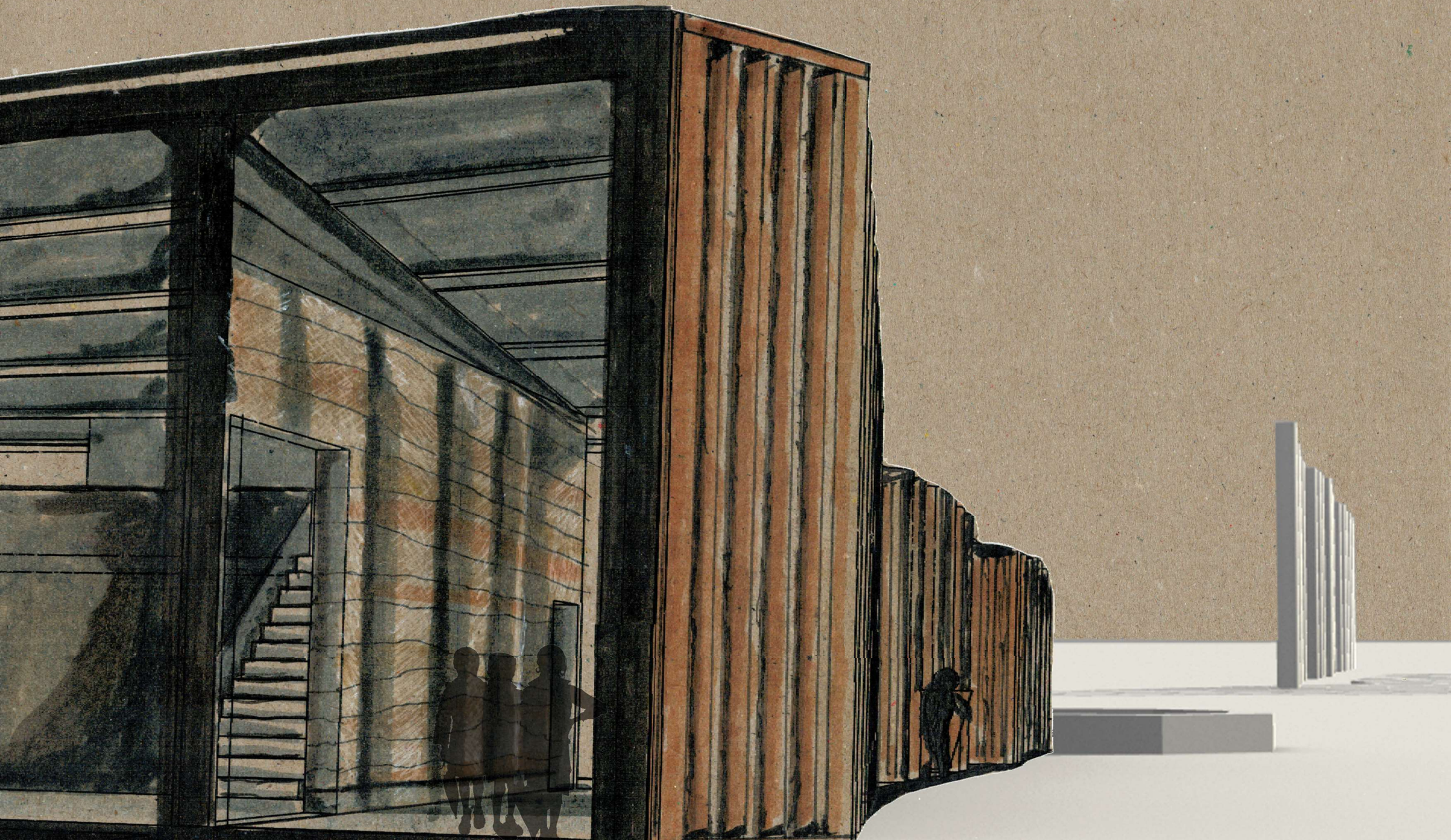
MAŘÍŽ CENTER FOR THE PAST AND FUTURE

STEPHEN MICHAEL APOLLONOV
WINTER SEMESTER
DIPLOMA PROJECT



DIPLOMA PROJECT

Winter Semster 2017/2018
ČVUT Fakulat Architecktury
Participant: Stephen Michael Apollonov
Supervisor: Henry W.A Hanson IV M.A., AIA, ASLA

“Cultural Landscape and Heritage Center for Mařiž”

OBJECTIVE

Project is to be set in the town of Mařiž in the Slavonice Area on the Czech Republic/ Austrian Border. It is to be a Cultural Landscape Centre with strong sustainable and resilient credentials. The building(s) is(are) to create spaces for cultural reflection and activation for the local area. The project is to complement and enhance the existing local trades, tourism and Local + EU Initiatives being conducted in the region and cross borders. The building program is to be designed with the aim of providing a platform for local heritage and cultural programs for the region.

OUTPUTS

•Exhibition Space for both permanent materials relating to the cultural landscape and temporary exhibitions.
•Space for Lectures and Films
•Performance Space for small musical, literature/poetry, and dance events.
•Workshop Space for use by both local schools, community as well as visiting university students. Workshop group size, 20 participants.
•Biological educational and research laboratory sSpace for visiting three researchers
•Research Room - Library/Workspace
•Educational local food preparation area(s).
•Administrative office space for three permanent staff and small meetings.
•Interior toilet facilities for all users of the interior spaces.

The use of the brown paper is due to the fact I wanted the entire Diploma process to be sustainable. The limited use of computers with hand drawing and graphics and the recycled paper that was selected.

