerable Endemic

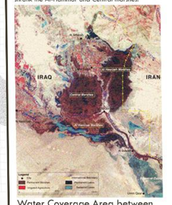
FORMERLY ENDEMIC FAUNA THAT MIGRATED
- Returned & Settled
- Under Reintroduction
- Rehabilitation Routes

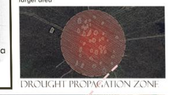
SEASONAL FAUNA
- Seasonal - Breeding/Feeding Migration
- Seasonal - Transient/Temporary Visitors

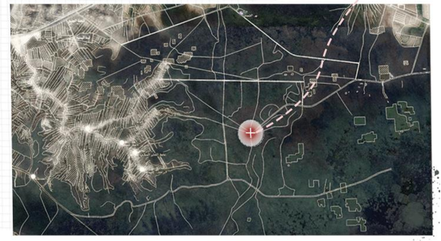
SITE LOCATOIN

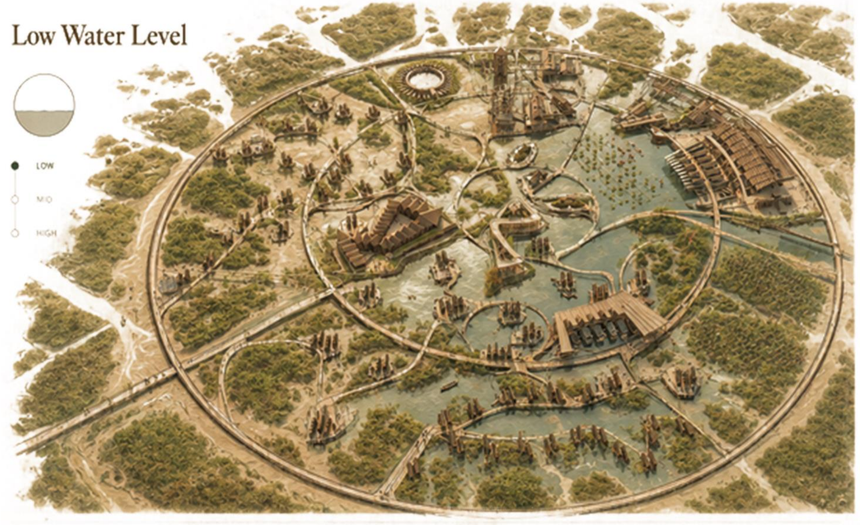


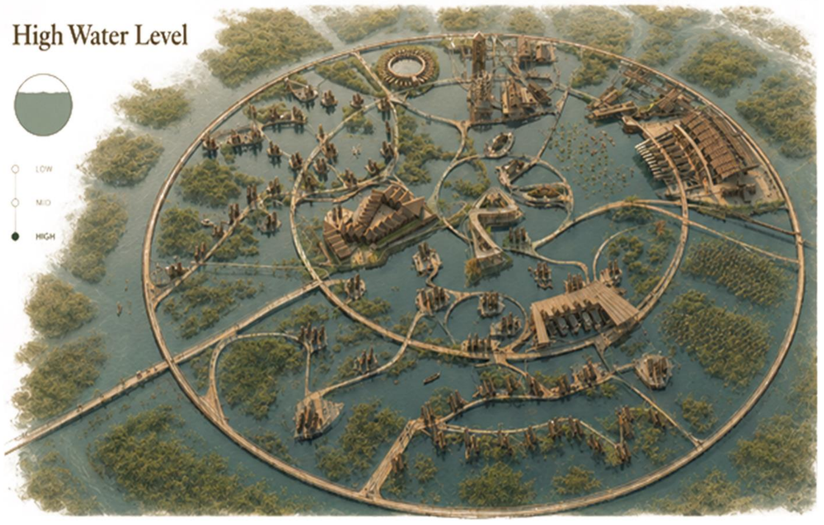












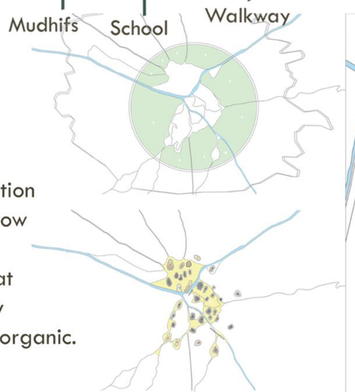
WATER | MARSH VEGETATION | EXPOSED LAND / MUDBANK | ELEVATED WALKWAY | BUILDINGS / PAVILIONS | DOCKS / BOATS

