

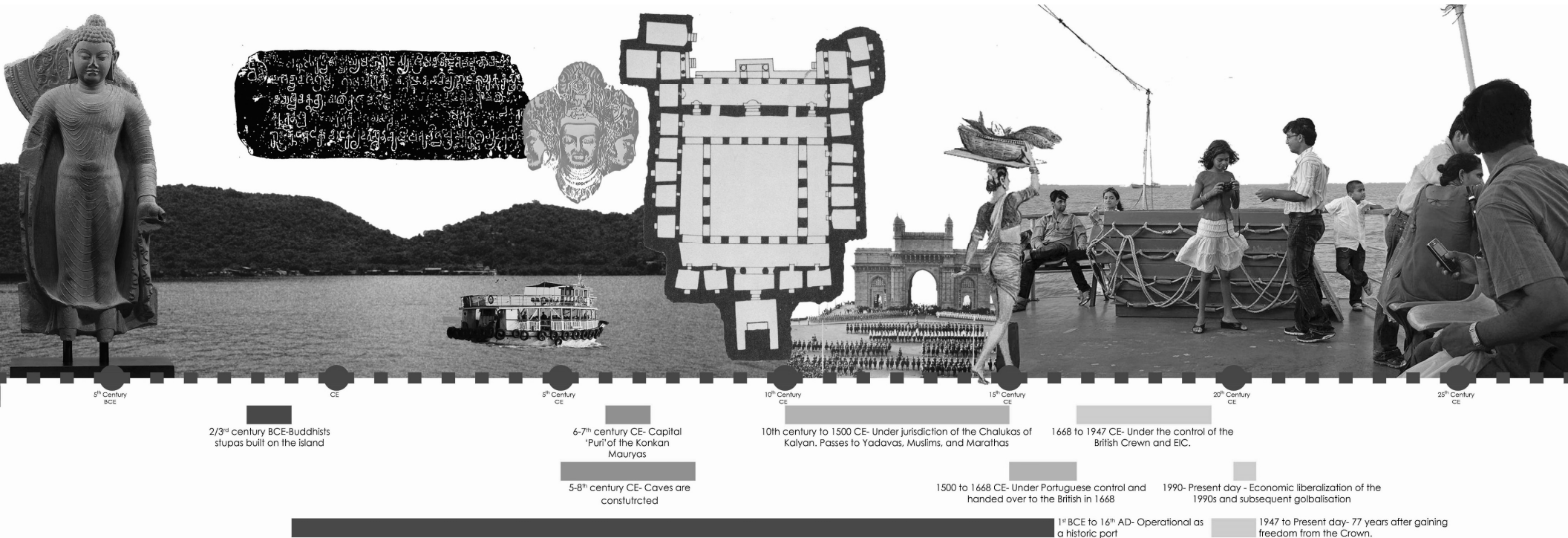
P5

Vihaan Shah - Explore Lab



Contemporary Pilgrimage- The Case of Elephanta Island

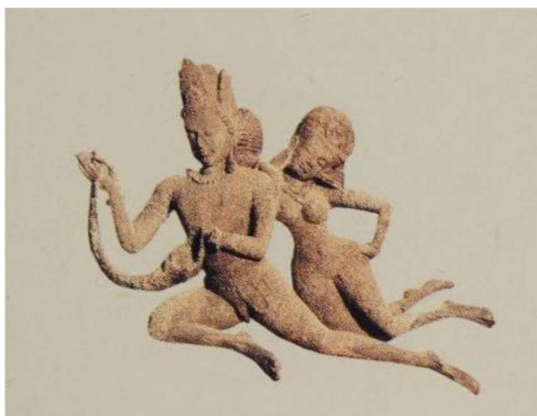
A long multilayered history



Timeline



The Trimurti. (Source- Raghu Rai/ Magnum Photos)

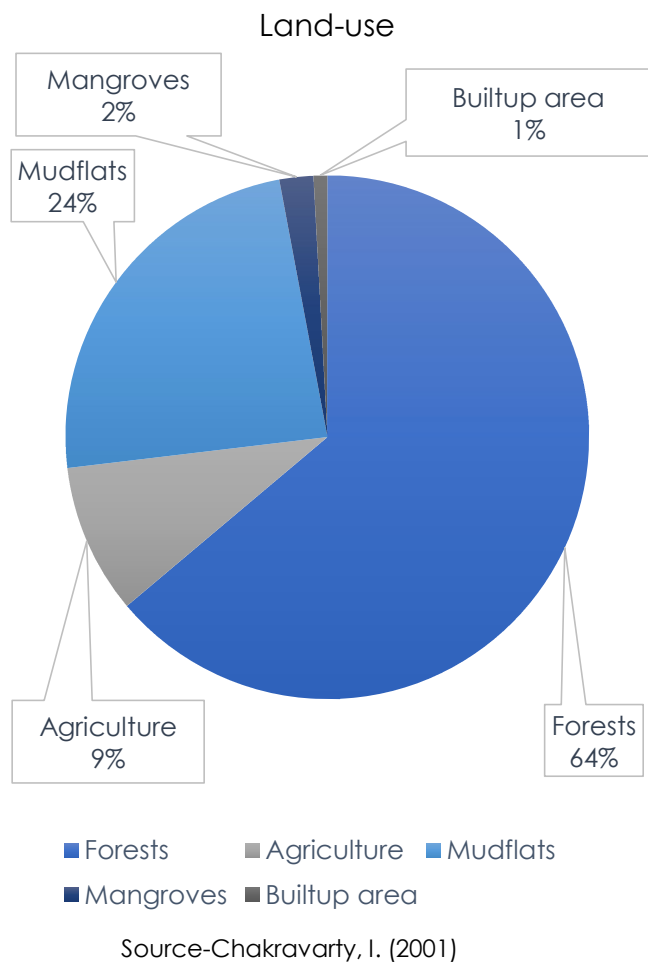


Site



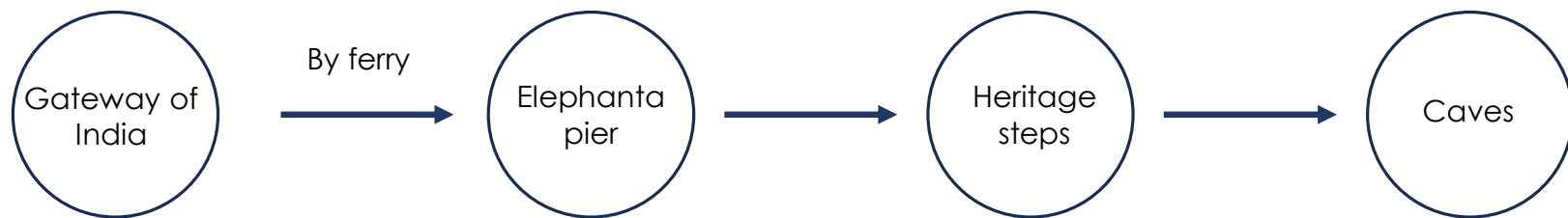
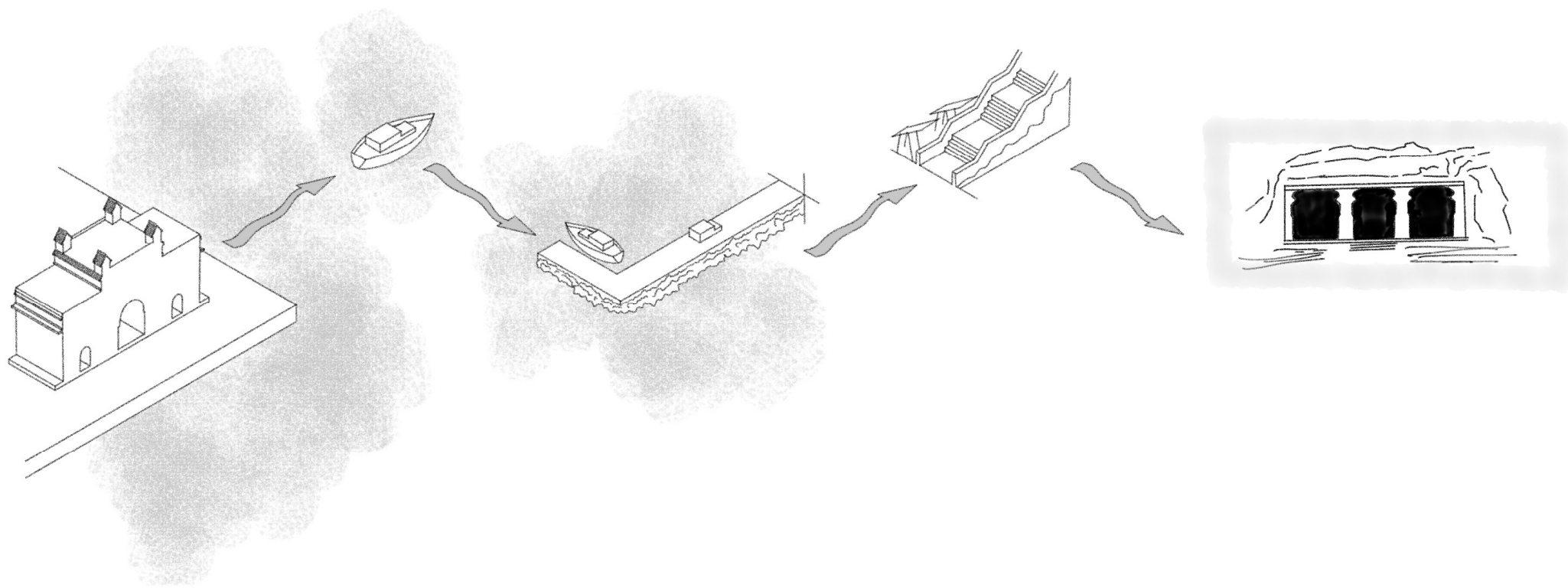
0 km 10 km N

Context

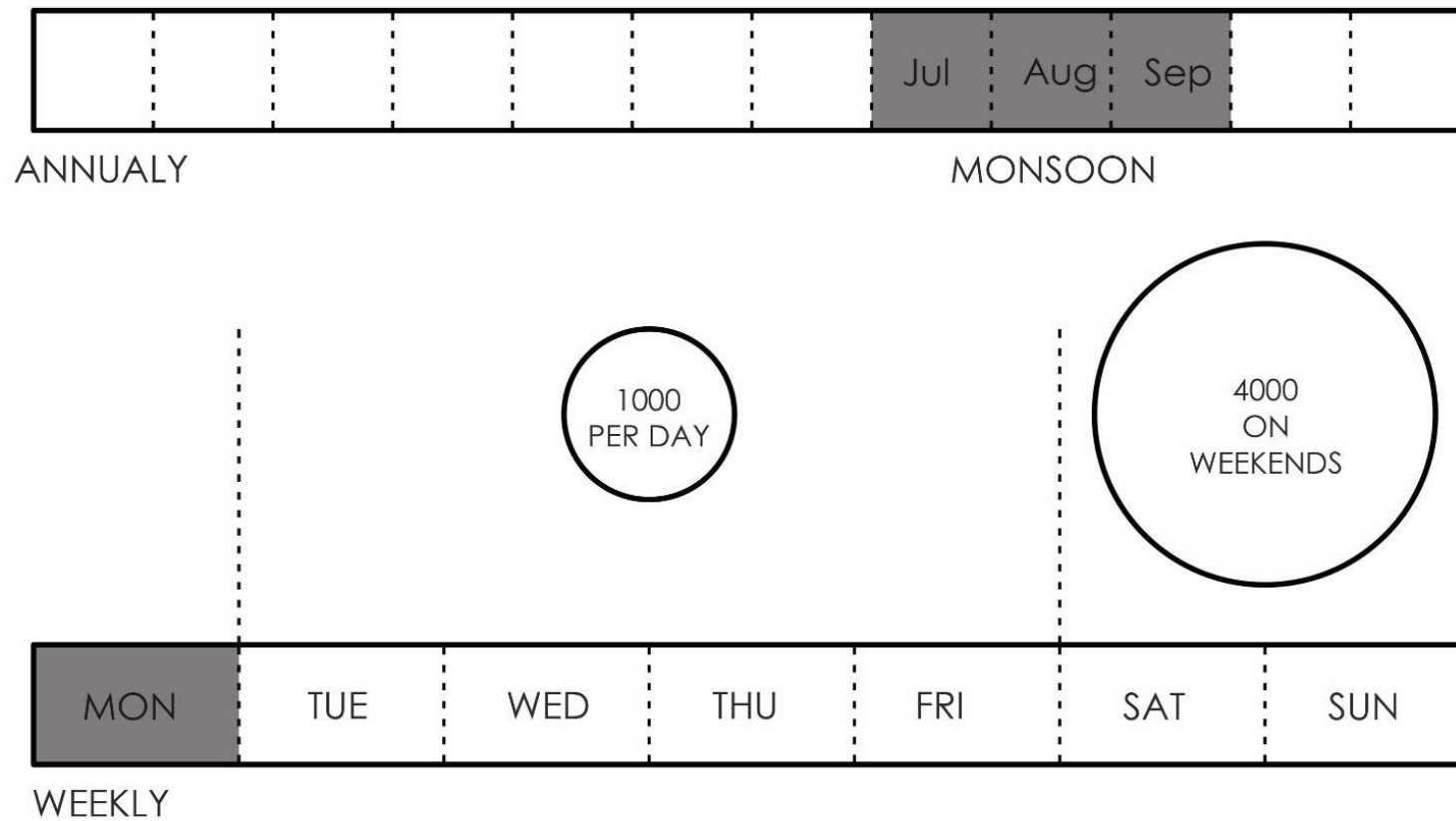


Elephanta Island

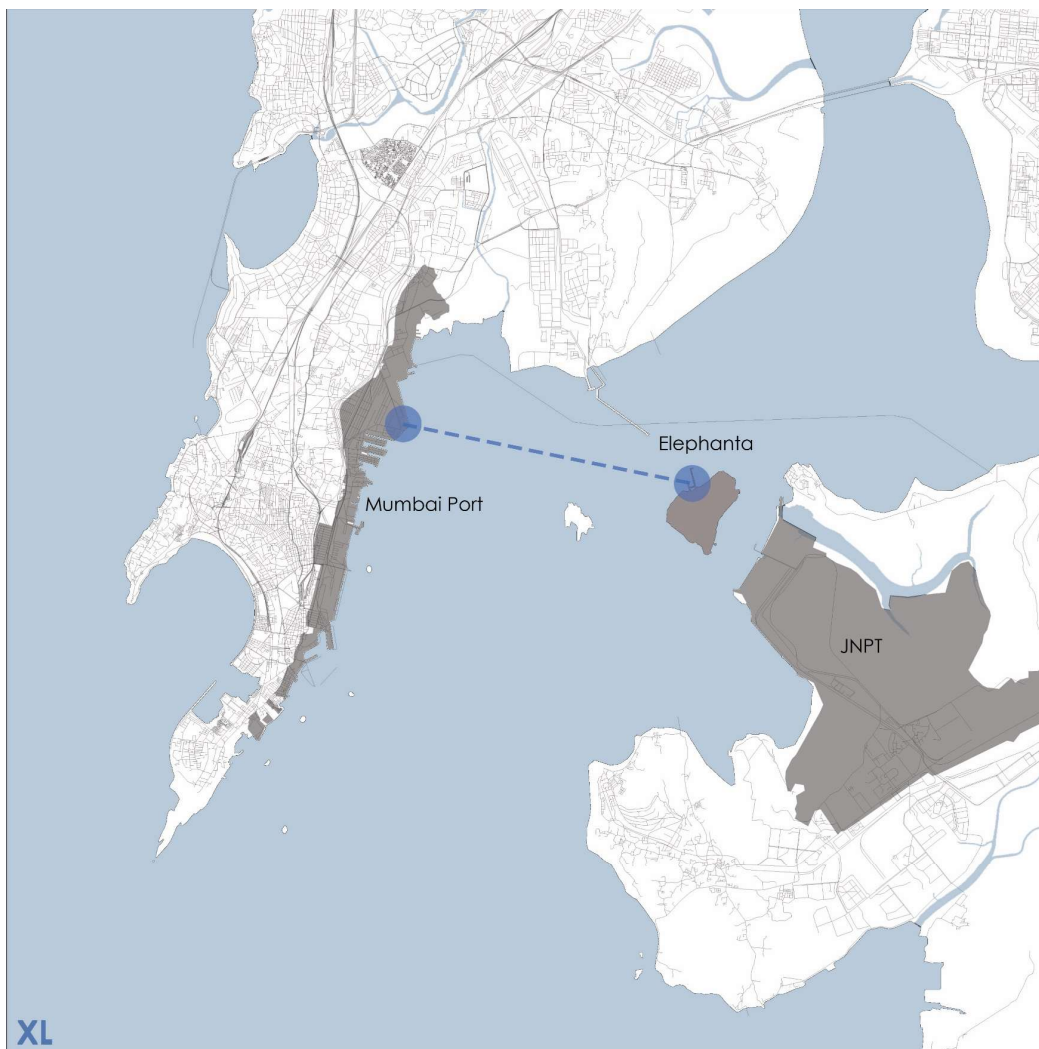




Journey

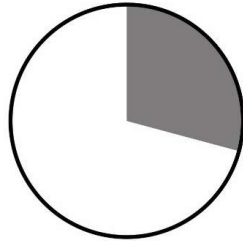
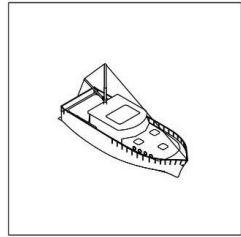