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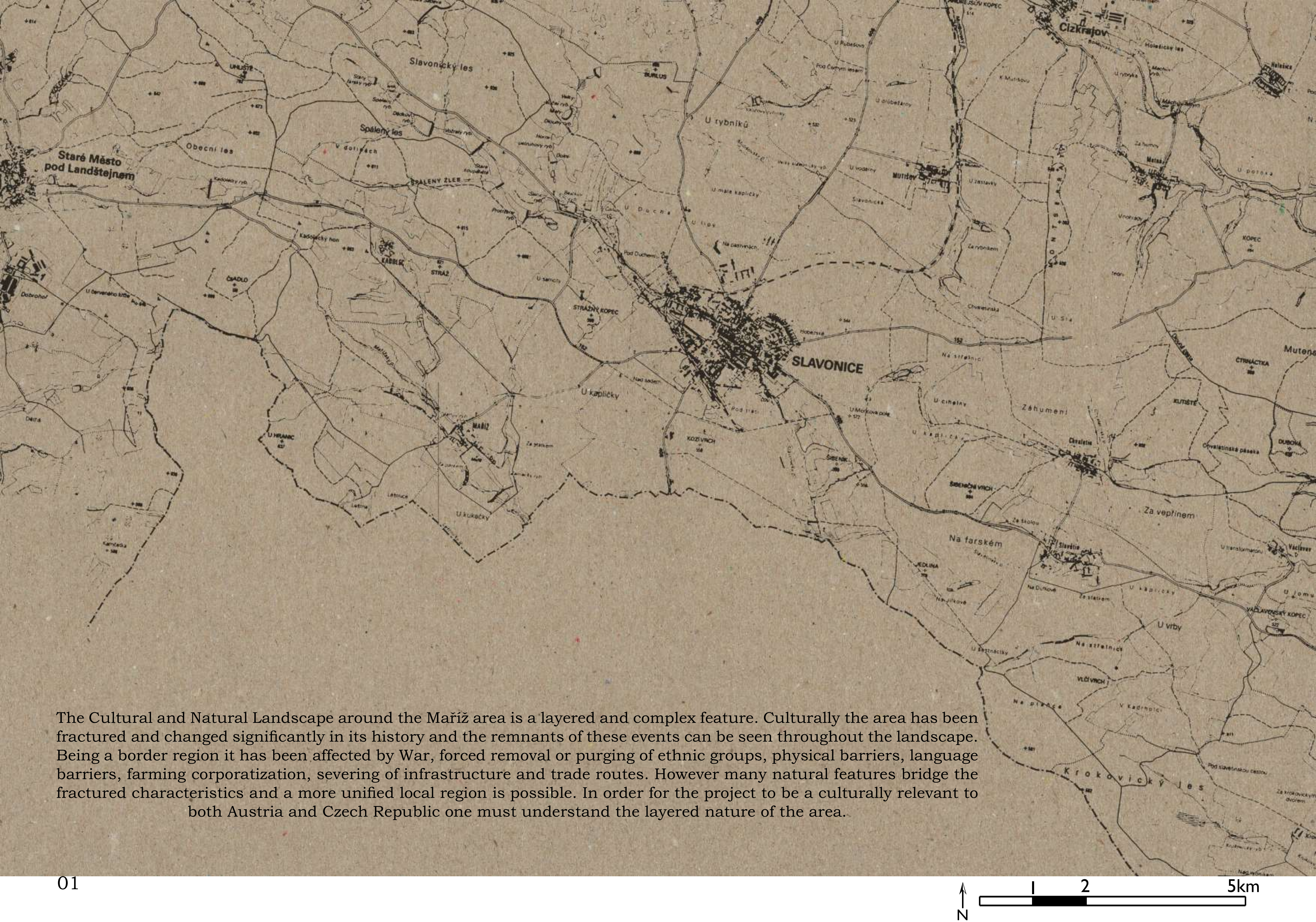
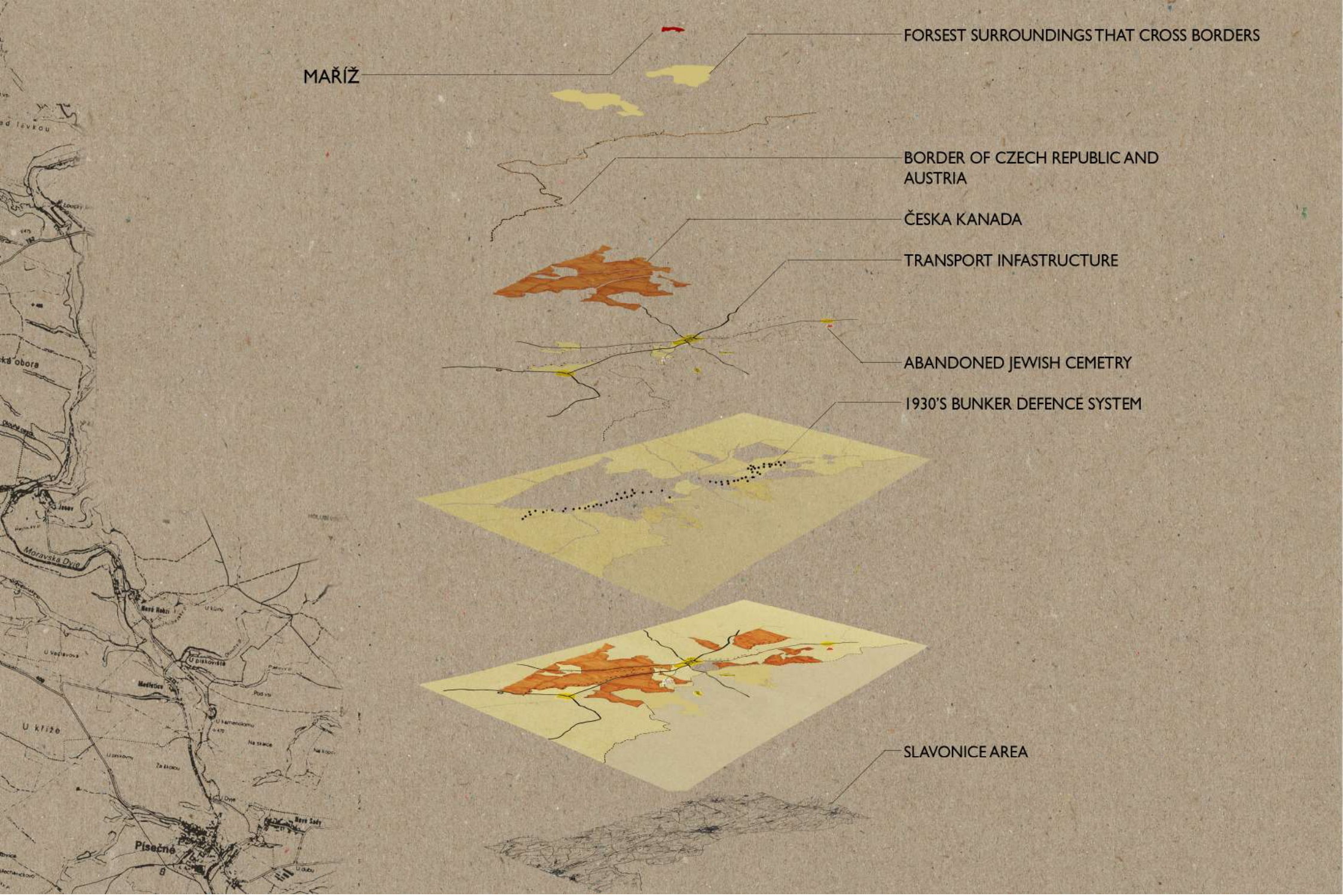
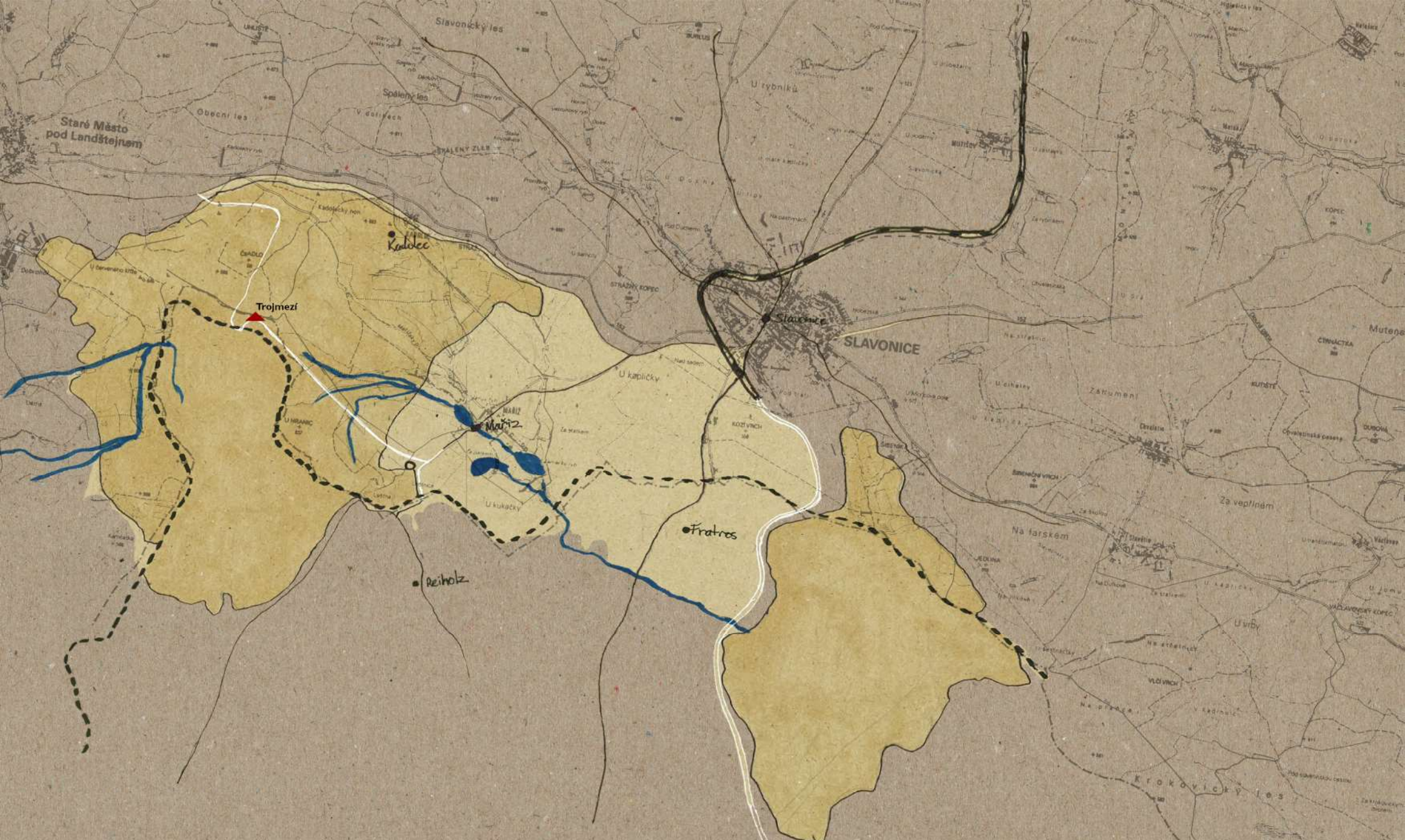


The Cultural and Natural Landscape around the Mařiž area is a layered and complex feature. Culturally the area has been fractured and changed significantly in its history and the remnants of these events can be seen throughout the landscape. Being a border region it has been affected by War, forced removal or purging of ethnic groups, physical barriers, language barriers, farming