N

MASTER PLAN, SCALE 1:800

TOPOGRAPHICAL & VERNACULAR LANDSCAPE ANALYSIS: ABU AJAJ VILLAGE

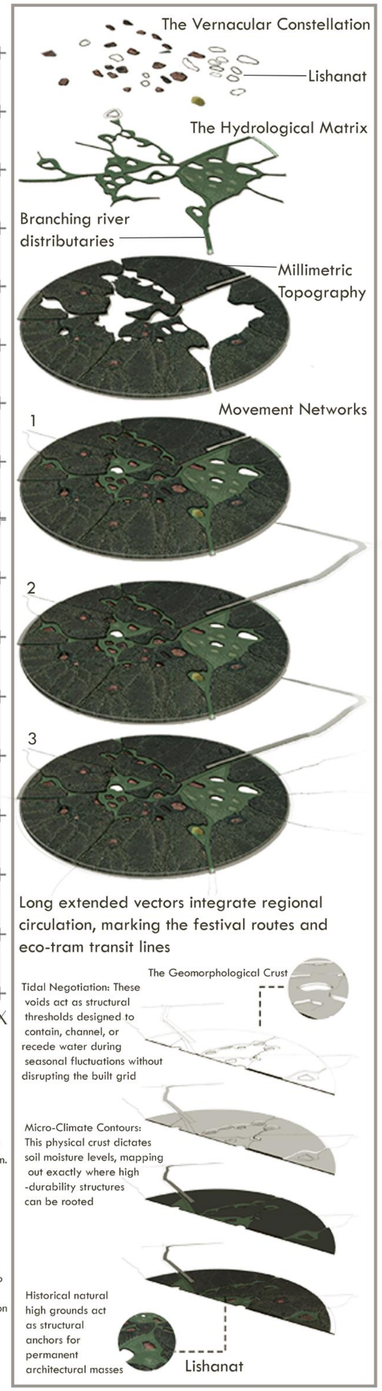
This topographical map illustrates the macro-spatial structure of Abu Ajaj Village, which is deeply embedded within a dynamic and ecologically sensitive marshland ecosystem. The masterplan layout features a prominent central open-water body and a branching hydraulic network of natural streams and canals that act as the ecological heart and primary transportation veins of the project. Distributed strategically within these water bodies and wet zones are the low -rise topographical hills known locally as Al-Ishan. In the vernacular architecture of the Iraqi Marshlands, these elevated mud-and-clay mounds serve as crucial, flood-resilient platforms that provide secure foundations for residential clusters and community Mudhifs, keeping them safely above fluctuating seasonal water levels while maintaining healthy metabolic water cycles. This organic.



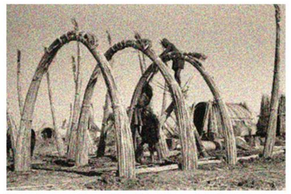
THE HYDROLOGICAL MATRIX

1. Inflow Vectors: Branching river distributaries that empty directly into the central core zone, serving as the main hydraulic lifelines that sustain the entire ecosystem.

2.Centripetal Feeders: These channels direct freshwater into the central core, which our design leverages to institute a closed-loop natural filtration and distribution cycle before the water disperses



STRUCTURAL ANALYSIS OF THE MARSH HOUSE



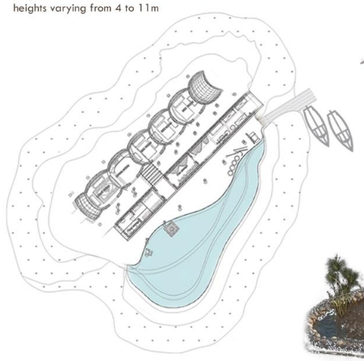
Massive reed bundles (40–80 cm in diameter) are anchored deep into the marsh soil at an outward angle. Opposing bundles are then pulled together and interwoven.

They bind the independent arches into a unified grid. This structural tie prevents lateral buckling of the main arches and ensures lateral wind loads are distributed evenly across the entire framework

Functionally, they act as a flexible shear diaphragm skin. By locking the framework together, they provide the necessary torsional stiffness to prevent structural distortion under high wind pressure

GROUND FLOOR PLAN

The entire system is designed using reeds; therefore, it consists of a single story with heights varying from 4 to 11m