Visitor flows

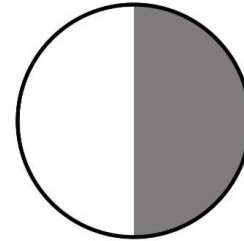
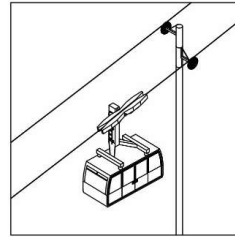


Upcoming ropeway

0 km 4 km  N



60-65 PER FERRY (7HR WINDOW)

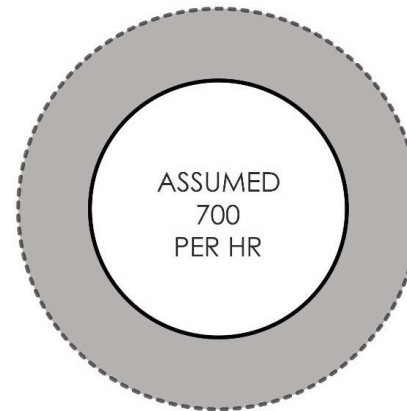
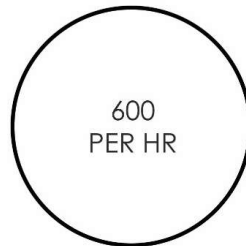


20-30 PER CABIN (12HR WINDOW)

WEEKDAY

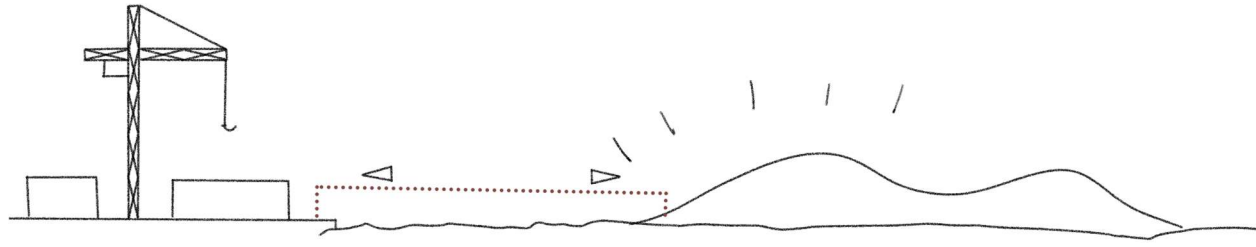


WEEKEND

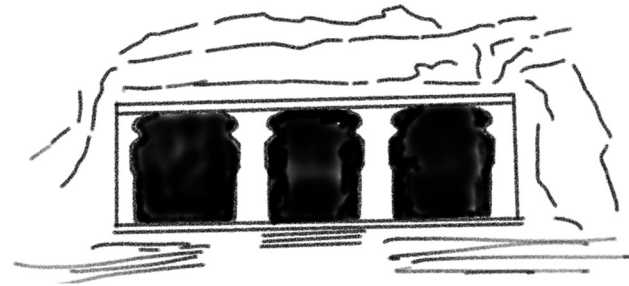


PROPOSED MAX-
1700 PER HR

Large influx

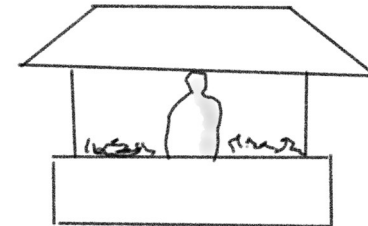


- Lack of infrastructure for this influx of visitors



- Protection of the site at risk

- Locals rely on the informal tourist economy

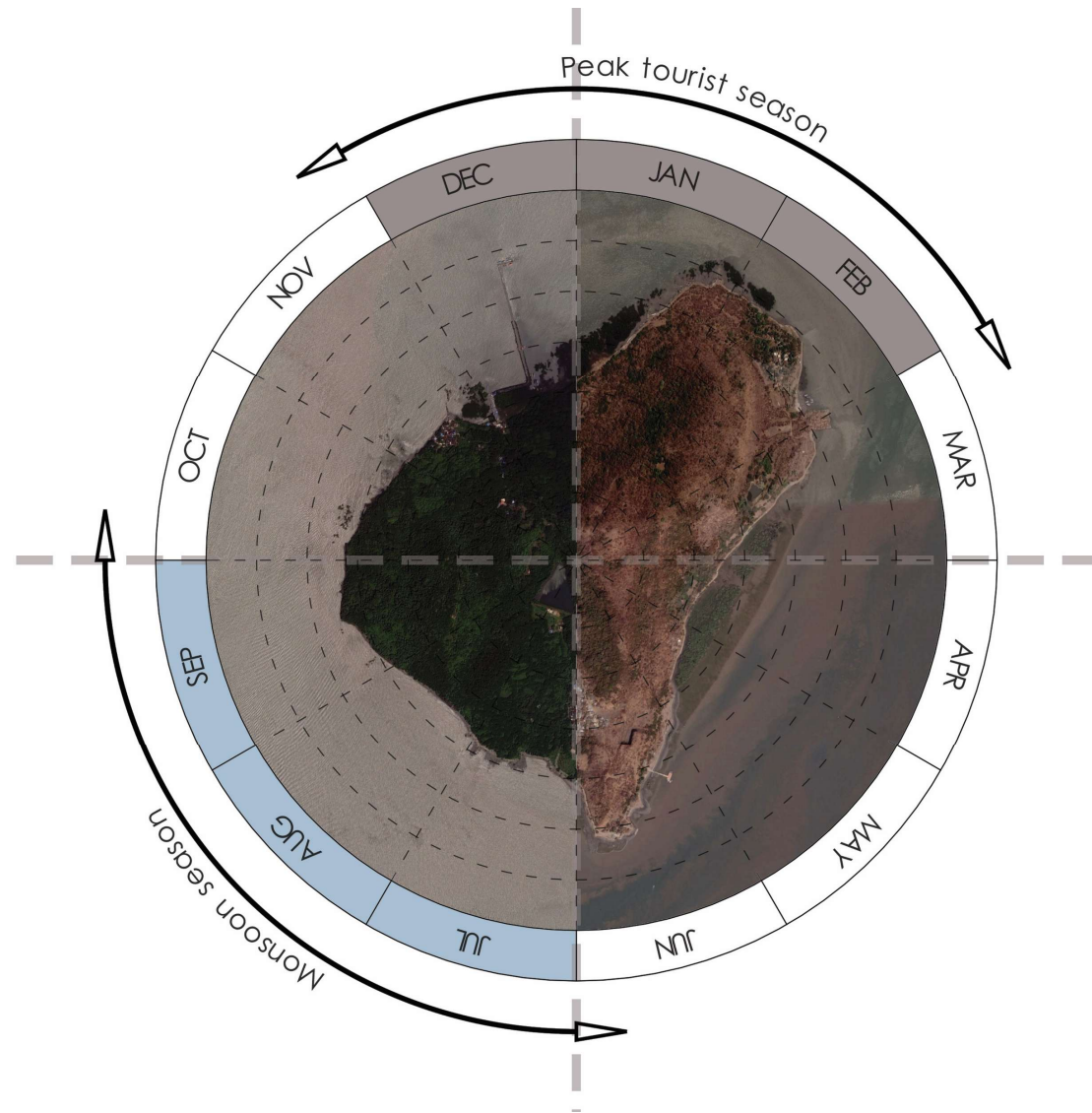


Problem statement

Lack of enough **drinking water**

No capacity for **septic waste management**

Invasive alien terrestrial species



The need for Ecological Resilience

Informal
economy
dependent on
tourism

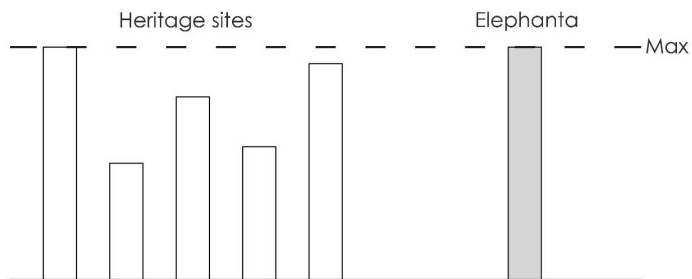


A souvenir shop at Elephanta Caves. (Source- Raghu Rai/ Magnum Photos)

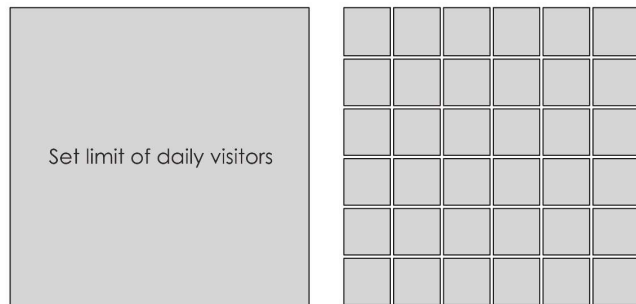
Residents



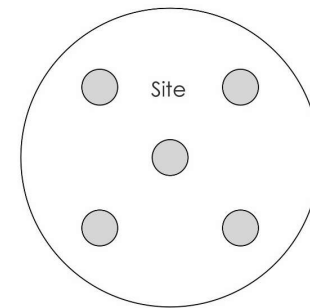
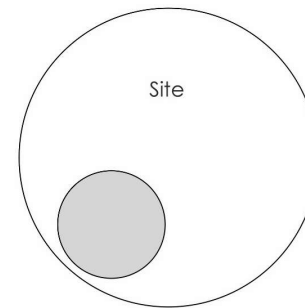
Strategy + Design



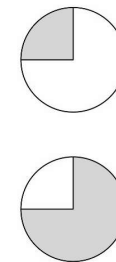
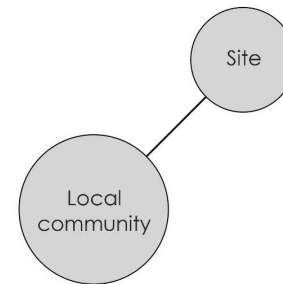
Setting a maximum limit