corporatization, severing of infrastructure and trade routes. However many natural features bridge the fractured characteristics and a more unified local region is possible. In order for the project to be a culturally relevant to both Austria and Czech Republic one must understand the layered nature of the area.

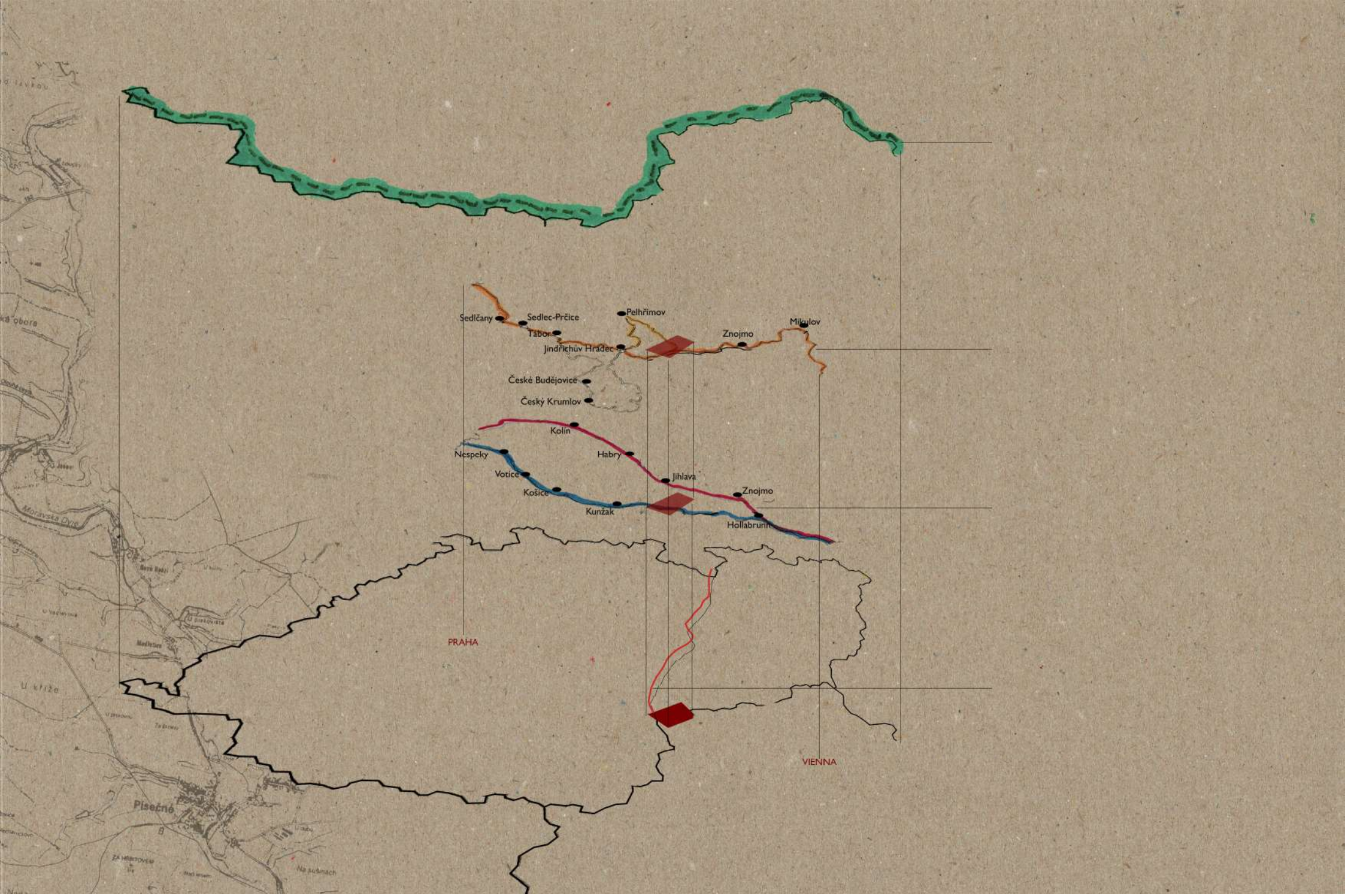

MAŘÍŽ
FORSEST SURROUNDINGS THAT CROSS BORDERS
BORDER OF CZECH REPUBLIC AND AUSTRIA
ČESKA KANADA
TRANSPORT INFASTRUCTURE
ABANDONED JEWISH CEMETRY
1930'S BUNKER DEFENCE SYSTEM
SLAVONICE AREA
Písečné
Moravská Dyje
U kříže