The bundles operate the system

They increase in strength upon bending

THE SARIFA

THE DEDICATED STORAGE

THE MUDHIF

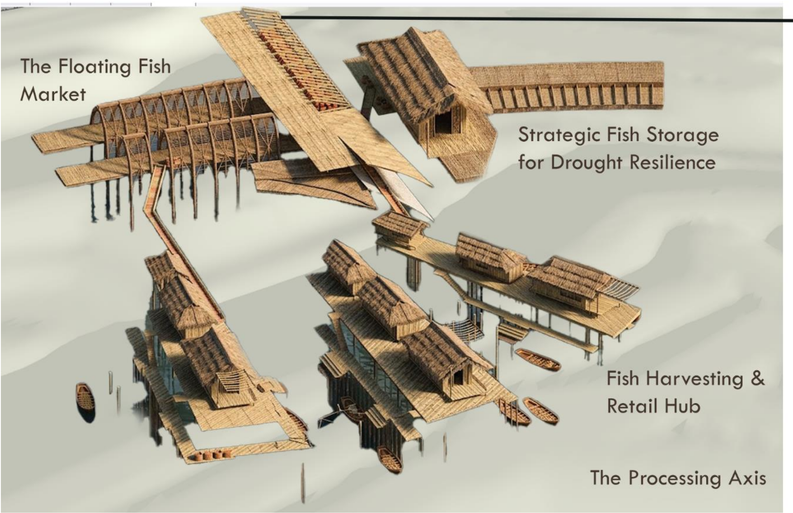
MAIN ELEMENT: BENDING STRENGTH

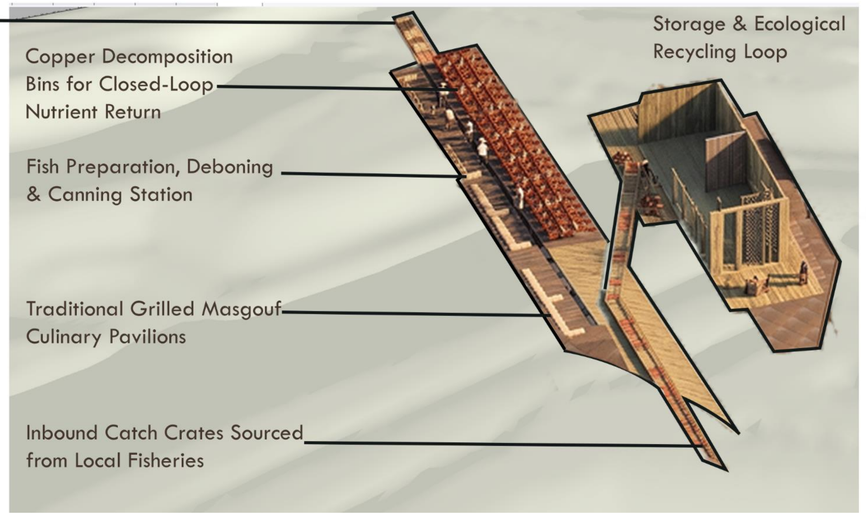
THE MUDHIF

a traditional communal guesthouse built by the Marsh Arabs of southern Iraq, representing a timeless masterpiece of vernacular, eco-friendly architecture with roots tracing back to the Sumerian civilization

THE FISH HARVESTING

Operating as a vertical ecological metabolism , traditional Mashahoof boats unload harvest at the piling- anchored lower level. Kinetic timber ramps seamlessly negotiate seasonal water fluctuations, guiding the catch up to an elevated, single-story deck that integrates linear processing lines, a floating market, and heritage Masgouf pavilions. The system achieves a closed-loop circular economy via copper decomposition bins that recycle organic waste into marsh nutrients, all sheltered under a soaring, modular reed roof (4–11m) optimized for passive ventilation.





01. REED FARMS :

Geometric water channels replace concrete basins within natural reed forests. They facilitate Mashhoof boat navigation for harvesting and act as natural phytoremediation systems to restore marsh biodiversity