Breaking up visitors into smaller manageable groups



Spreading visitor groups evenly around the site

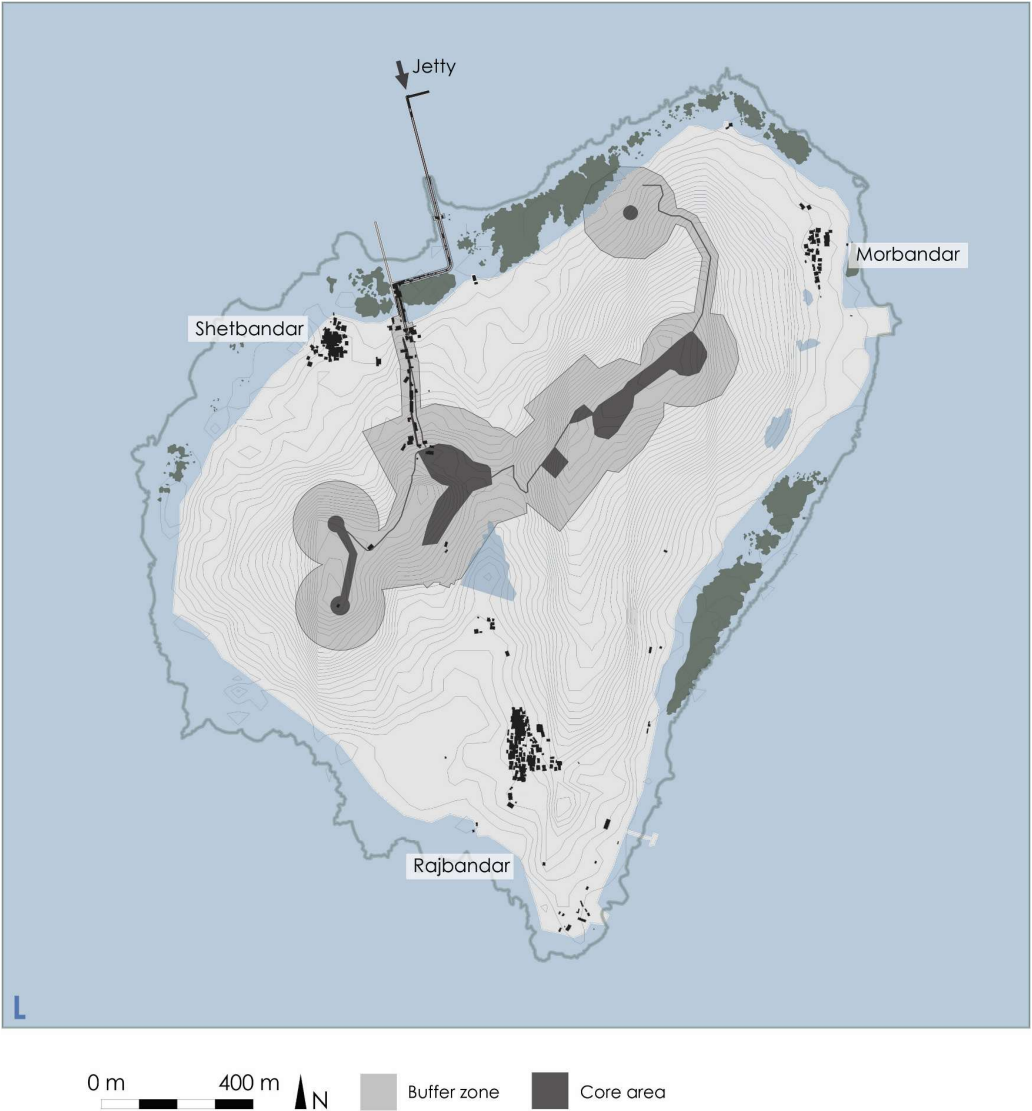


Increasing dwell time to positively impact local business

Methods of management

Managing visitor flows on the Island

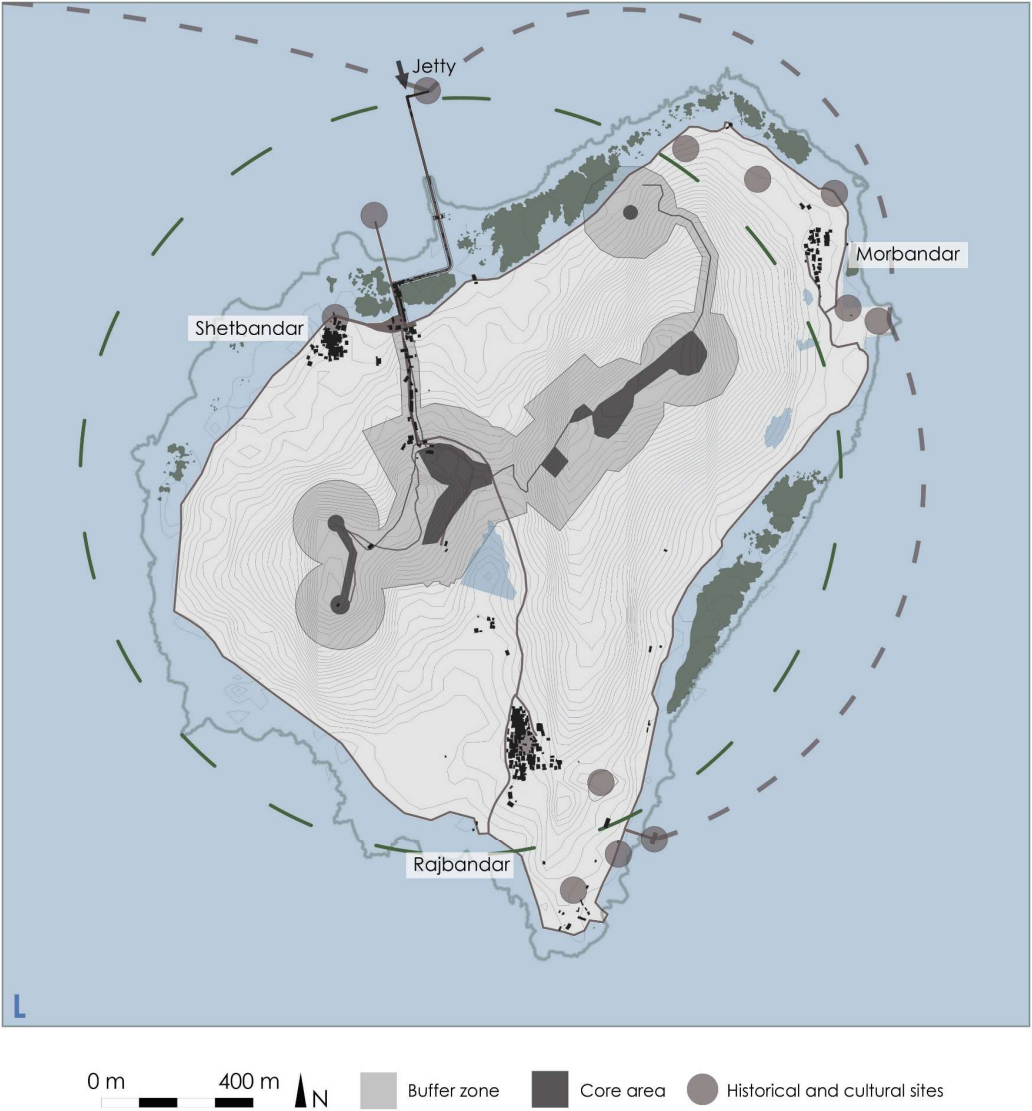
Proposal for the Island



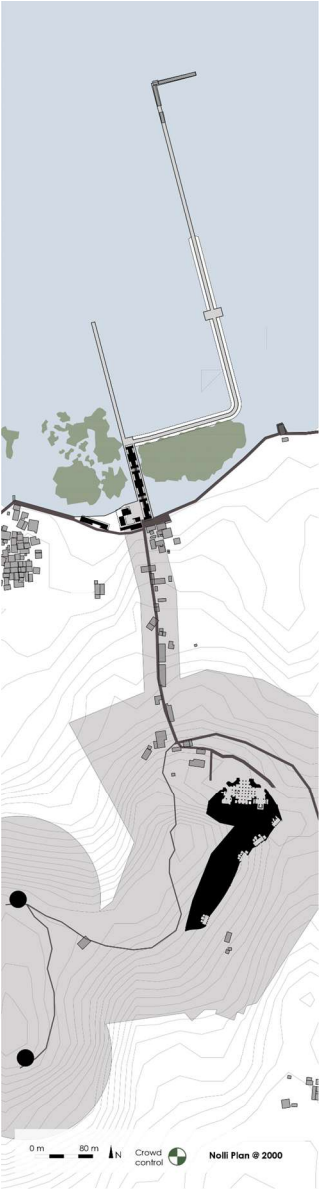
Spreading visitors around the island

Strengthening existing routes to other sites

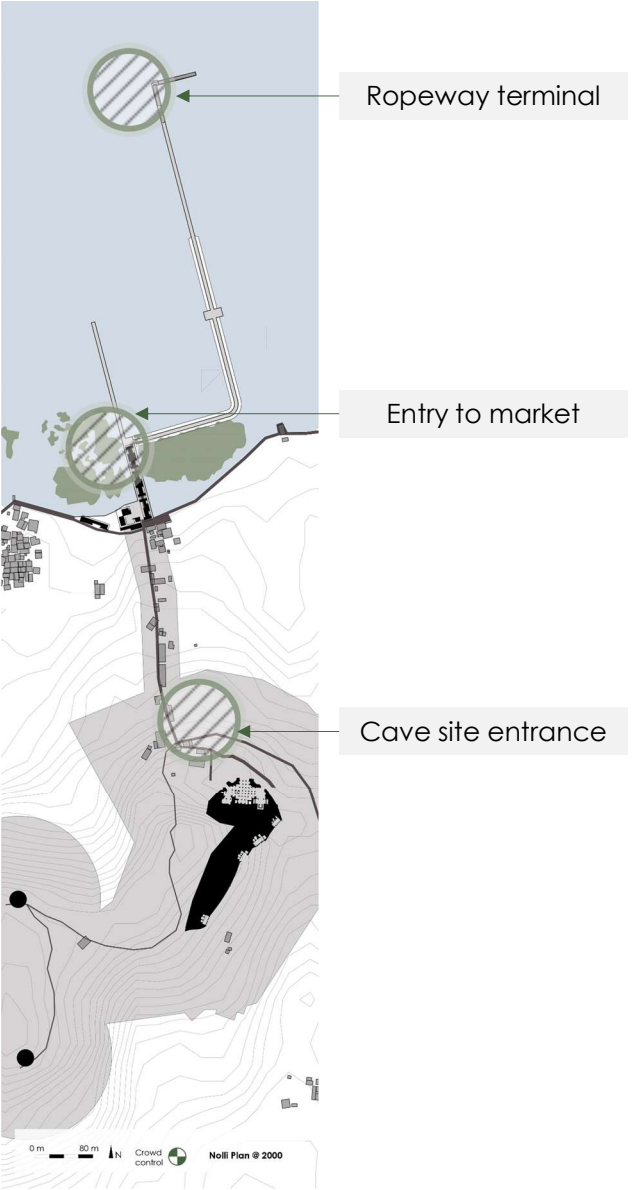
Proposal for the Island



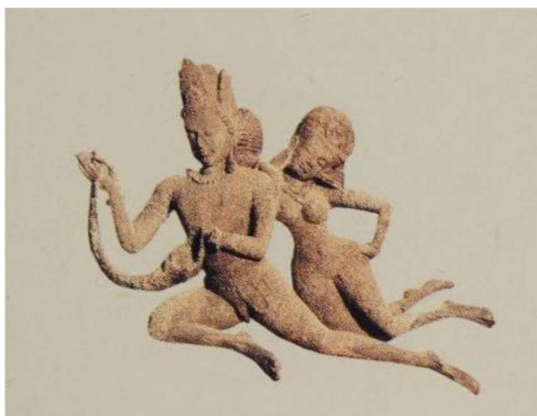
Proposal for the route



Determining crowd control points within the journey



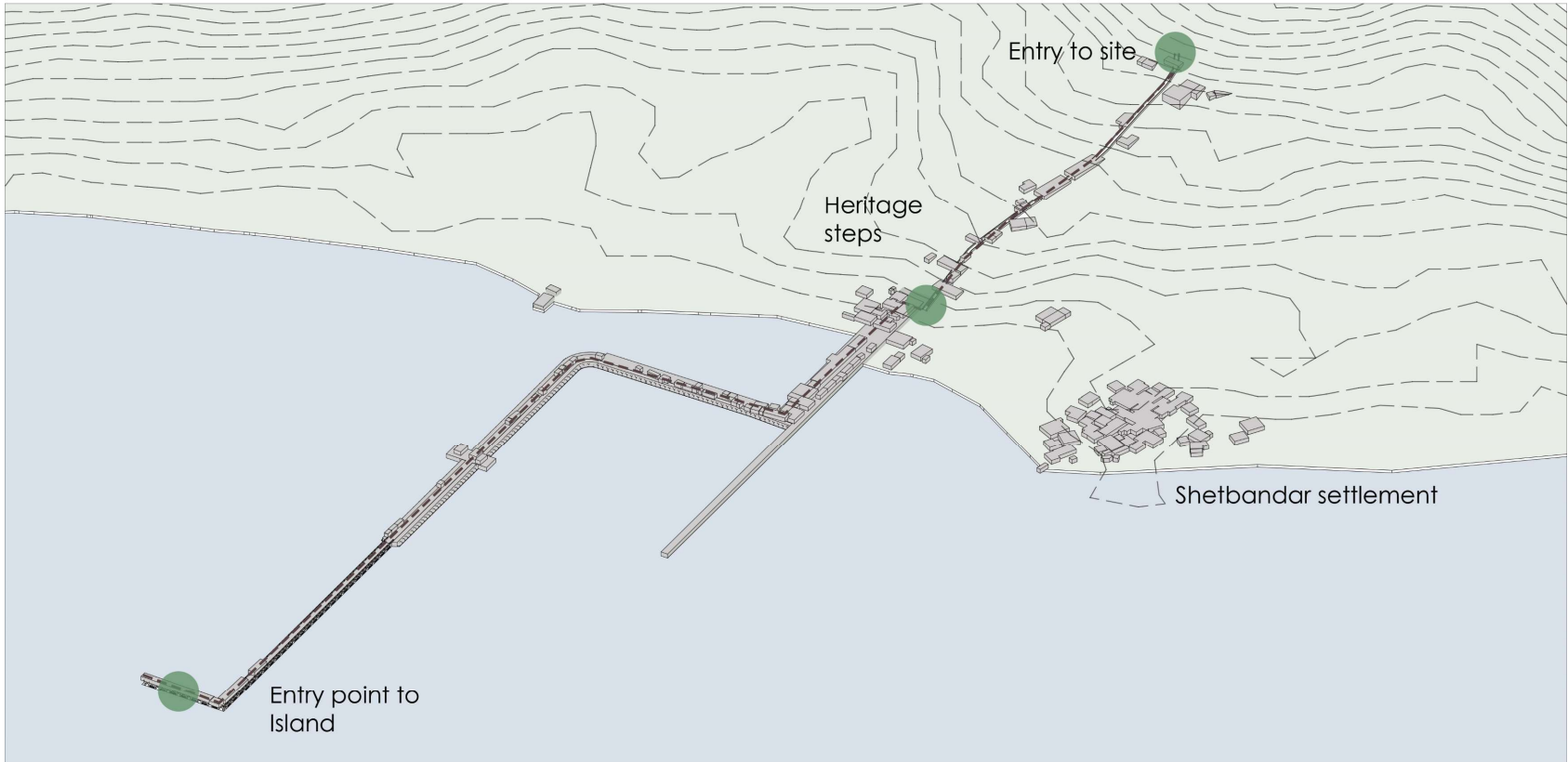
Proposal for the route



The Pier

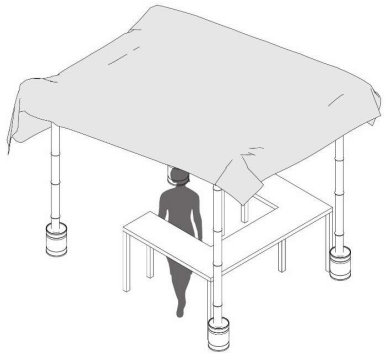


Existing

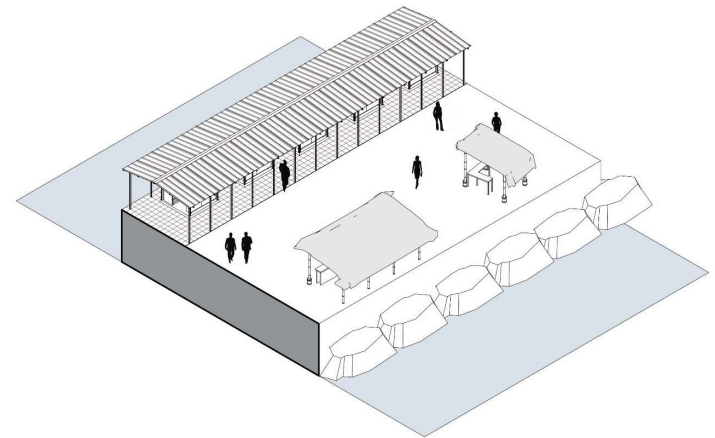
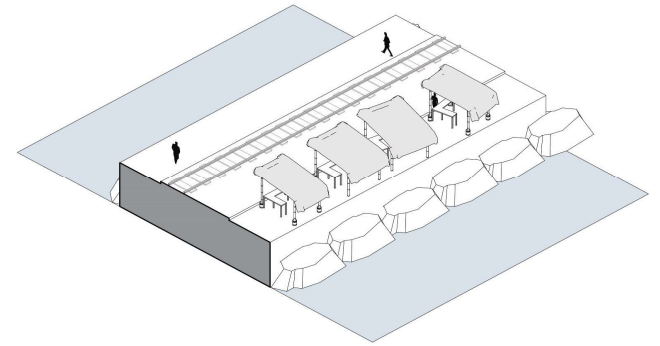
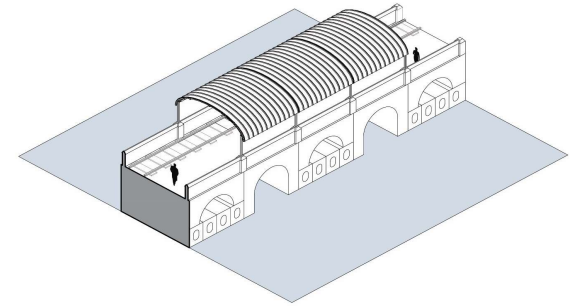
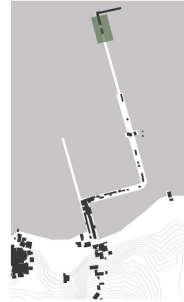
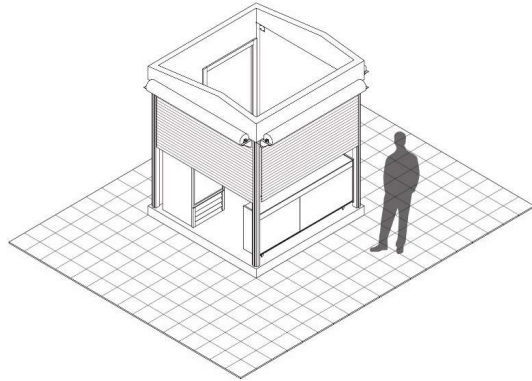