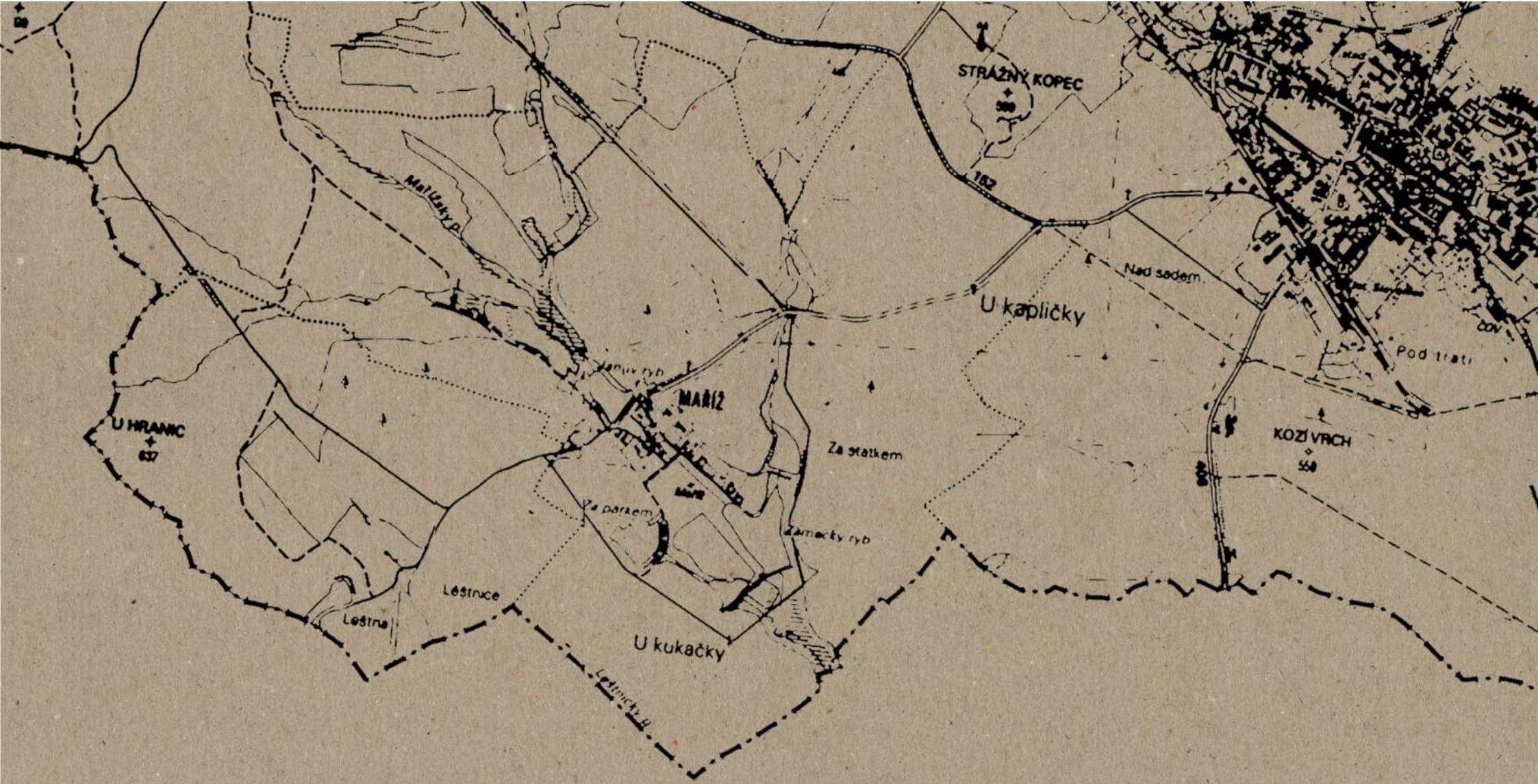


The Iron Curtain which was erected in 1948 heavily splintered the Czech Republic and Austrian border. Today that barrier still has existing ramifications for wildlife and the landscape at large. Many of the border towns were forcibly abandoned including Leštnice and Mařiž. Cross border connection exists in natural forms of forests and water ways with a few old patrol roads existing, but the connection between Mařiž and Austria has been largely cut. The Rail connection between Slavonice and Austria has been severed and only road access exists today. The stones at Trojmezí signify the old Tri-point Border between Bohemia, Moravia and Austria. Significantly it also marks the watershed Between the North Sea and Black seas. West of that point the waters empty into the Elbe and East empties into the Danube.

N

1 2 5km

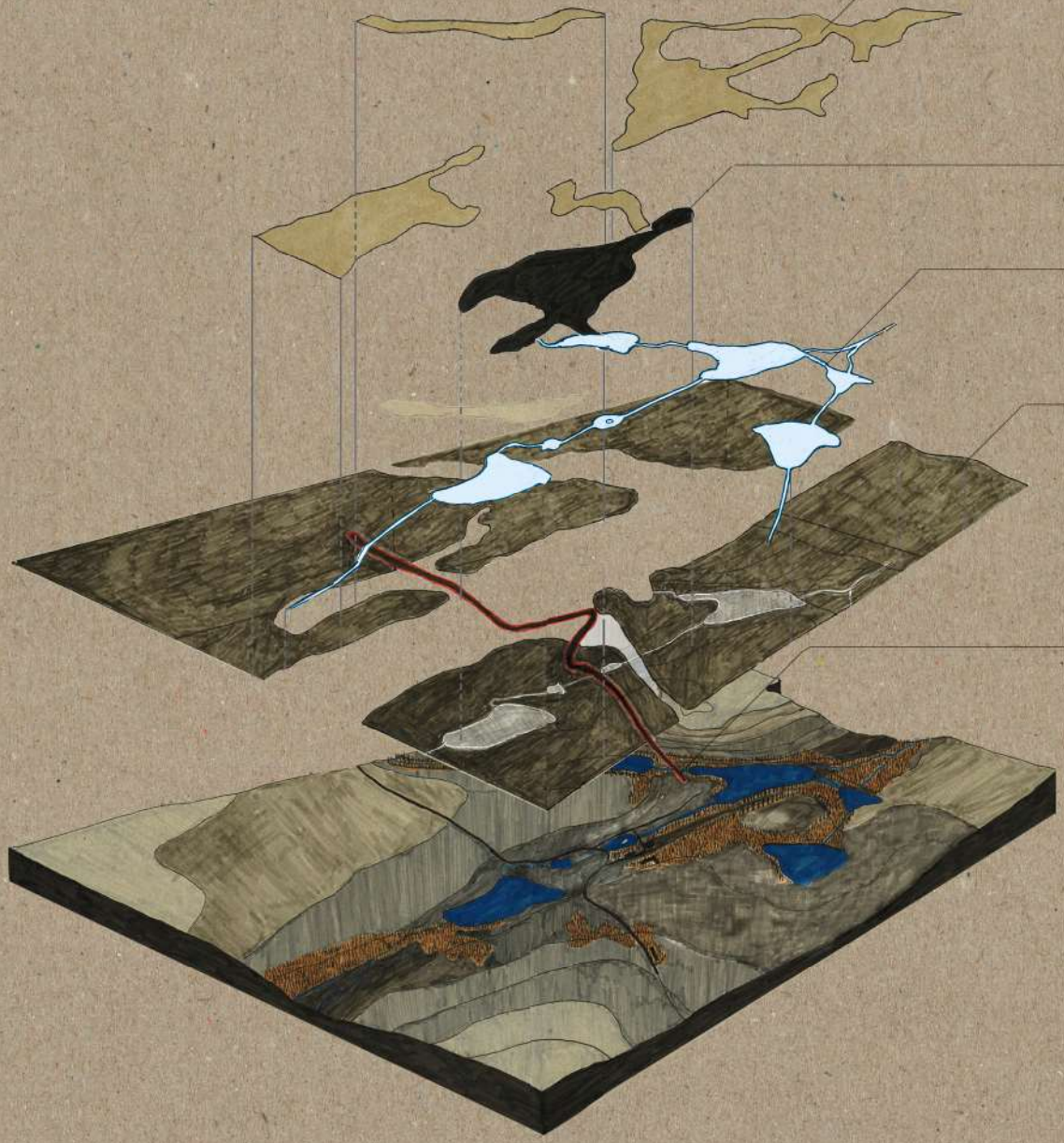

Sedlčany
Sedlec-Prčice
Tábor
Jindřichův Hradec
Pelhřimov
Znojmo
Mikulov
České Budějovice
Český Krumlov
Kolín
Nespeky
Votice
Košice
Kunžak
Habry
Jihlava
Znojmo
Hollabrunn
PRAHA
VIENNA



Mařížˇ is situated right on the border between the Czech Republic and Austria. The village lies within a shallow valley surround by large areas of single crop farming plots. It is surrounded by copses of trees and with a small creek flowing through the center of town connecting a series of reservoirs supplied by the nearby National Park. A very quiet and peaceful town has a quiet forceful history. The closeness to the Austrian border and its unique history makes it an ideal site for a project that seeks to explore the rich layered heritage and culture of the Area.