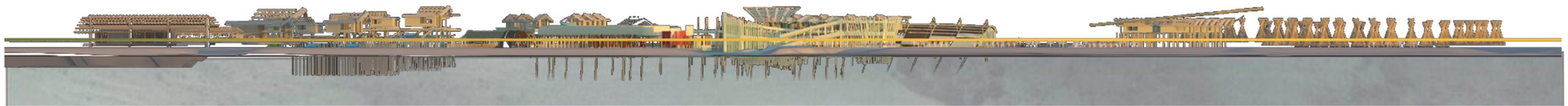
02. PRODUCTION WORKSHOP

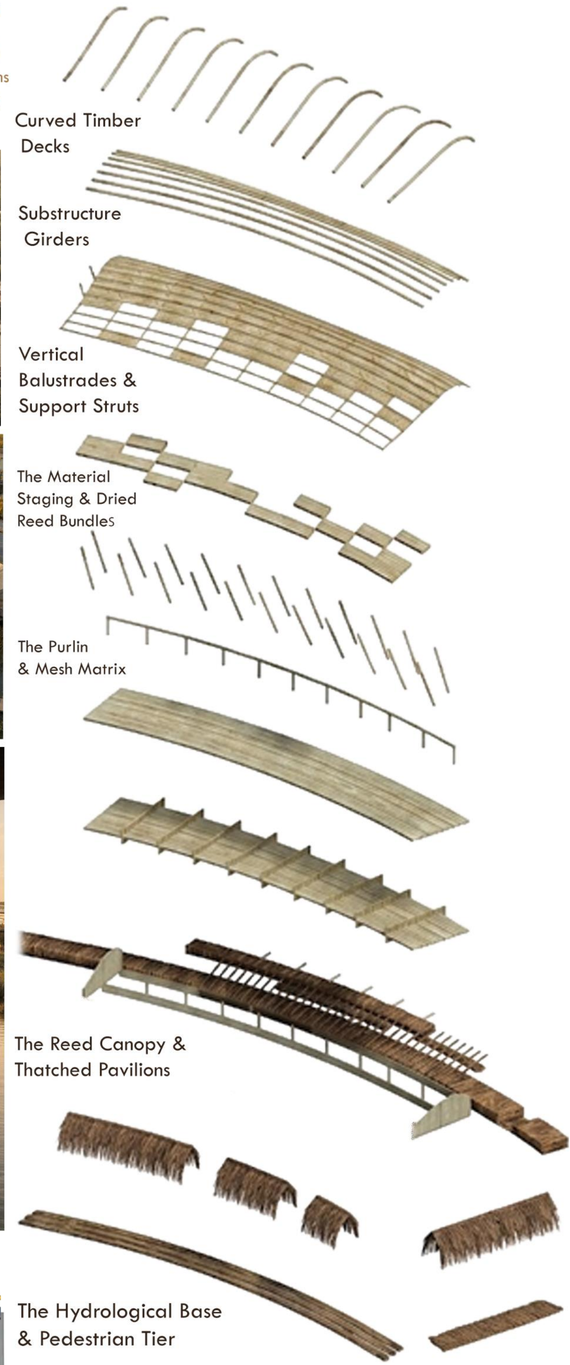
Functioning as an open factory, this evolved Mudhif features giant reed vaults. It utilizes evaporative cooling over the water bodies to create a thermally comfortable workspace for artisans and weavers.

03. WATER STORAGE

Instead of concrete edges, floating reed rafts are used to store processed bundles. These flexible docks adapt to seasonal water fluctuations and allow for direct loading onto boats for distribution.

REED PROCESSING FACILITY





Curved Timber Decks

Substructure Girders

Vertical Balustrades & Support Struts

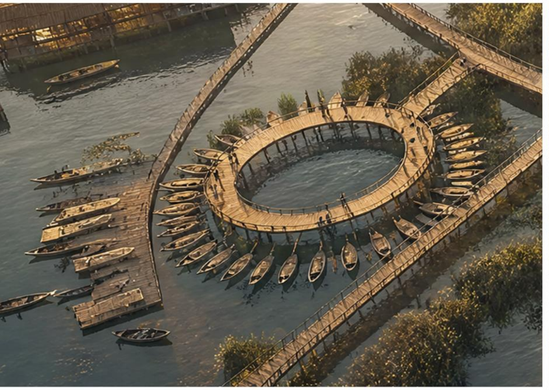
The Material Staging & Dried Reed Bundles

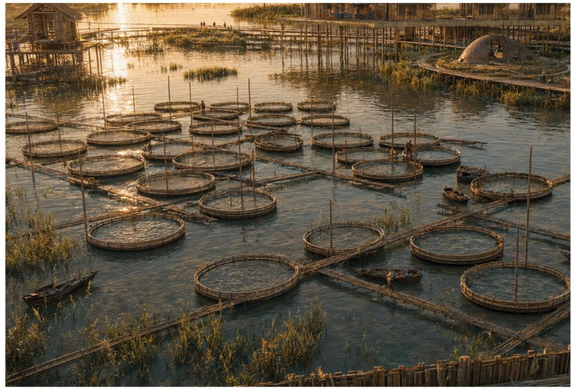
The Purlin & Mesh Matrix

The Reed Canopy & Thatched Pavilions

The Hydrological Base & Pedestrian Tier

BIRD HIDES





AVIAN OBSERVATOR

ECOLOGICAL SCHOOL

SCHOOL GROUND FLOOR PLAN

WATER BUFFALO DAIRY FACILITY