Studying the Pier

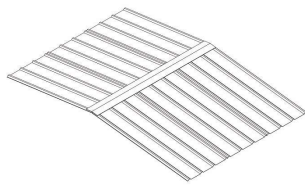
Informal units



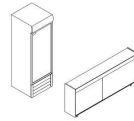
Formalised units



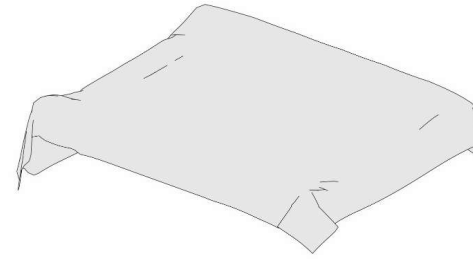
Mapping current conditions



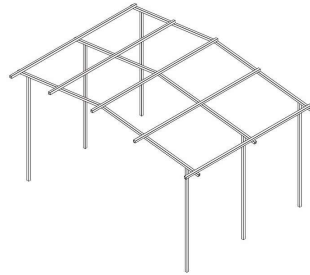
Steel roof sheets
Typical widths- 1050 to 1200 mm



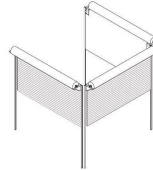
Fridges and display cabinets



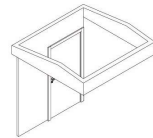
Tarpaulin sheets



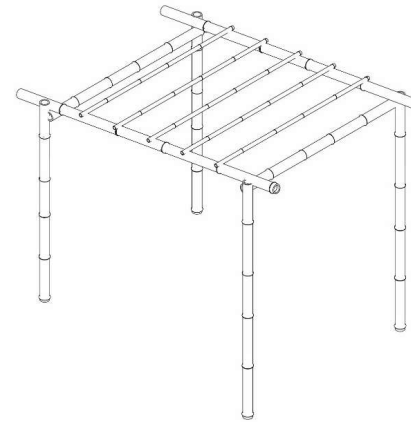
Steel sections forming frame
Typical sizes- 50 to 75 mm



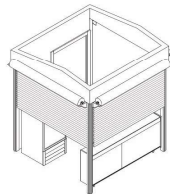
Rolling steel shutters



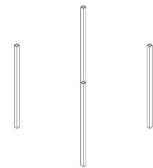
Cement sheets to form shell



Bamboo frame

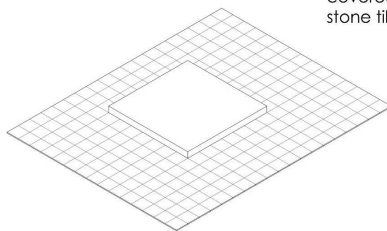


Formalised shops on raised plinths

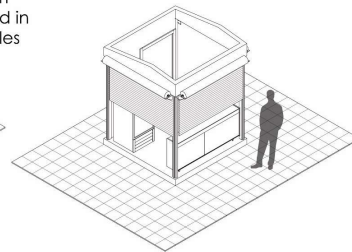


Steel sections forming frame

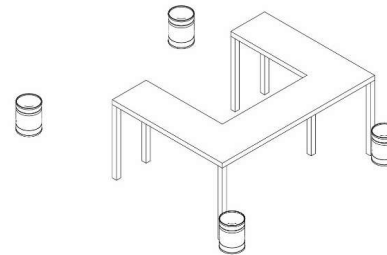
Cans filled with stone to support bamboos



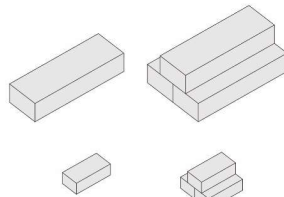
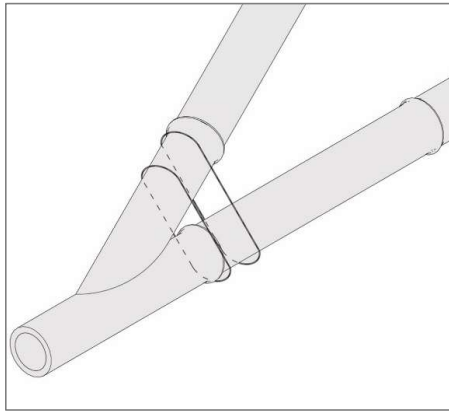
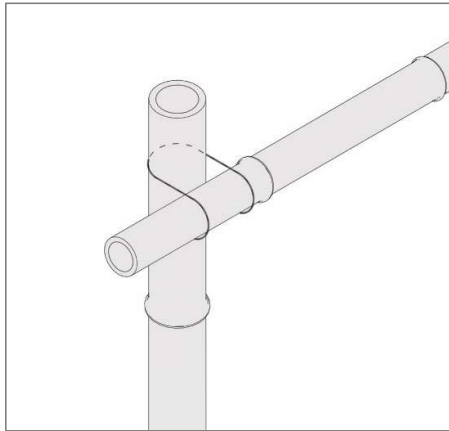
Platform covered in stone tiles



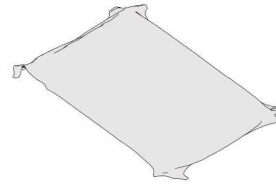
Platform for display



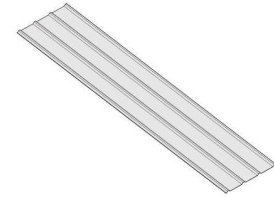
Disassemble and repurpose



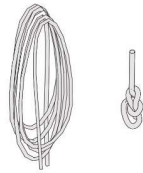
Bricks and CCBs



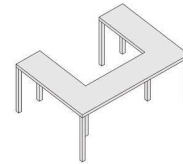
Tarpulin sheets



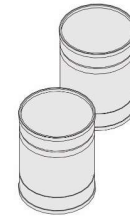
Metal roof sheets



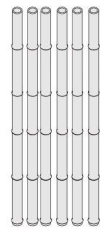
Ropes



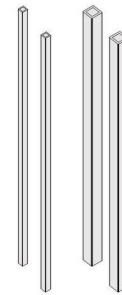
Timber/ply furniture



Steel cans/barrels



Bamboo

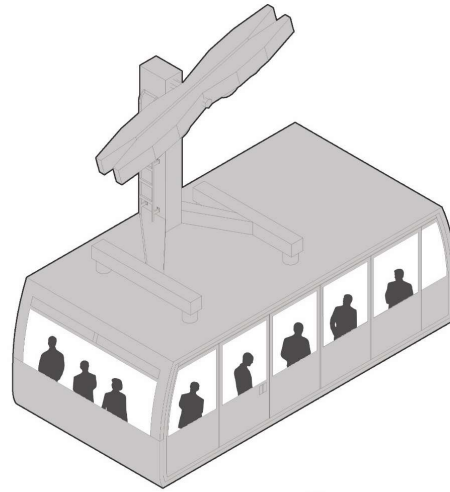


Steel sections

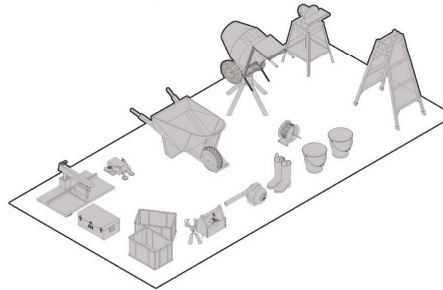


Nails

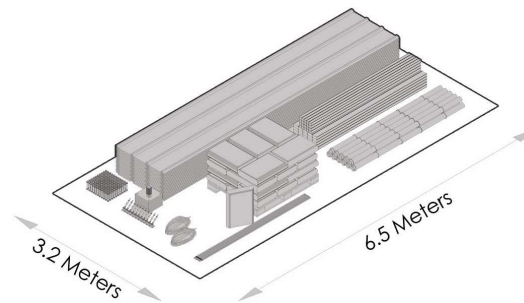
Documenting materials and joints



Workforce



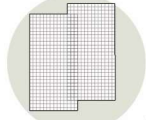
Construction
equipment



Materials

Logistical challenges

Metal mesh sheets
10-30 Years



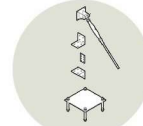
Steel cans
5-20 Years



Metal roofs sheets
20-50 Years



Tensile Steel Wires & Connections
50-100 Years



Ropes
3-10 Years



Nails
10-50 Years



Steel sections
50-100 Years



Tarpaulin sheet
2-5 Years



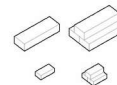
Bamboo
10-30 Years



Engineered bamboo
30-50 Years



Bricks & Compressed Earth Blocks
50-100 Years



Proposed materials aim to
bridge the gap between the
formal and informal typologies

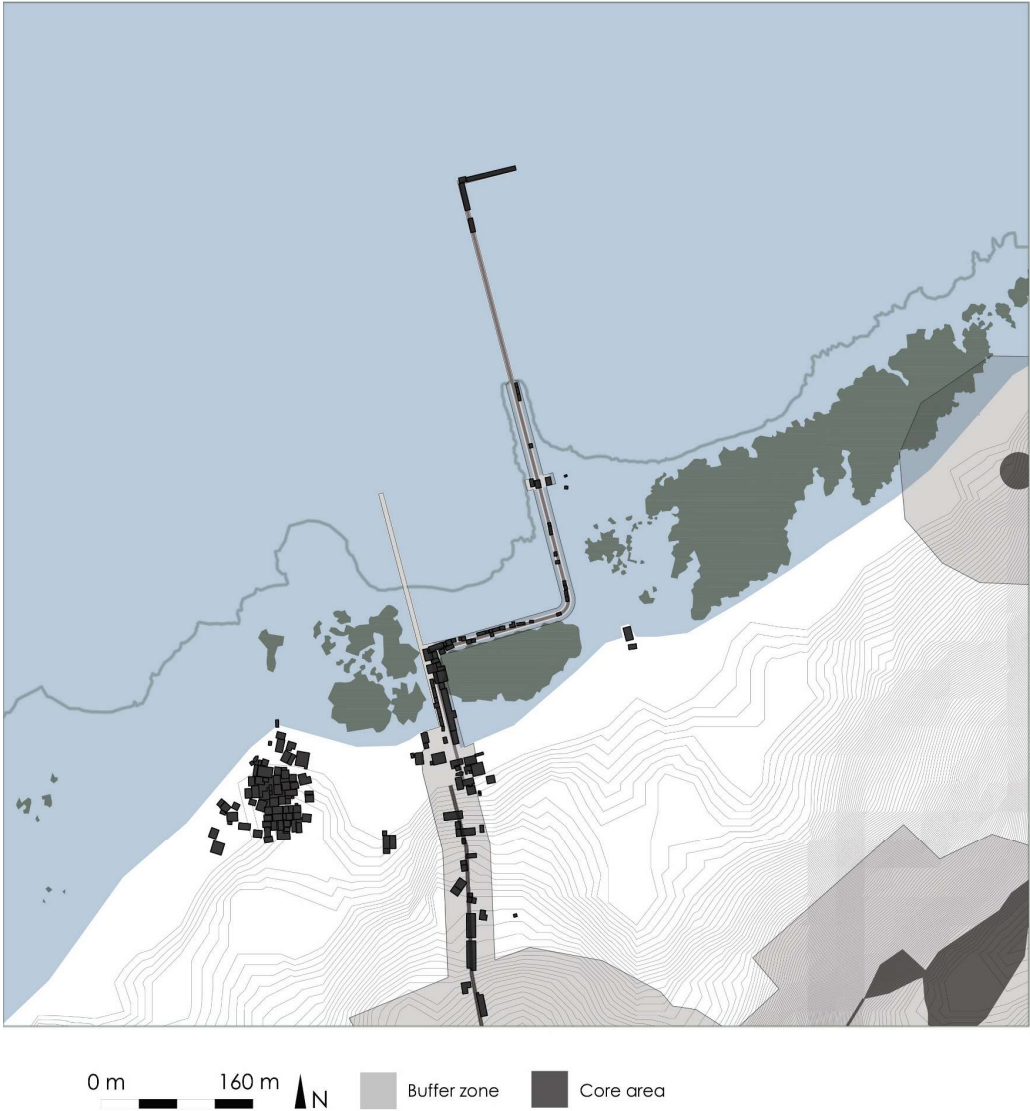
Material selection



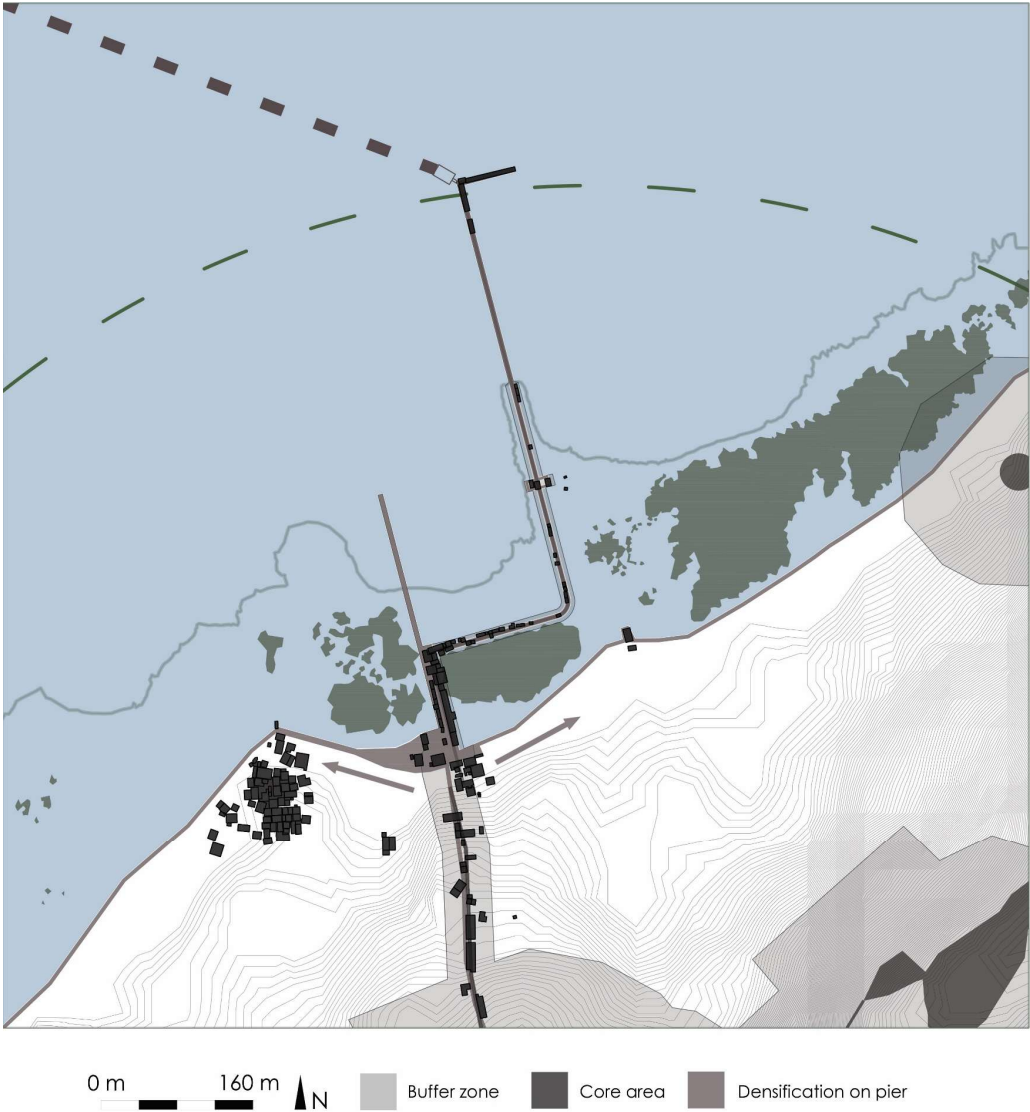
Proposed materials

Focusing on the **primary route** to the caves

Proposal for the Pier

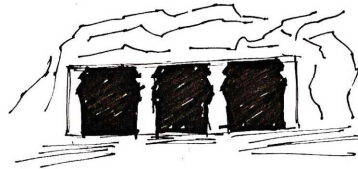


Densification of the pier to **increase the dwell time** of visitors.