N

1 2 5km



ENCLOSING FORESTED AREA

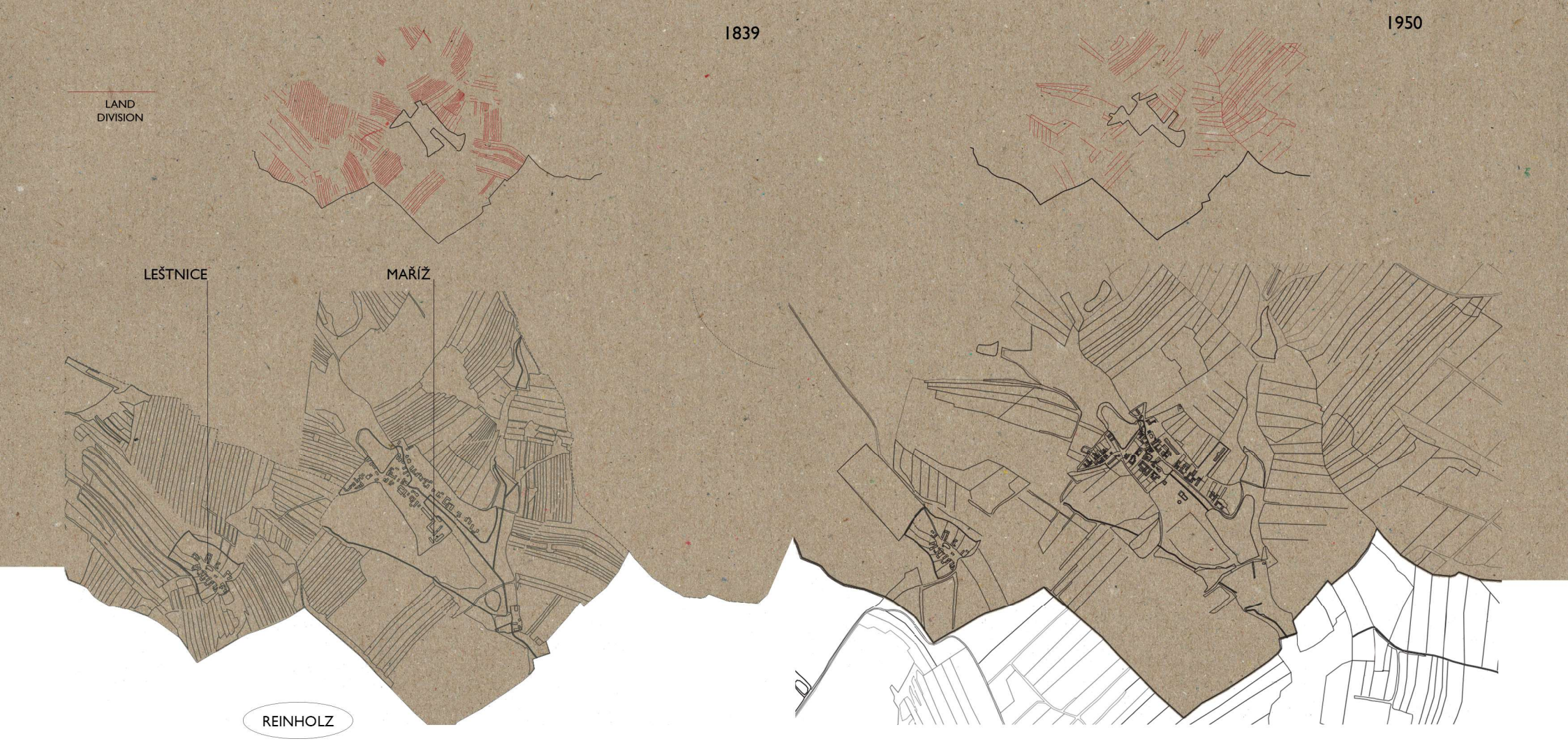
DEVELOPED LAND

WATER CONNECTIONS AND RESERVOIRS

CONSOLIDATED FARMLAND

ONLY ROAD ACCESS

BASE MAP



Through its History Mařiž was mainly of German settlers. The Czech regions held roughly 5 million - 3.5 million inhabitants into pre-war Czechoslovakia. During the Second World War the persecution of the Jewish nationality led to total decline of Jewish structures and a disappearance of their culture within the landscape. In August 1945 post war action led to, the persecution and displacement of the Germans in the region. With the help of the Allied troops the German population was forcibly removed from Czechoslovakian borders, with the allowance of a 50 kg bag per person. This led to a gradual decline in Industrial production and economic stability in the area. From this the period of 1945 – 1960 130 villages disappeared, 3000 settlements and 50,000 structures became uninhabited within the border regions. The shift meant a total loss of cultural and social co-operation between the two nationalities and a result a decline in cross border connections.

In 1945, a tide of the Czech inhabitants migrated from the interior to the borderland. They were mostly farmers, laborers, farm hands or small businesses from the Dacice district and neighboring areas. However these people had no ties to the land and the population steadily declined after this initial wave. Shortly after the end of the Second World War, Mařiž became a part of the border zone.

In 1951, when the border buffer zone was drawn, Mařiž was sentenced to extinction because of its location. However, it was not a quick decline as with the case of Leštnice.

Its decline was in the form of violent displacement and dismantling the village and its building material.

Slowly the difficulty of life on the border, lack of information about the situation, the impossibility of selling land, severing of the transport connections, removal of agricultural land in favor of the JZD / later state estates of Nová Bystřice, all led the inhabitants to gradually leave their homes and move inland. The last straw for the remaining villagers was the construction of the Iron Curtain in 1972. It was a five meter wide, derelict and highly guarded strip separating the western world from the East. This created a ring around the village, a kind of guarded island. There was only one entrance and exit to the village - a large iron gate where the state security officer resided. This led to an almost total abandonment of Mařiž. When the Iron Curtain fell the revitalisation of was a slow process. However the traditional segmented agricultural land was still conglomerated so the new lease on life came through a thriving arts community from Prague. Today's situation is more of an arts community and tourist trade associated with it plus a handful of weekend retreats.

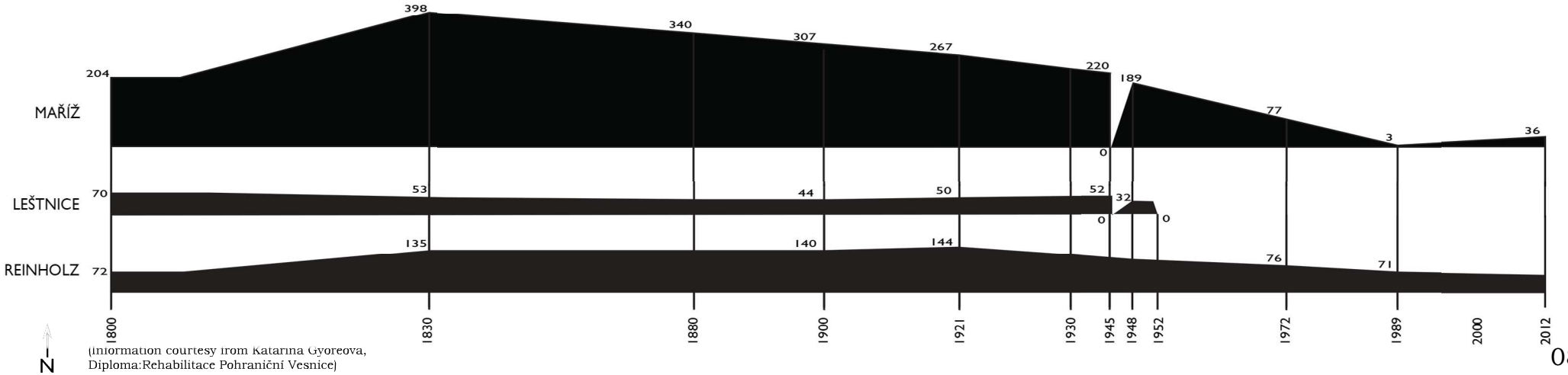
(Information courtesy from Katarina Gyoreova, Diploma:Rehabilitace Pohraniční Vesnice)