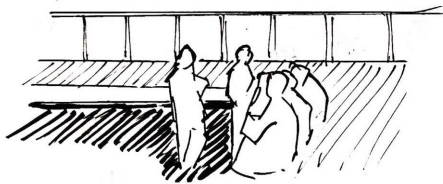


Proposal for the Pier

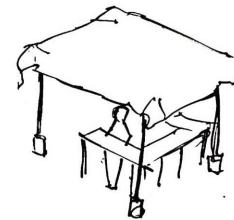
TRANSMIT



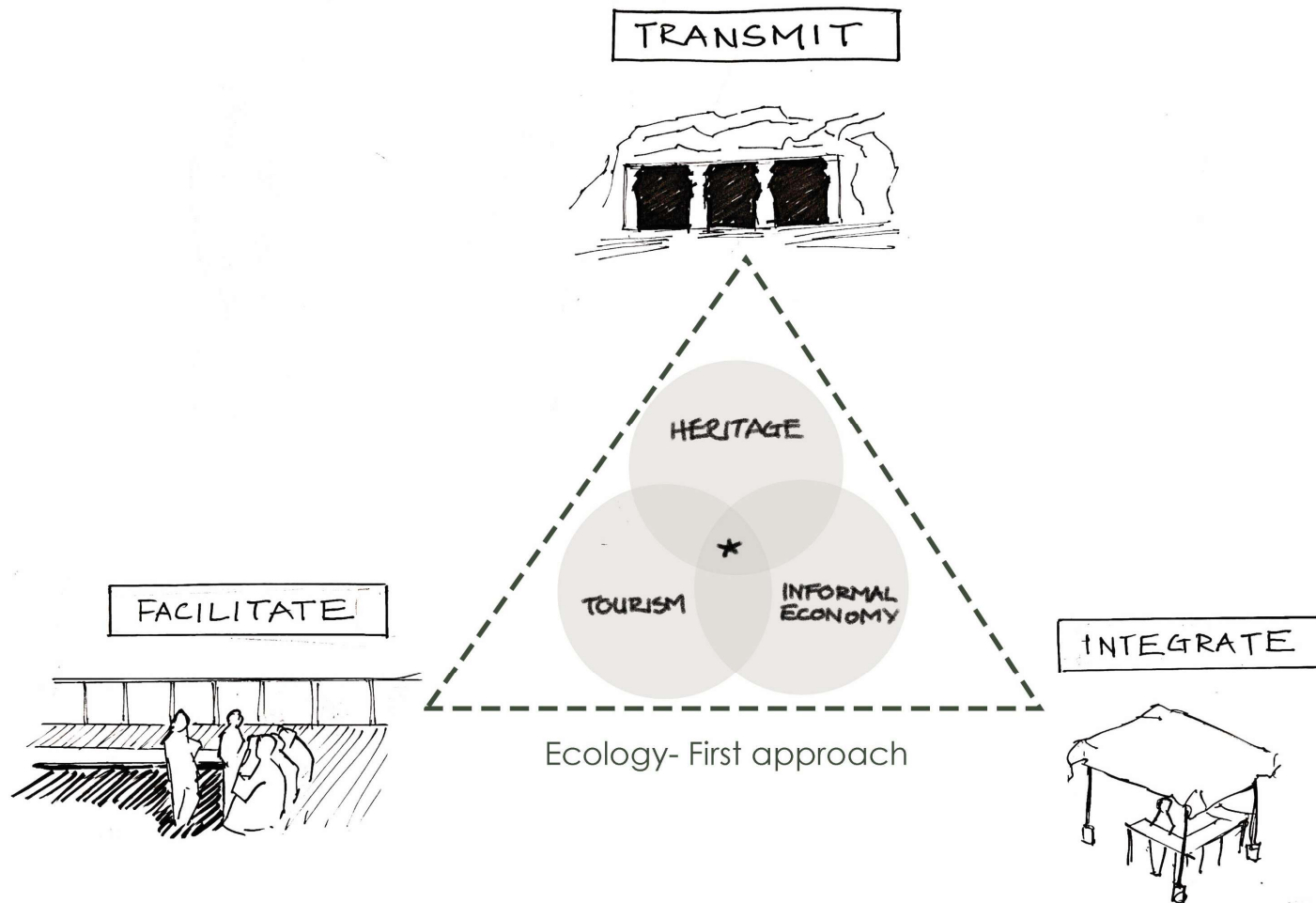
FACILITATE



INTEGRATE



Aims of the proposal

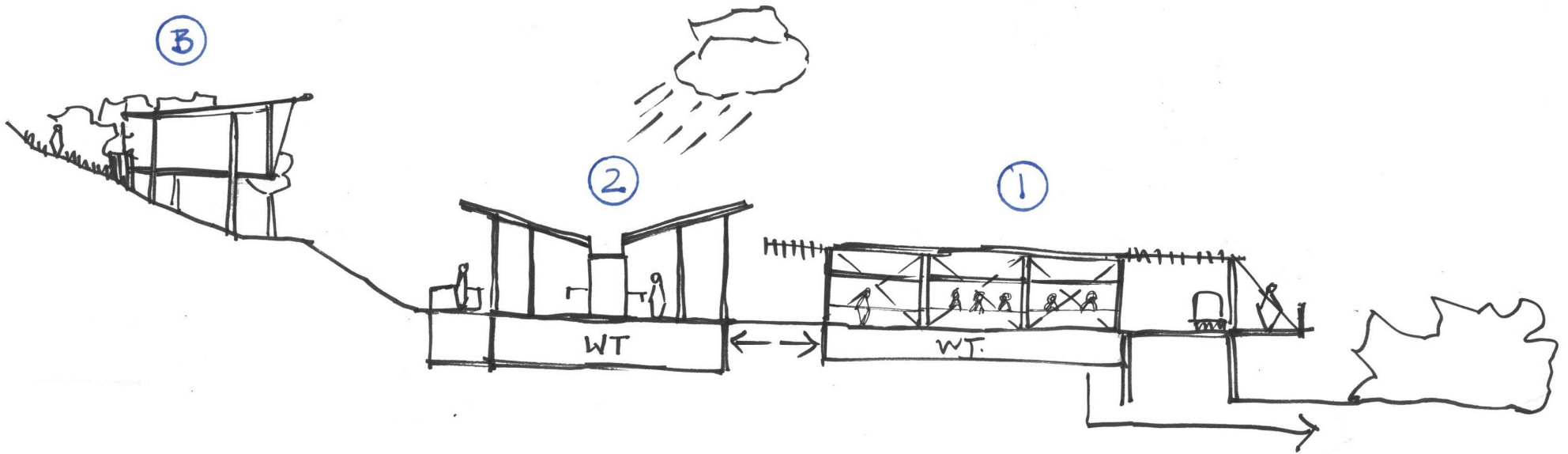


Tying the themes with an ecology-first approach

A series of **small-scale** infrastructural changes

Restore the **ecological balance** of the site

Slow down visitors along their journey



A beginning

Rain

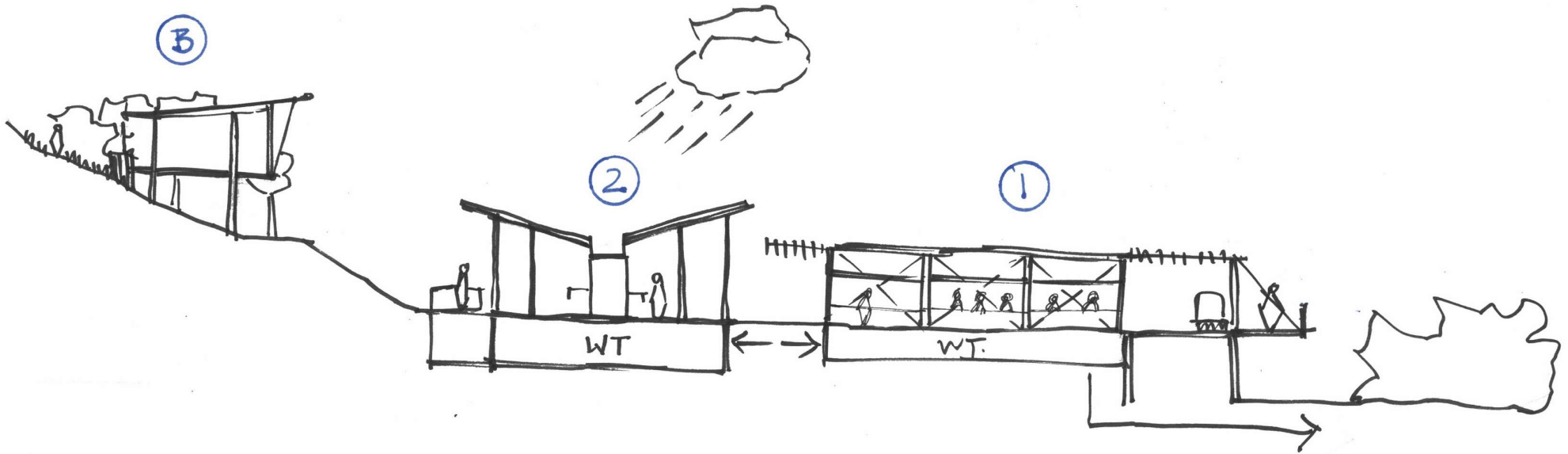
Storage
Drinking
Washing

Waste water

Plant filtration
Bioswales

Food Waste




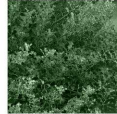










Natural composting
Biogas generation



Waste-Water-Energy loop

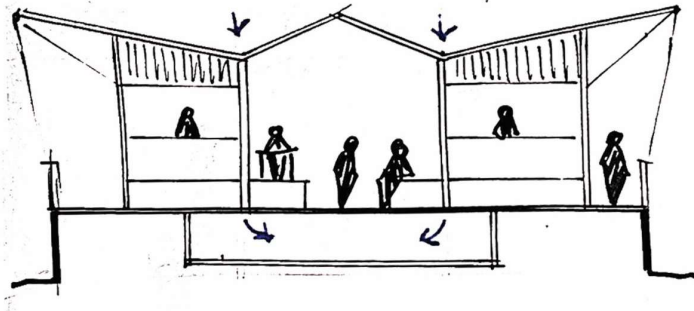
Using a selection of **native and regional species** each with their own function

Bamboo farming is also emphasized for its use in construction

	Native Vegetation									Proposed Vegetation				
	Avicennia marina	Sonneratia apetala	Sonneratia caseolaris	Acanthus ilicifolius	Azadirachta indica	Bambusa (balcooa and bambos)	Tamarindus indica	Pongamia pinnata	Aegle marmelos	Canna indica	Phragmites australis	Chrysopogon zizanioides	Ricinus communis	Colocasia esculenta
														
Common name and use	Grey Mangrove- Absorbs heavy metals (lead, mercury, arsenic), reduces water salinity	Mangrove Apple- Filters organic pollutants, excess nutrients, prevents coastal erosion	Mangrove Tree- Improves water quality and stabilizes soil	Holly Mangrove- Removes pollutants from water in wetlands	Neem- Removes toxins from soil, acts as a natural pesticide	Bamboo- Absorbs heavy metals (cadmium, lead), nitrates, and stabilizes soil	Tamarind- Improves soil fertility, removes fluoride from soil	Indian Beech- Absorbs hydrocarbons and heavy metals from contaminated soils	Bael- Improves soil microbial activity, removes pollutants from water	Canna Lilly- Absorbs heavy metals, nitrogen, phosphates from wastewater	Reed Grass- Filters wastewater, stabilizes wetland ecosystems	Vetiver Grass- Absorbs toxins, nitrates, phosphates from greywater	Castor Plant- Absorbs cadmium, lead, arsenic from soil	Taro- Absorbs heavy metals from waterlogged areas
Size required per plant	5-10 Sq. M	5-10 Sq. M	5-10 Sq. M	2-5 Sq. M	3-6 Sq. M	5-10 Sq. M	4-8 Sq. M	3-7 Sq. M	3-6 Sq. M	2-4 Sq. M	4-8 Sq. M	2-5 Sq. M	3-5 Sq. M	2-4 Sq. M
Time taken to grow	4-5 Years	3-4 Years	3-4 Years	2-3 Years	5-7 Years	3-5 Years	5-7 Years	4-6 Years	5-7 Years	1-2 Years	2-3 Years	1-2 Years	1-2 Years	1-2 Years
Key role	Water Purification			Soil Remediation			Require monitoring and management			Water Purification		Require monitoring and management		Soil Remediation