N

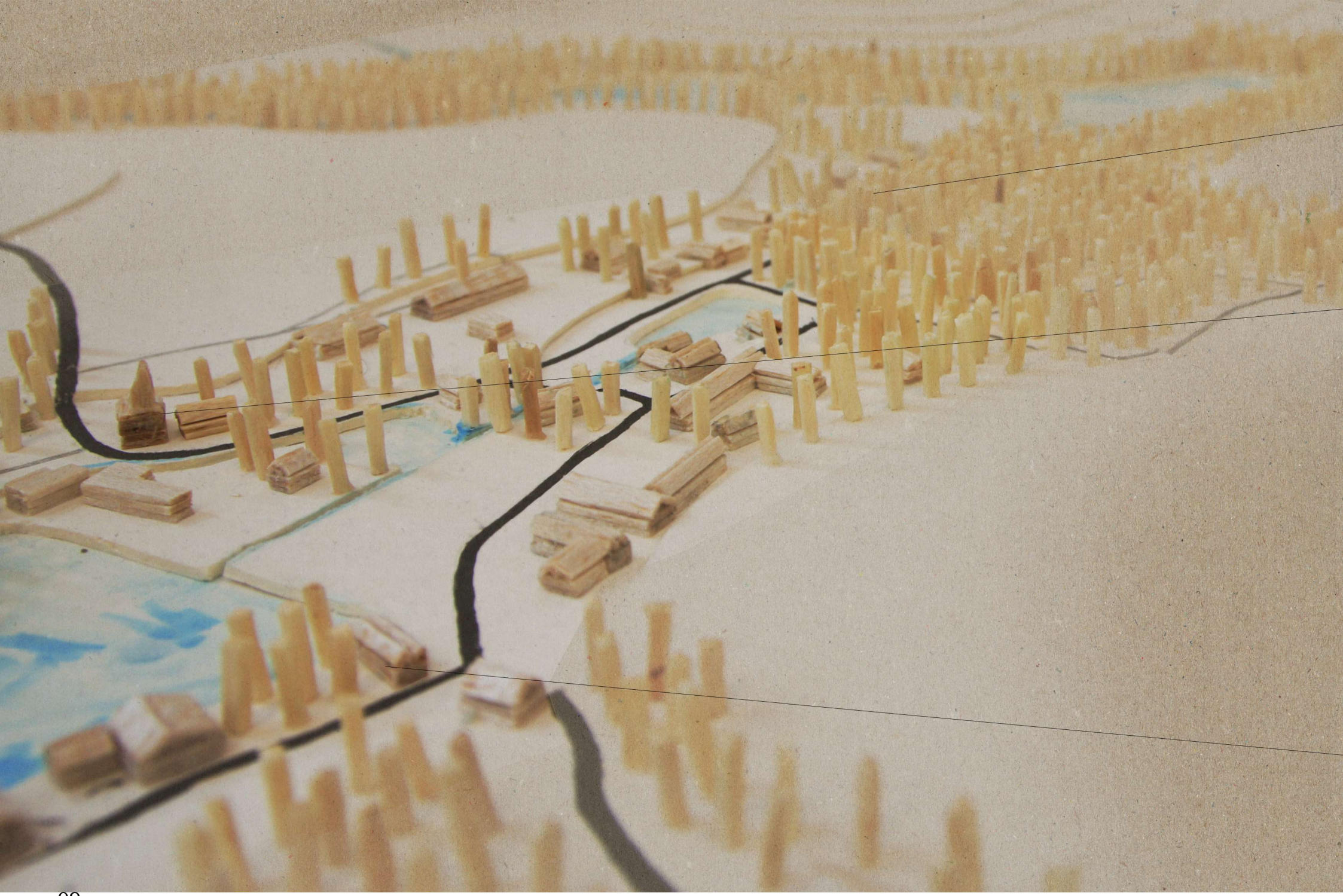
1989

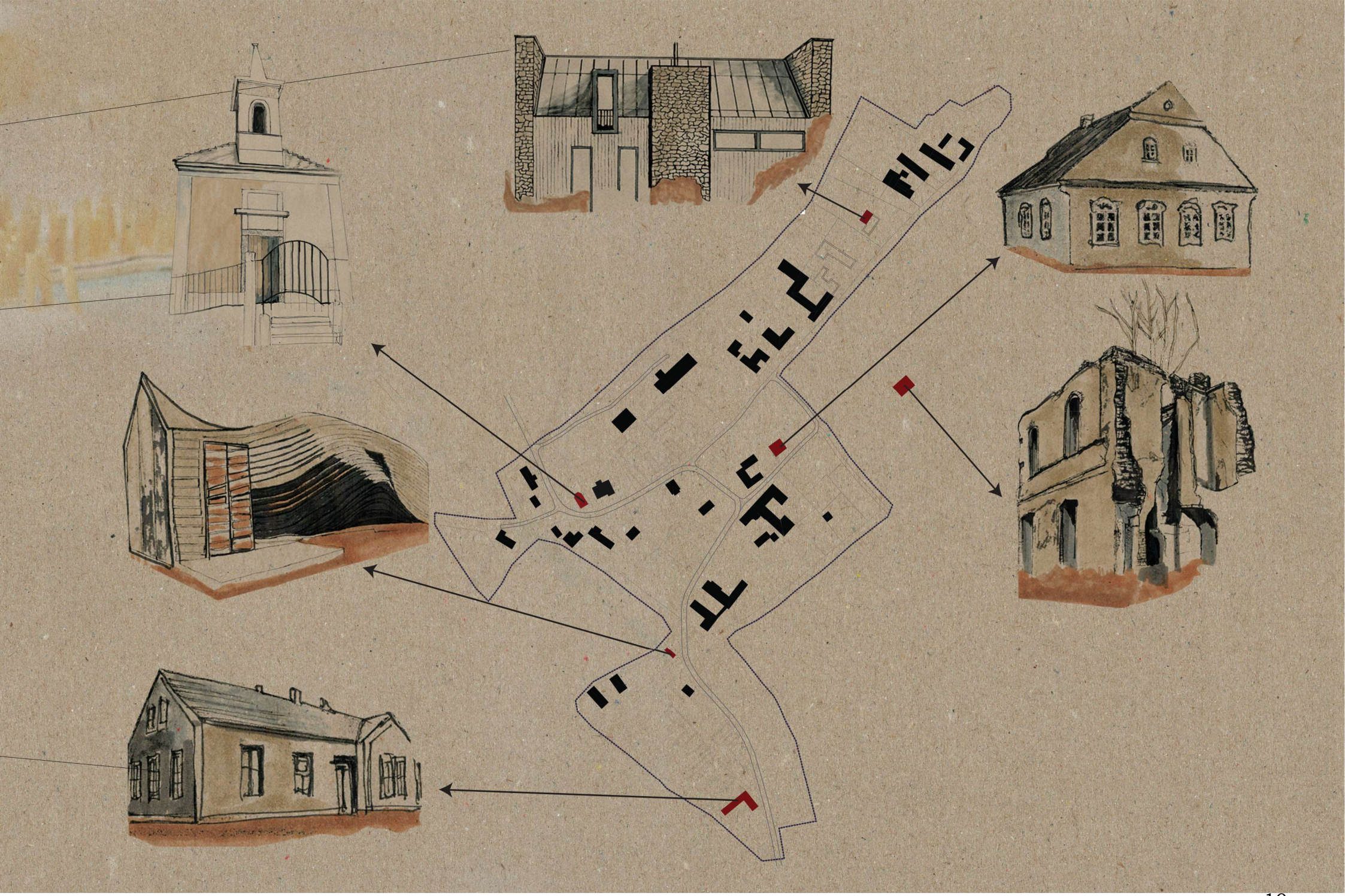
2012

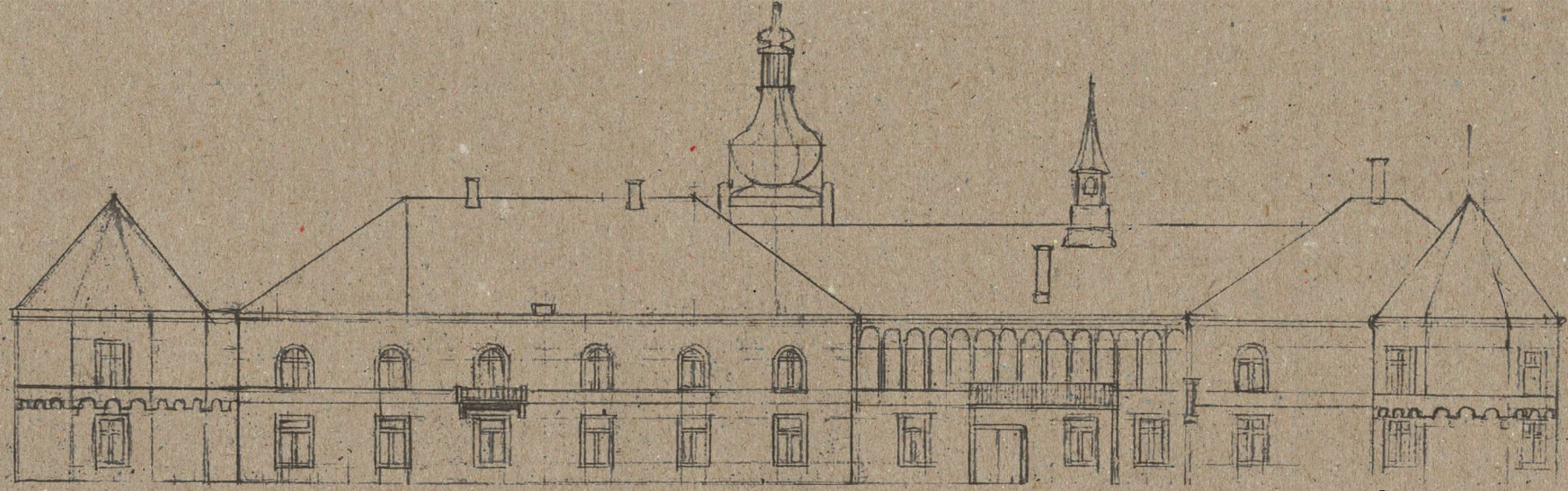
FRATRES



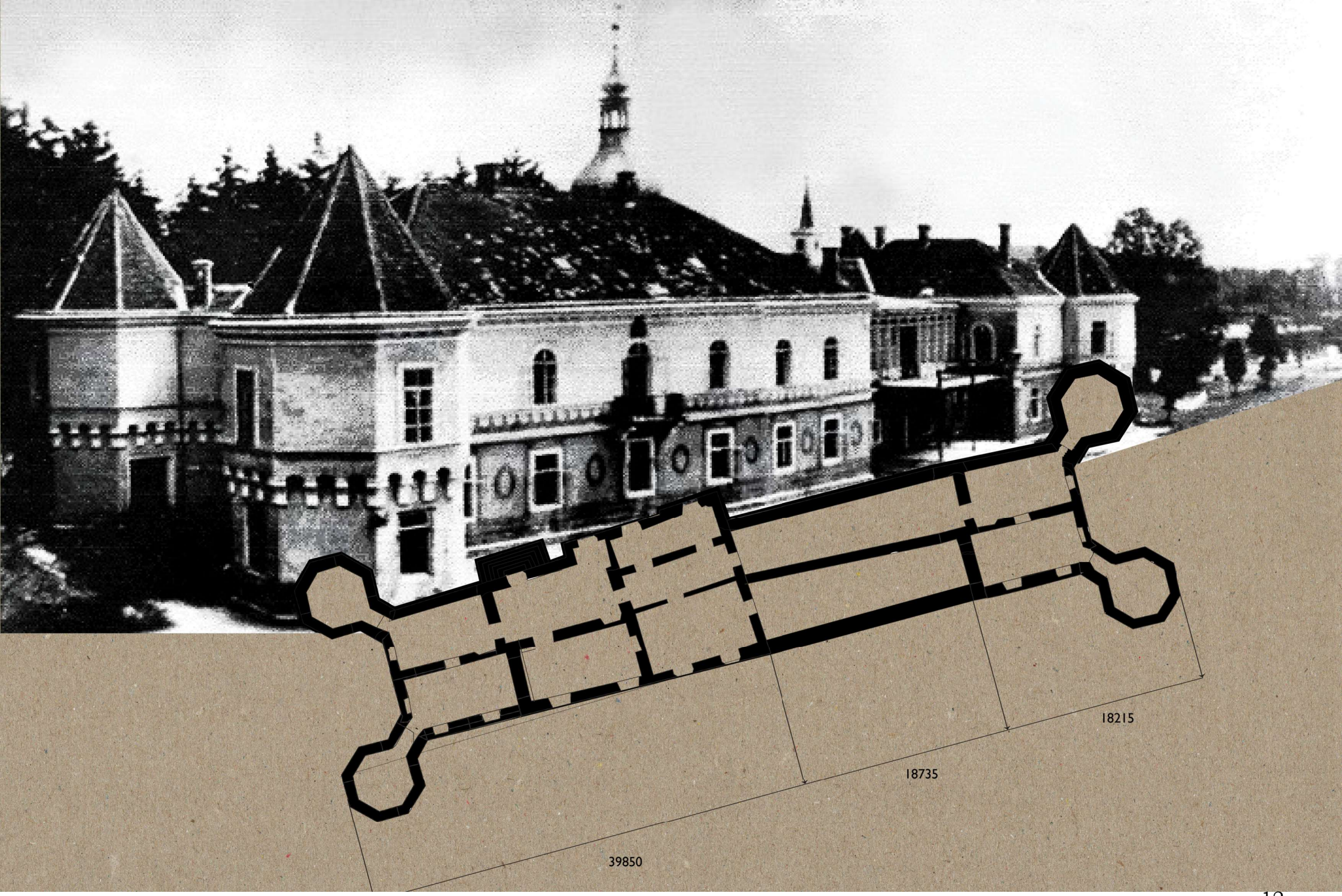
(Information courtesy from Katarina Gyoreova, Diploma:Rehabilitace Pohraniční Vesnice)







The original fortress on the place of the castle is mentioned with certainty in 1372, when it belonged to Oldřich and Ješek of Olešná. Since 1494, the family of the Řečické family took over ownership. In 1717 it was rebuilt by Matyáš Jindřich Butz from Rolsberk to a baroque castle, which also resulted in the park modifications and Octagonal wing extensions. Its condition remained fairly stable until after World War II. It was still used for cultural purposes, but in the 1950s it's true degradation began. The oldest part of the hrad is probably the Left most longitudinal two-part section - 17.5m x 12m, which was added by a series of cellars conceived perhaps by Renaissance, but the rest of the hrad is baroque. The plan of the original section of the hrad was fortunately discovered by L.Svoboda - which included the ground floor and cellars. In the center of the northeastern facade, the château still had another prism shaped tower, whose form can be seen on the old pictures of the castle. The eastern part of the castle, the polygonal towers on both sides and the tower were built sometime after 1824 (probably in the middle of the 19th century). The tower, built of bricks, was dismantled by the settlers for building materials before the Revolution. In 1989 it was finally demolished by a bulldozer. All that remains is the Eastern most corner of the original hrad. The ruins lost their heritage listing and as a result the ruins will slowly decay into nothingness if no intervention is carried out.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18735
39850







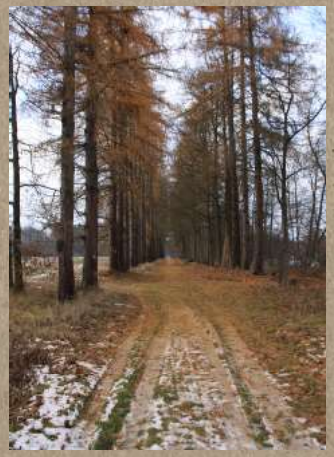




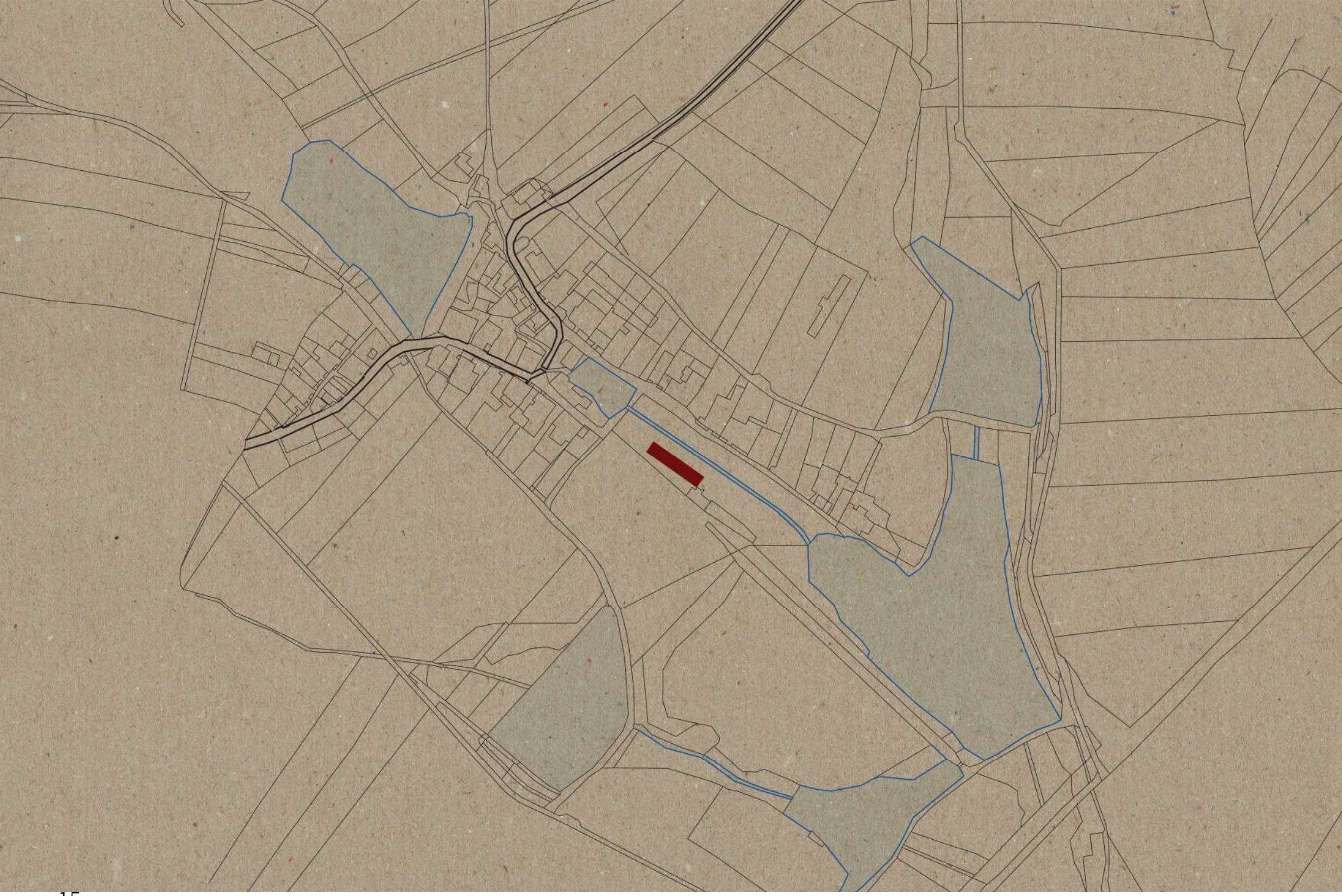




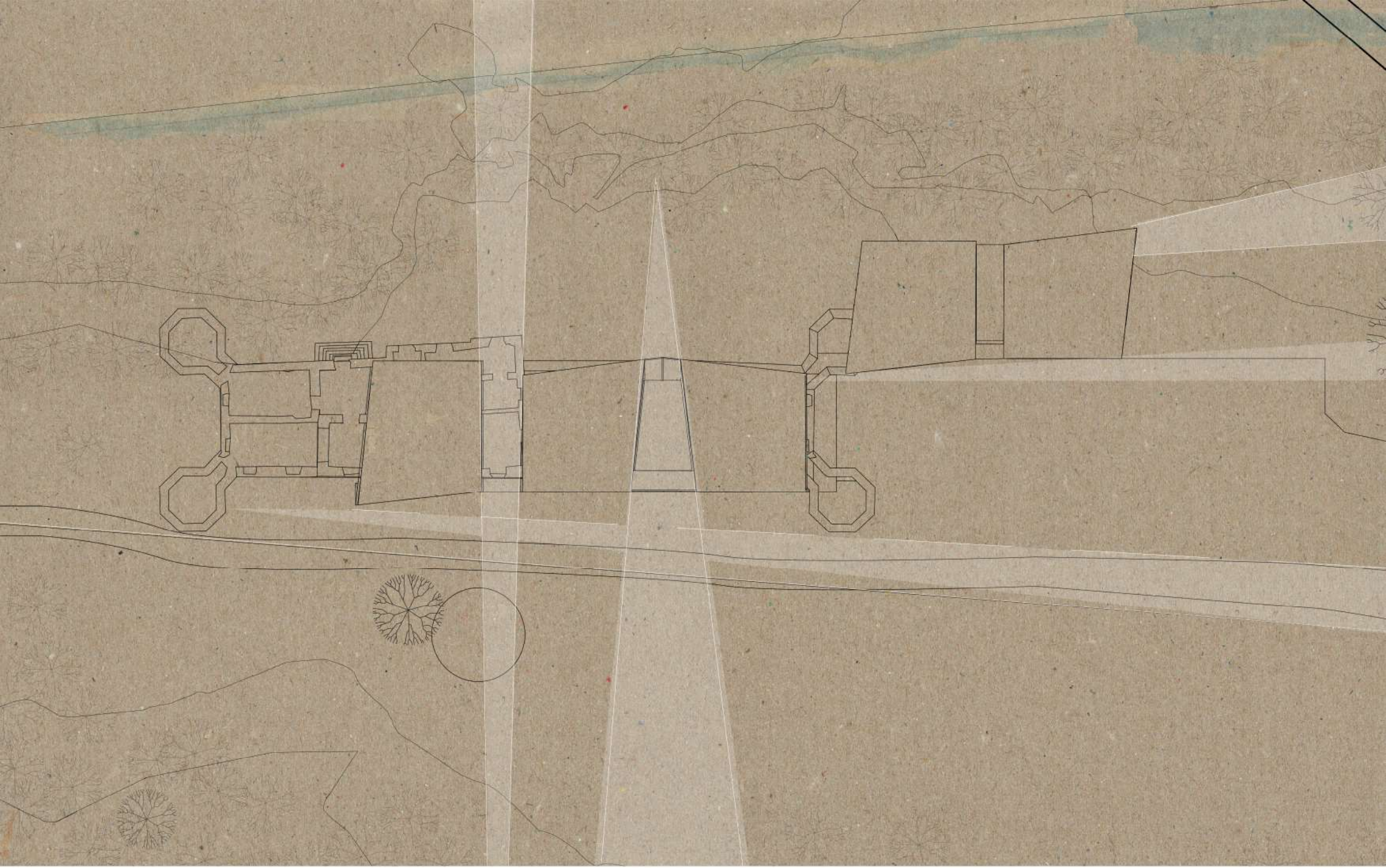



Hrad Surrounding Landscape

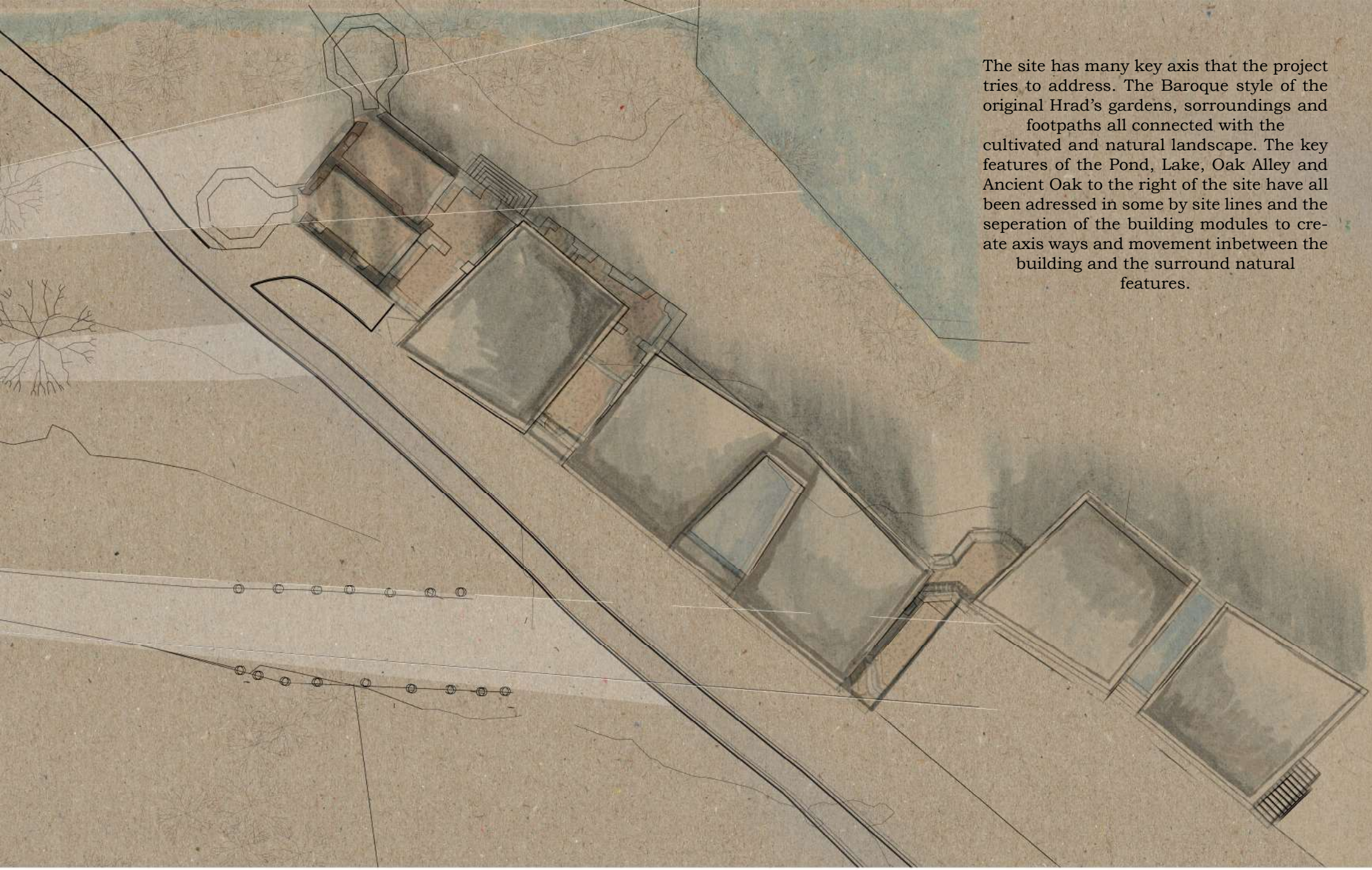


Site 1:5000



N

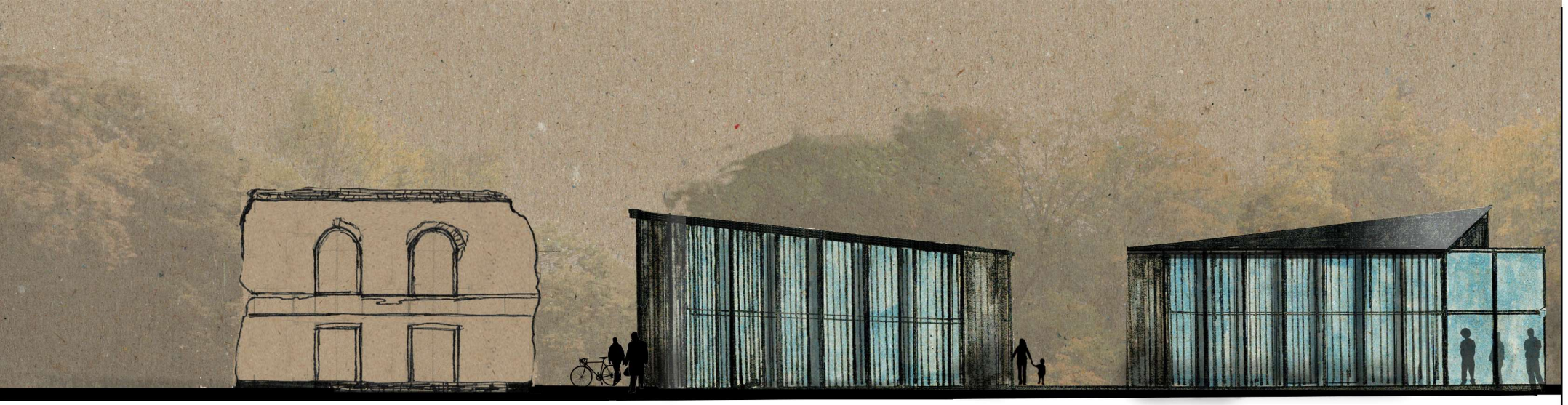
500 1000 2500



The site has many key axis that the project tries to address. The Baroque style of the original Hrad's gardens, sorroundings and footpaths all connected with the cultivated and natural landscape. The key features of the Pond, Lake, Oak Alley and Ancient Oak to the right of the site have all been adressed in some by site lines and the seperation of the building modules to create axis ways and movement inbetween the building and the surround natural features.