Strategic phytoremediation

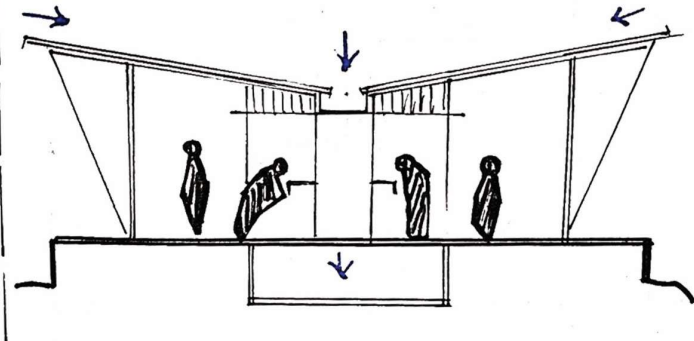
The Catalyzer



Reorganizing and densifying the market

Integrated seating and viewing points

The Collector



Public toilets and water taps

Public programmed space

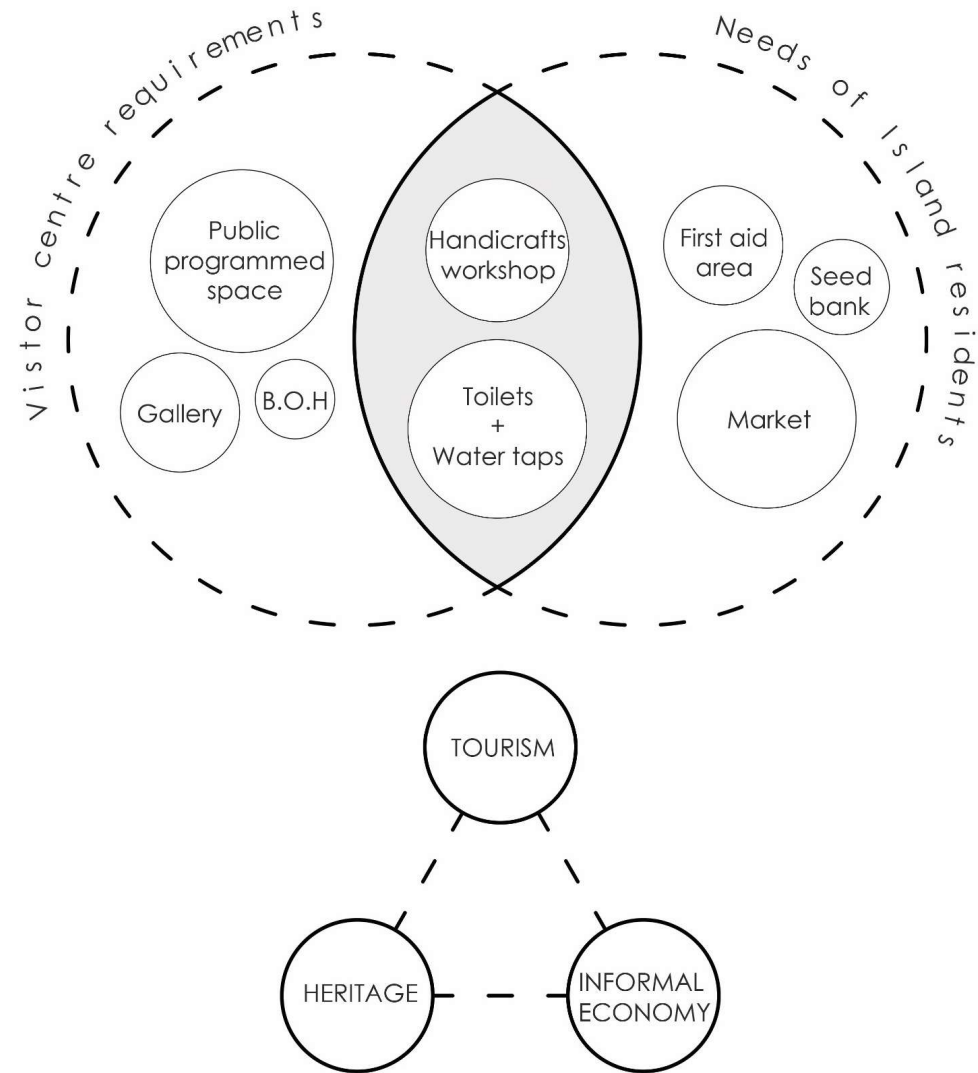
Workshop areas

Amphitheatre

Office

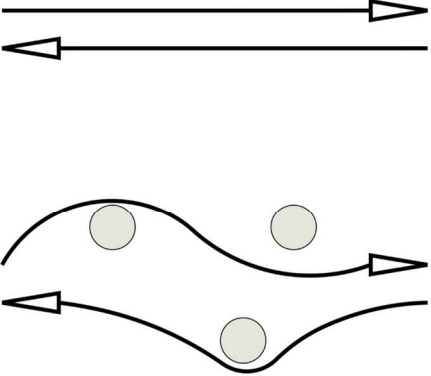
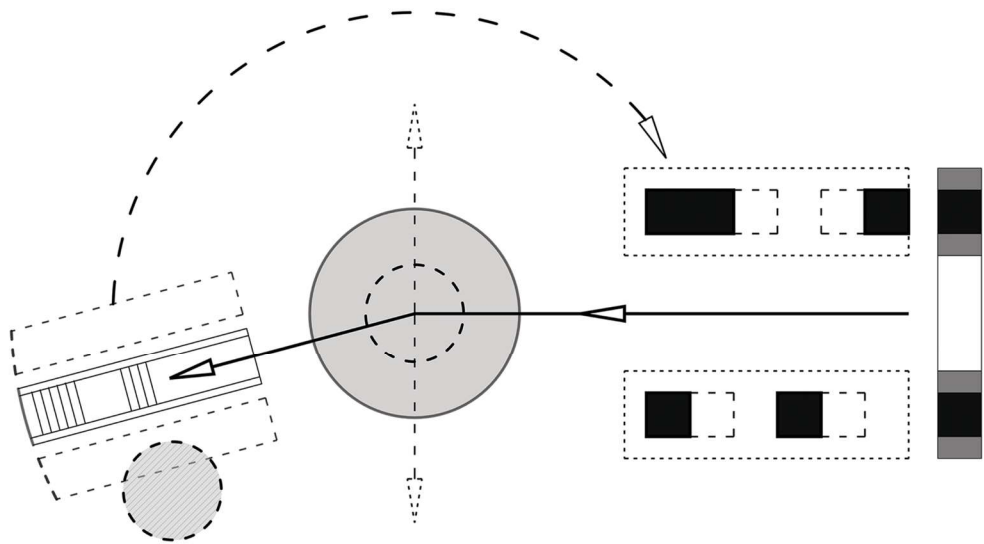
Supporting infrastructure

Integrating formal and informal **Infrastructure**
Address the needs of residents as well as visitors.



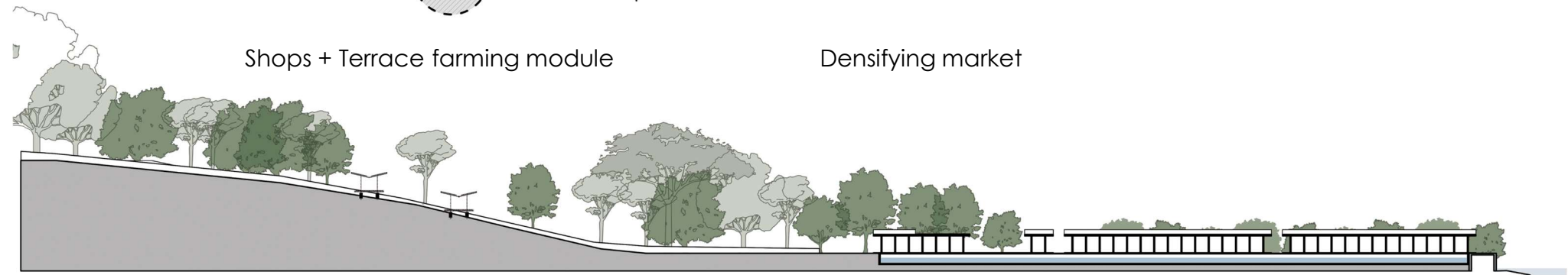
Programmatic overlay

Adding programs along the existing route



Shops + Terrace farming module

Densifying market

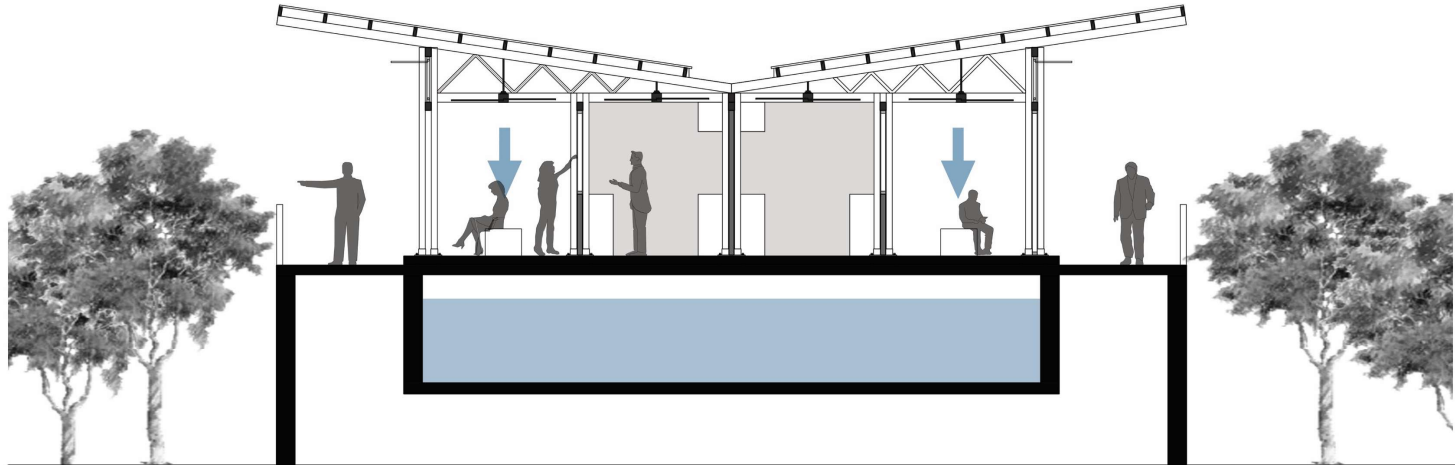
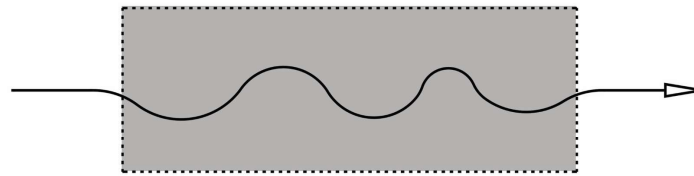


Programmatic overlay



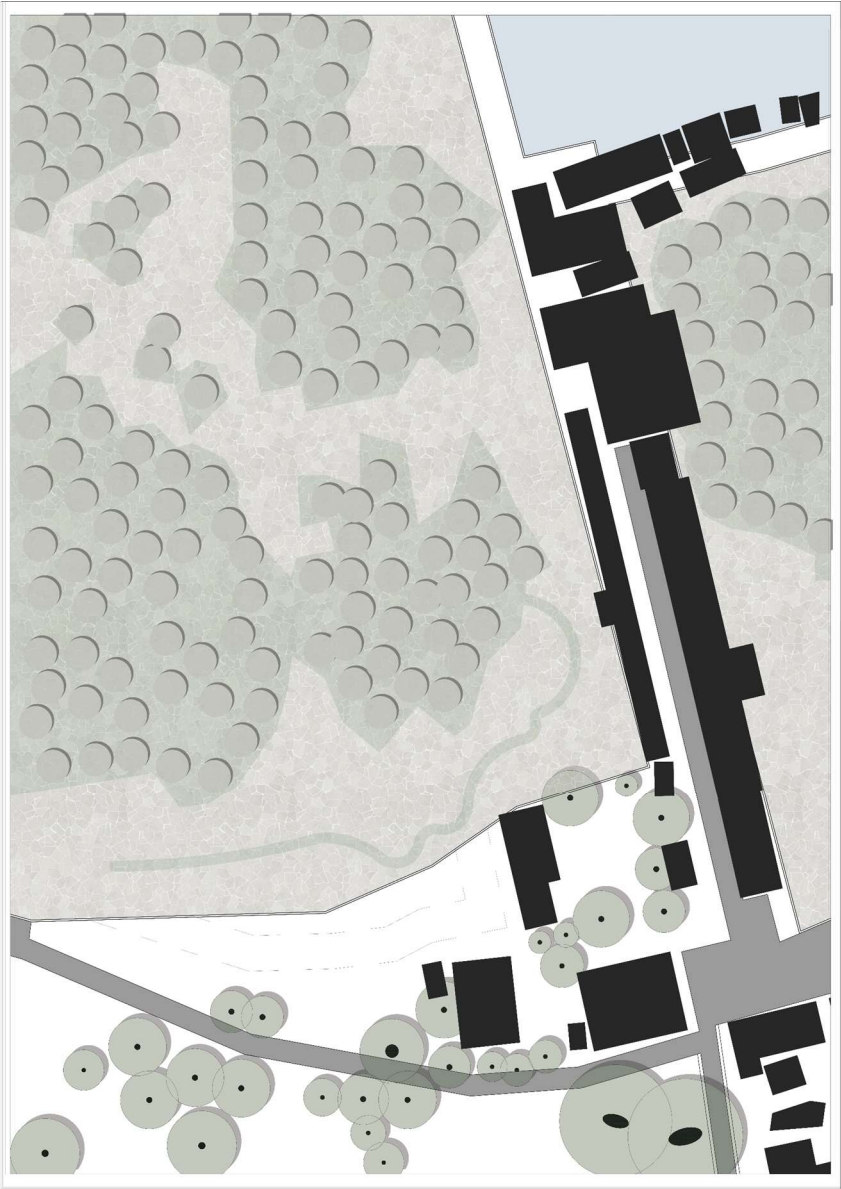
Concrete pier excavated to **store rainwater**

Solar-powered **slow-moving fans** and shade from an **exaggerated roof**

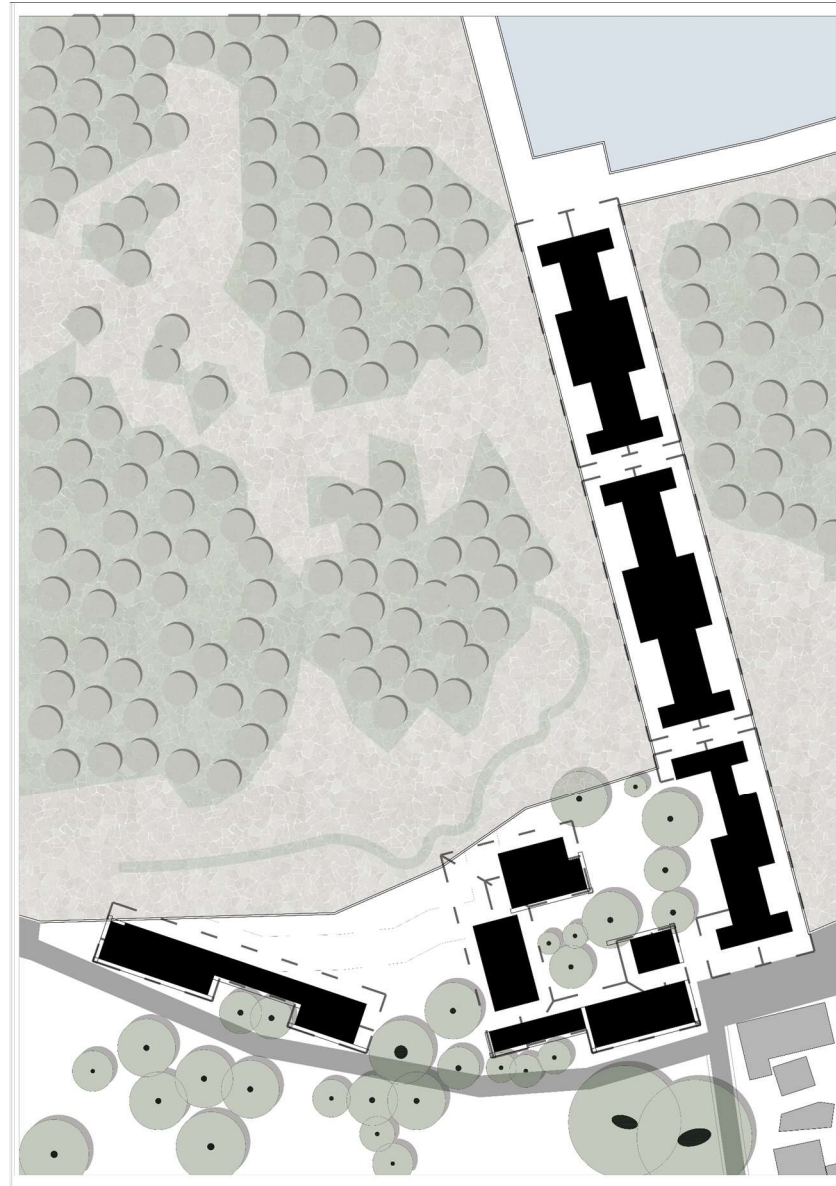


Slowing down visitors

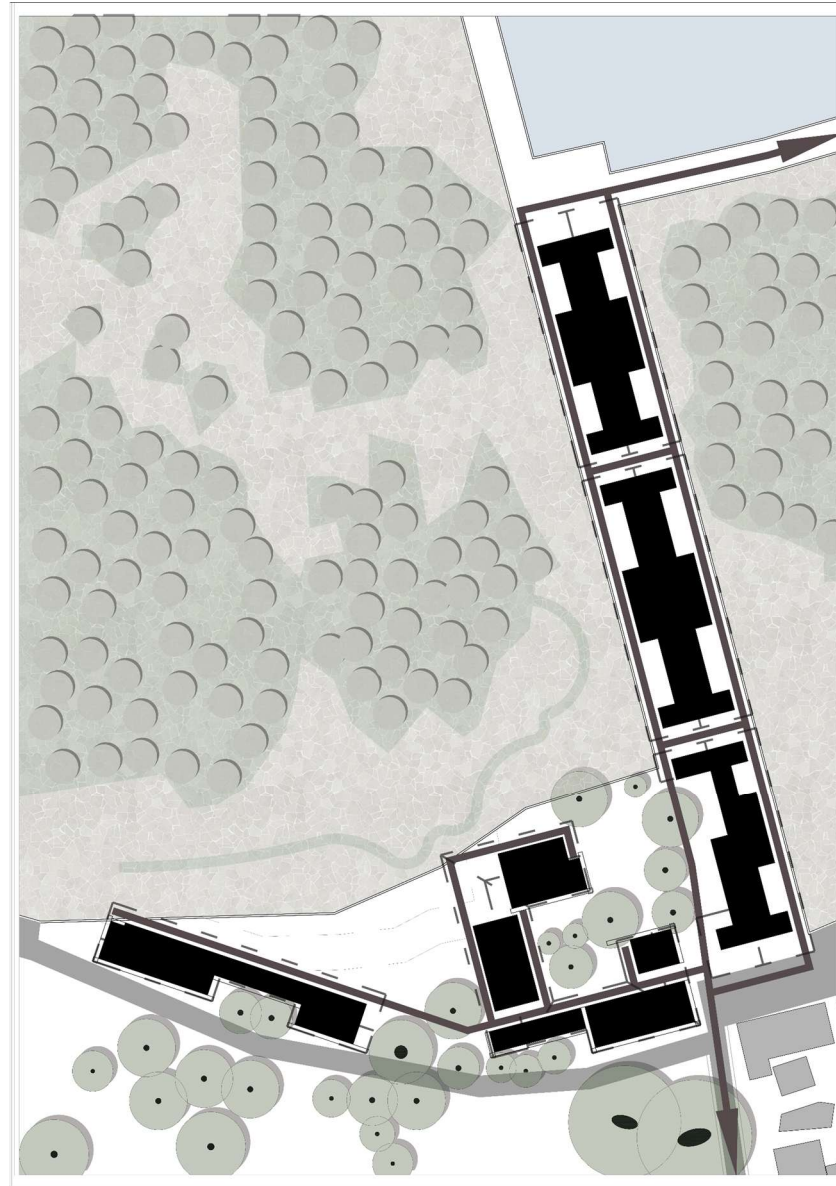
Existing



Proposed



Proposed



Pause points with panoramic
views

**Integrated seating +
Amphitheatre** to increase the
dwell time

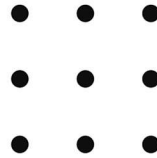
Proposed







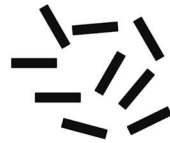
Heritage steps



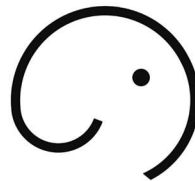
Cave system



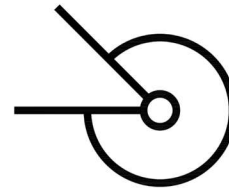
Water tank



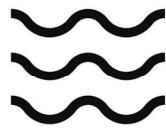
Stone quarry



Elephant statue



Cannon hill



Pier



Stupa



Mangal tank

Narrative layer



Wayfinding and Signage



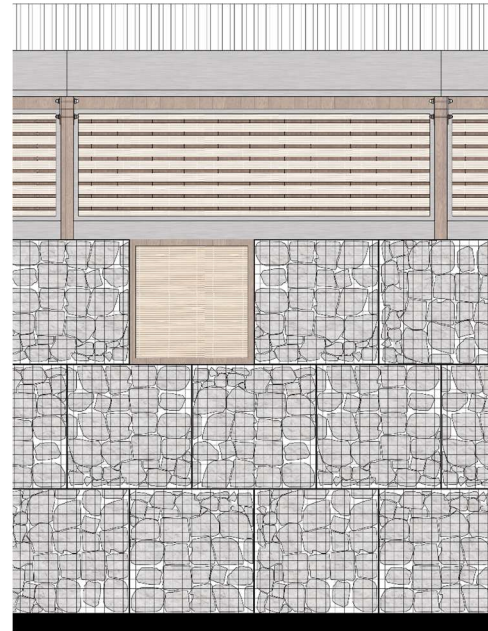


Resource sensitive –

Employs basalt rocks available on site

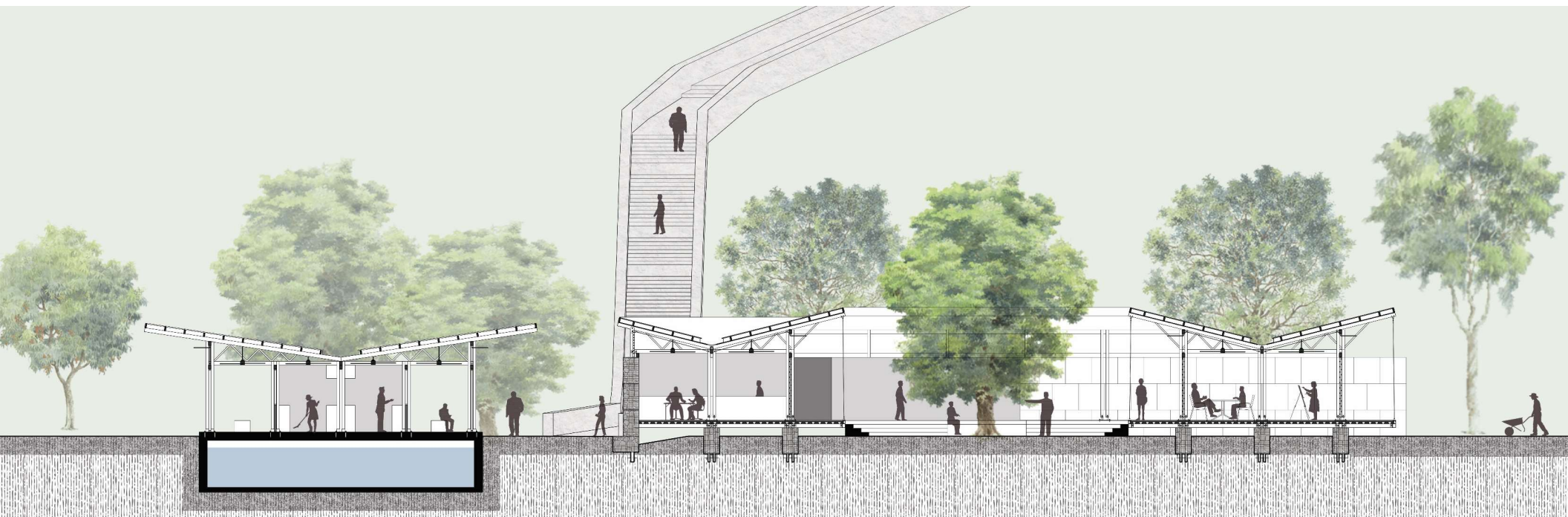
Treated bamboo deployed as **shading** elements

Raised roof to promote cross ventilation



Gabion wall

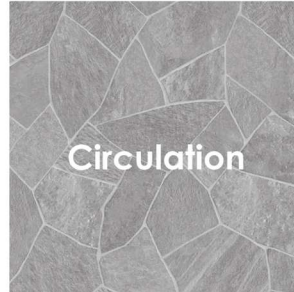




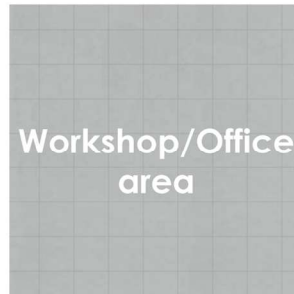
Section through proposal







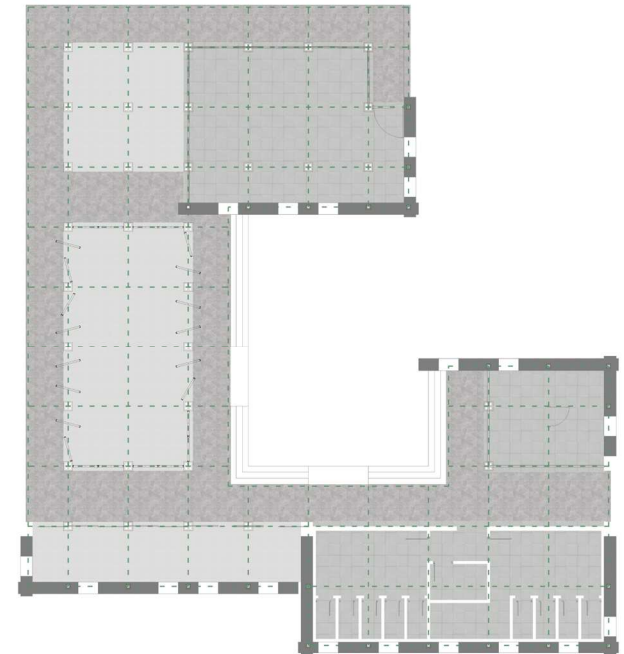
Random basalt
polished floor



Grey-green Kota
stone tile



Grey-Kota stone
tile- Falmed finish



Using **locally available** Kota
stone in different finishes

Basalt stone **available on the
site** is used for circulation
spaces

Delineating spaces

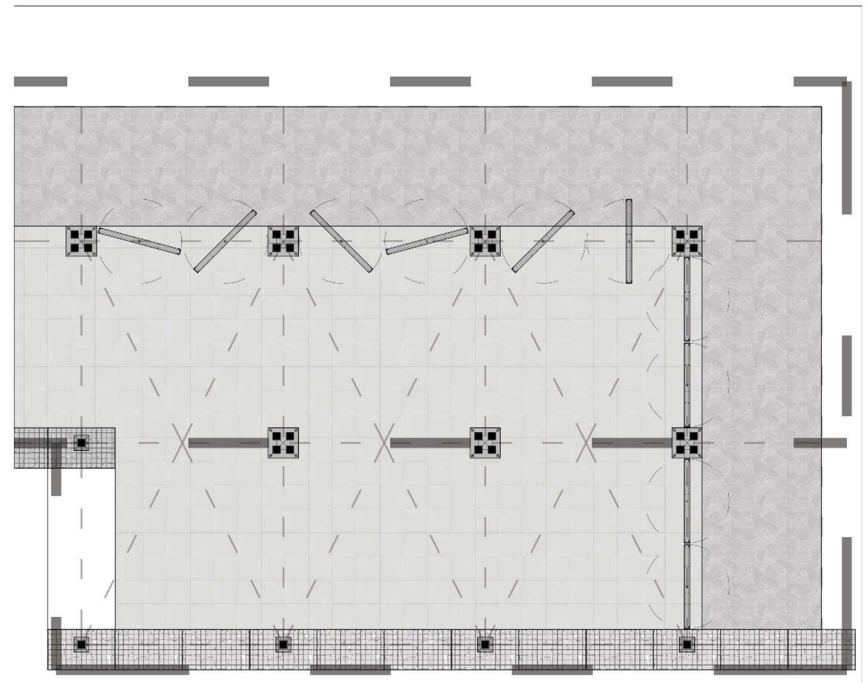
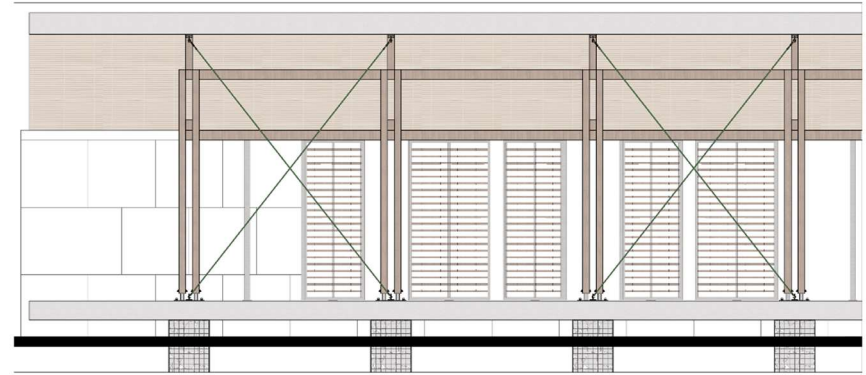




Rotating panels to modulate light

Panels use **treated bamboo** and **repurposed** steel sections

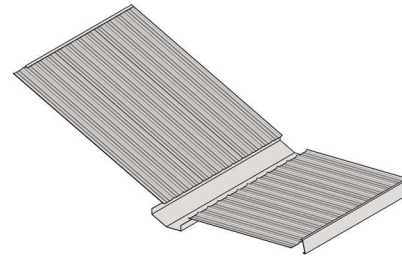
Tensile steel bracing elements



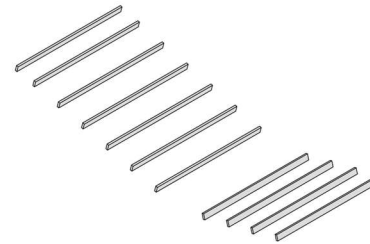
West and East facades



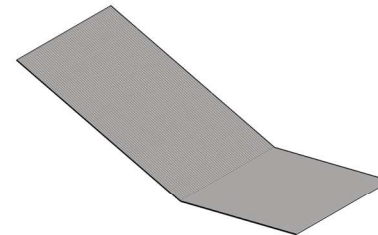
Corrugated metal
roof and bent steel
gutter



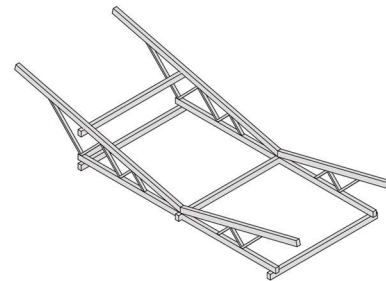
Engineered
bamboo purlins



Treated bamboo
decking



Engineered
bamboo rafter and
beam frame

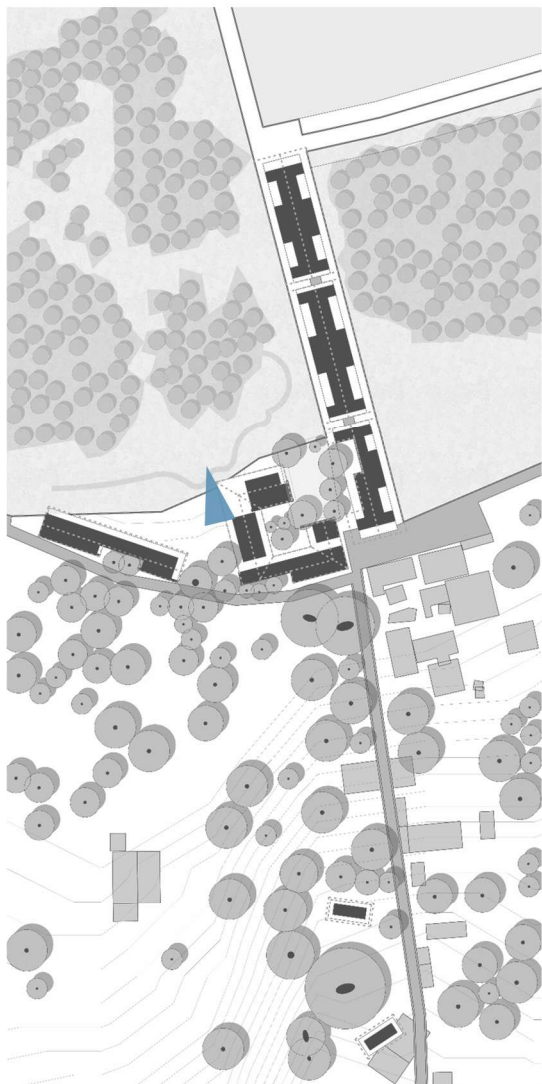


Reusing metal roof sheets

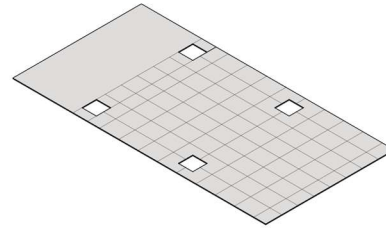
Engineered bamboo **frame**

Treated bamboo under
decking for **insulation**

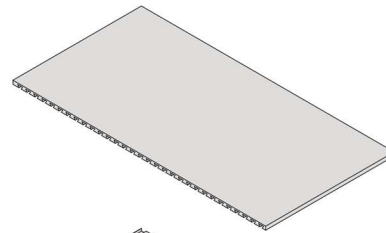
Roof system



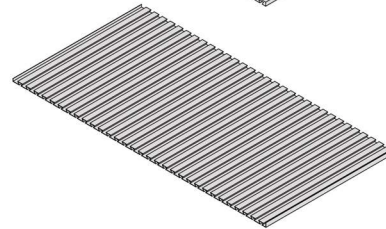
Kota and polished
basalt flooring



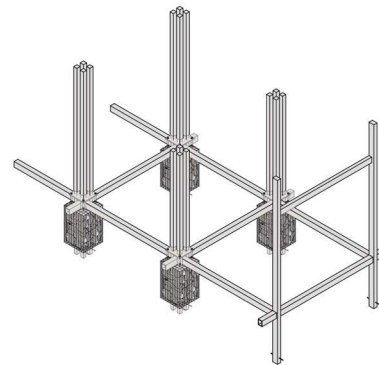
In-situ concrete



Steel decking
sheet



Engineered
bamboo and steel
frame



A hybrid structural system
consisting of steel and
engineered bamboo

Gabion walls **stabilize** columns

Raised composite plinth

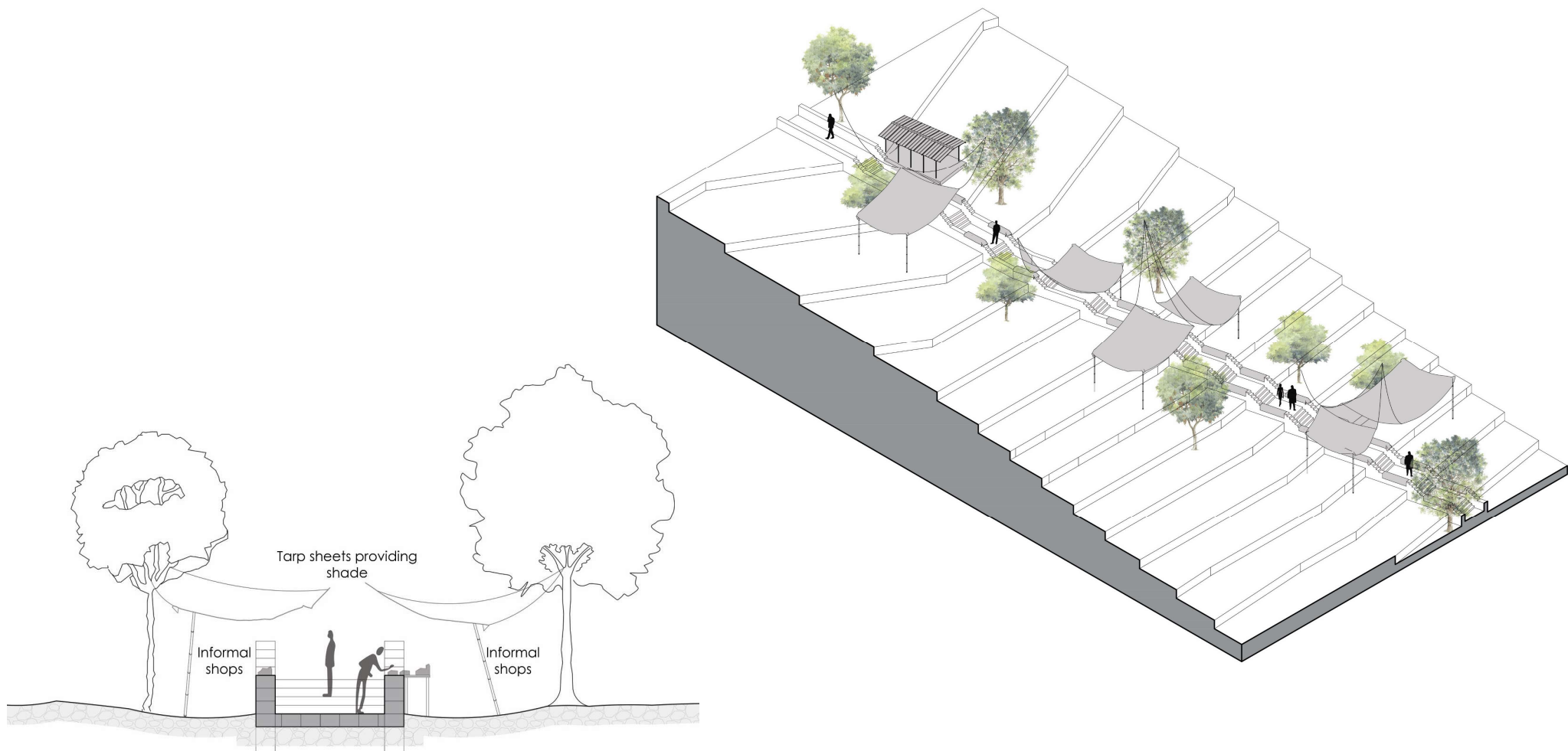
Foundation



Heritage steps



Existing



Informal market thriving at the steps

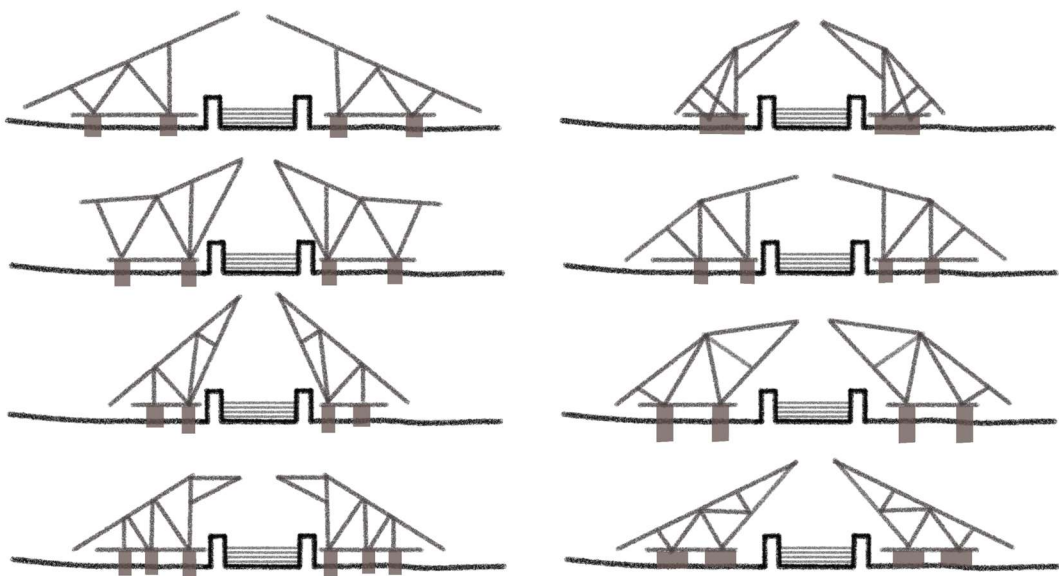
Providing locals with a **kit** and **methods** of construction



Kit of parts

Variations based on choice

Exaggerated overhang providing shade



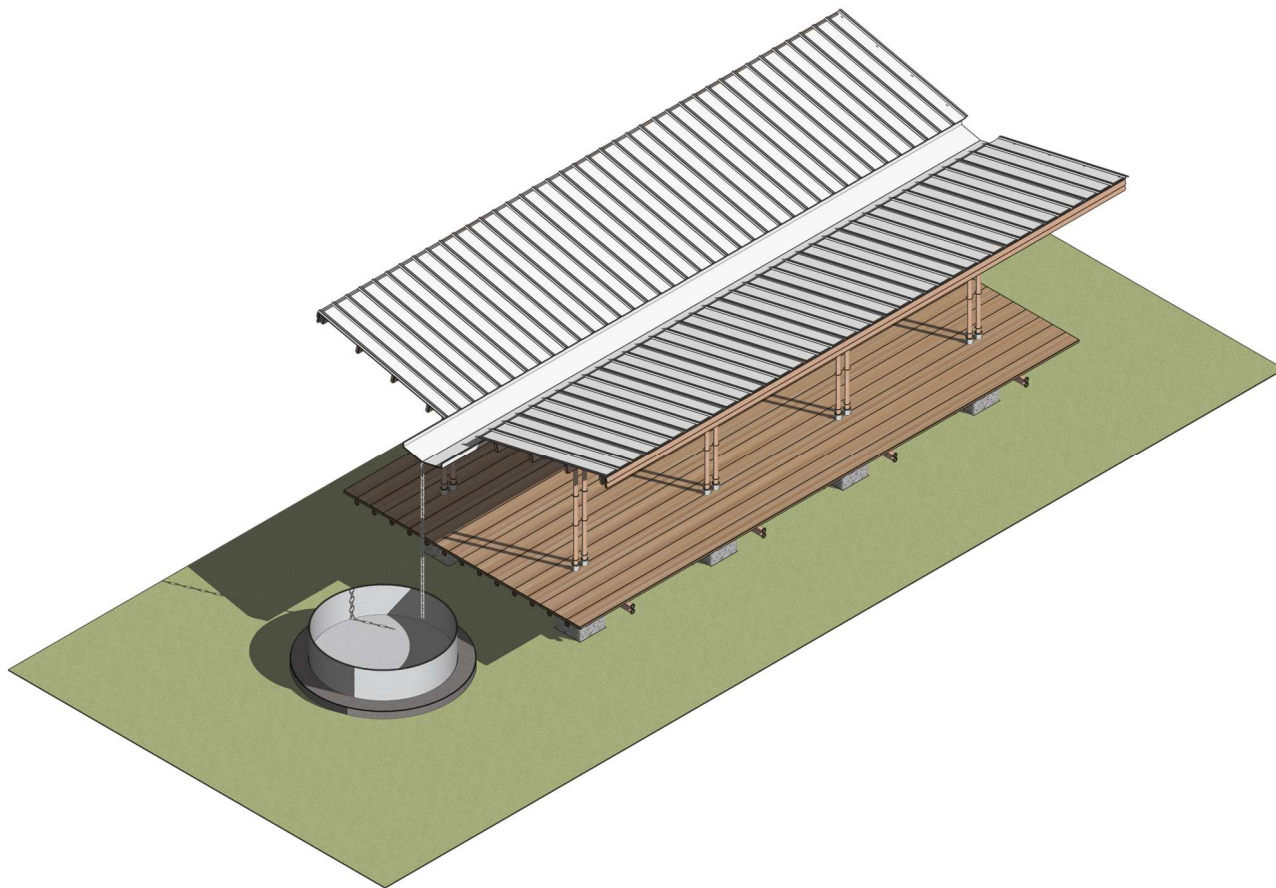
Shopping module





Terrace **farming module**

Off-grid water collection



Future phase- Cultivator module



Gabion walls to negotiate the terrain

Treated bamboo as the primary material

Deployed for **2-3 monsoons**

Parts can be **disassembled** and **repurposed**

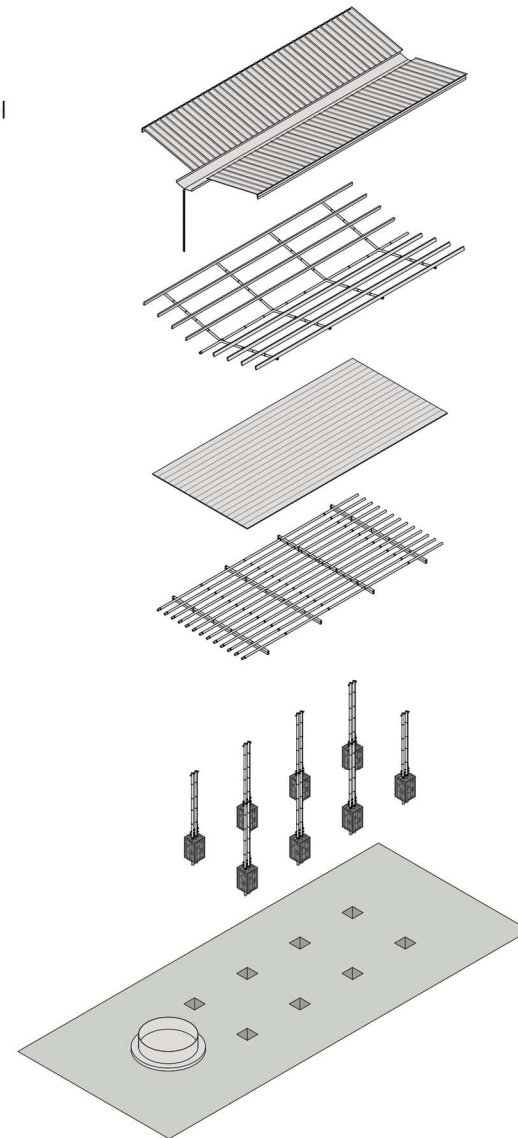
Corrugated metal roof and bent steel gutter

Treated bamboo purlins

Treated bamboo decking

Treated bamboo beam frame

Treated bamboo inserted into gabion wall for stability



Light structure





Thank you