N

200 400 1000

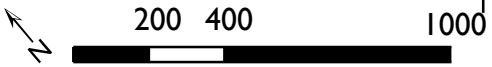


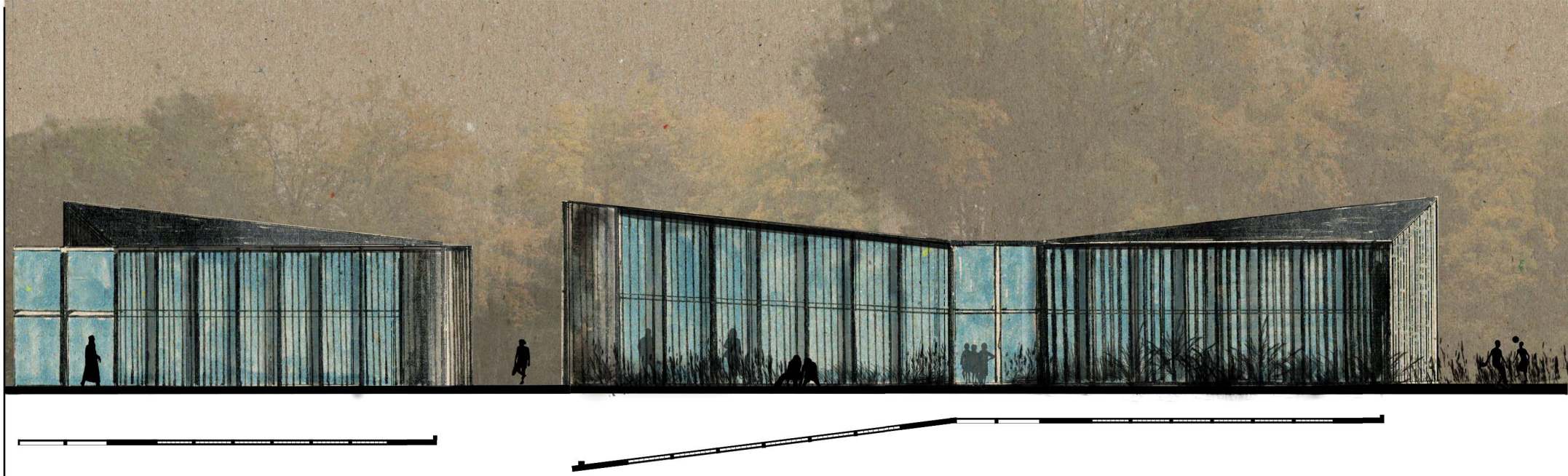
SUMMER

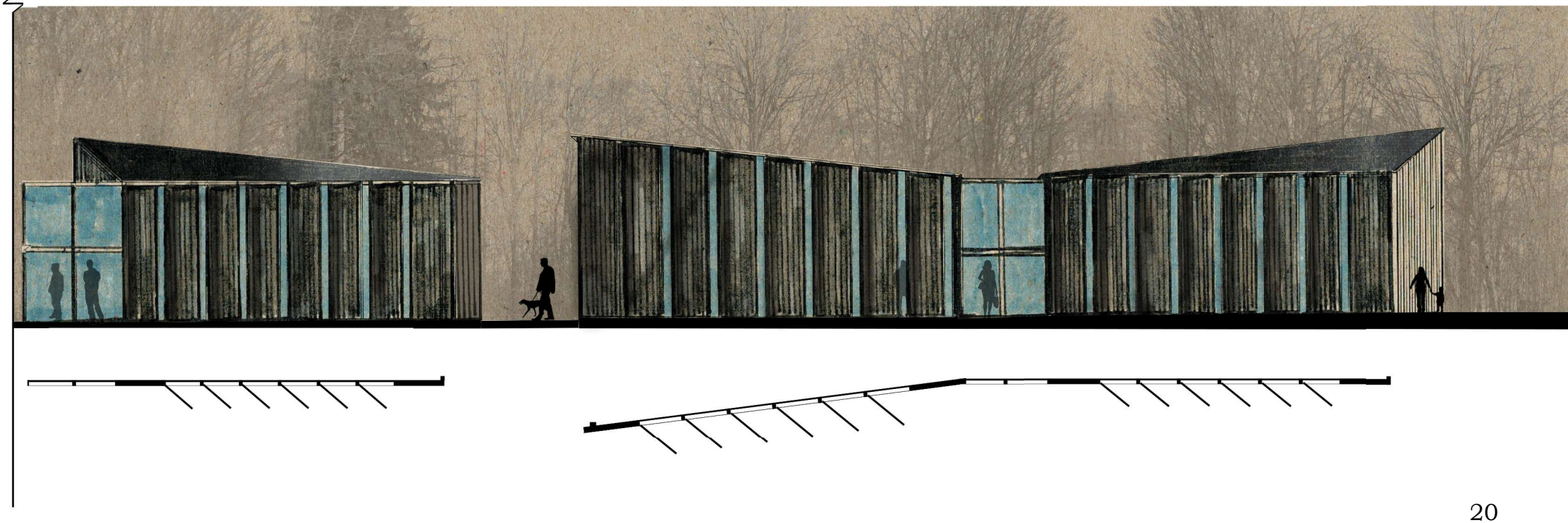
The exterior panels are closed blocking the direct sunlight of the summer season. This keeps the circulation corridor shaded and the Thermal Mass rammed earth wall cool. The glazing behind the timber lattice works are operable to capture any cooling winds. The timber slats are orientated to still allow the visual connection to the surround nature.

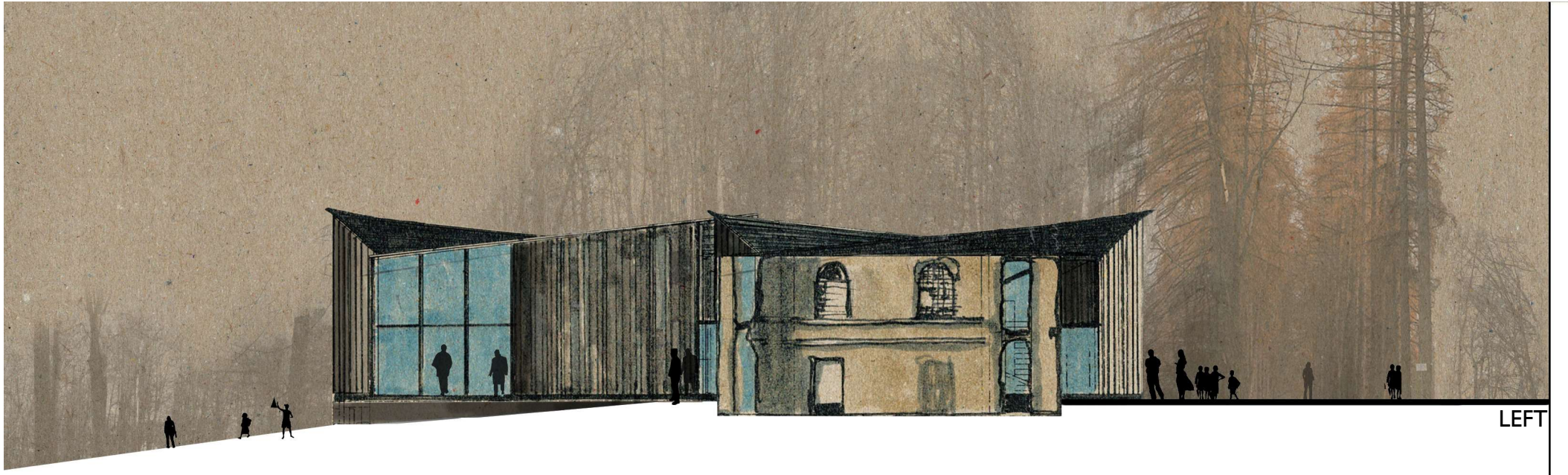
WINTER

The exterior panels area open to allow passive solar heat to fall directly upon the rammed earth thermal mass wall and concrete floor to provide heating the interior spaces throughout the day and into the night. Ideally the panels are angled to 40 for maximum solar gain at mid-day but can be adjusted as needed. This passive heating coupled with insulation and double glazing aims to keep artificial heating to a minimum. The panels also orientate to the beautiful tree corridor further into the site.

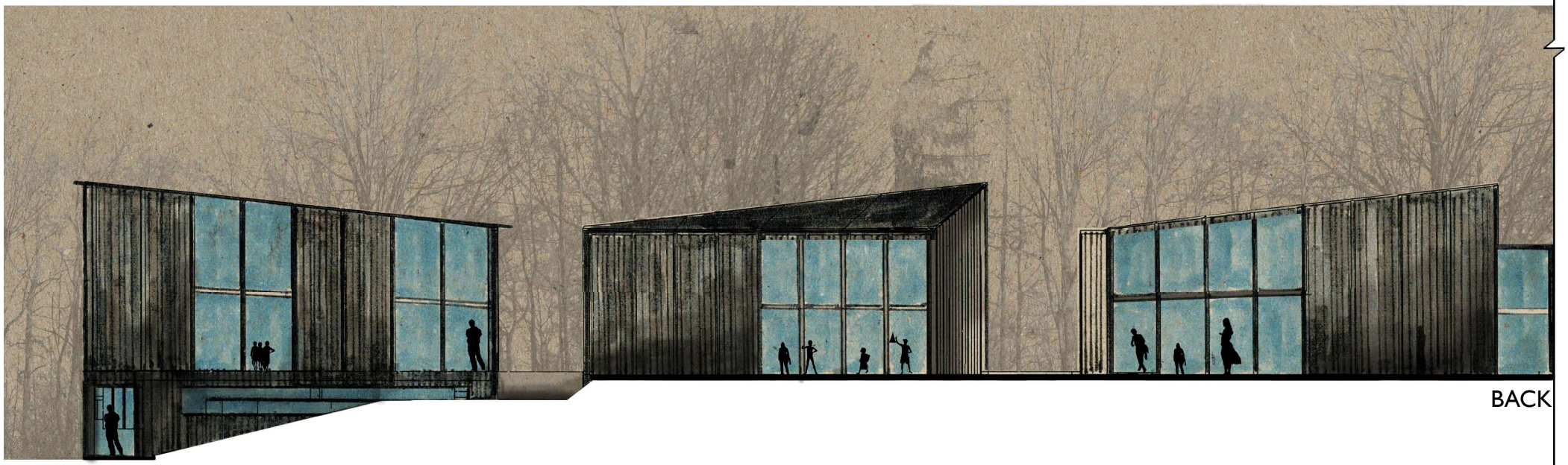






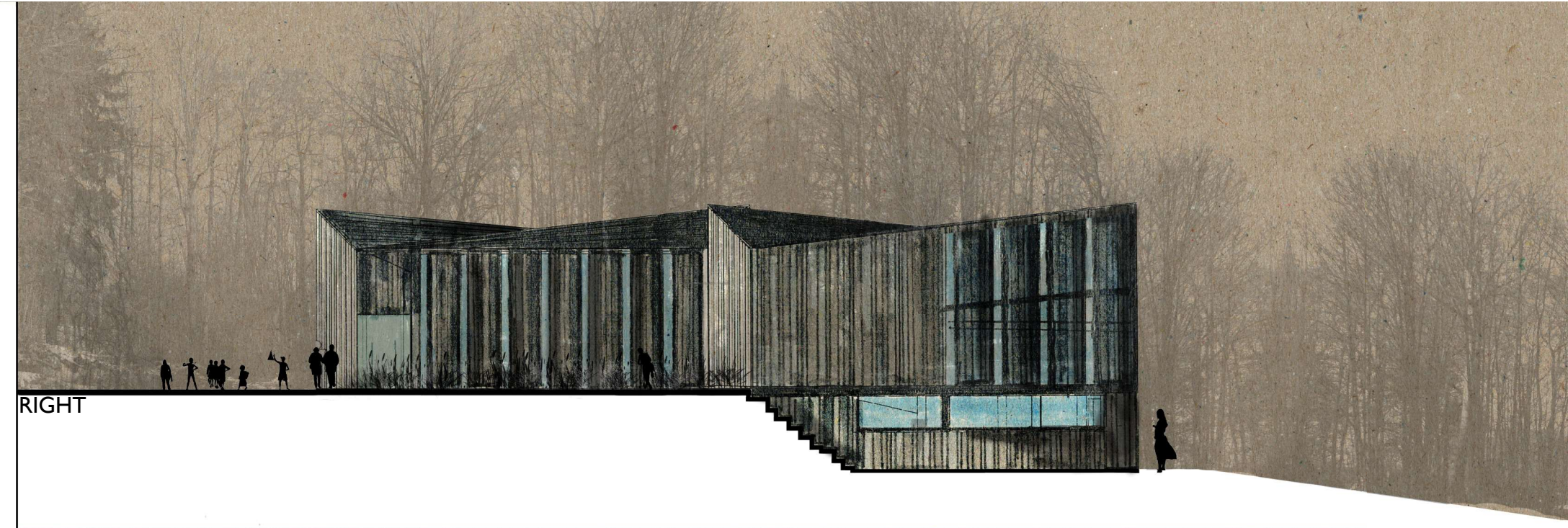


LEFT



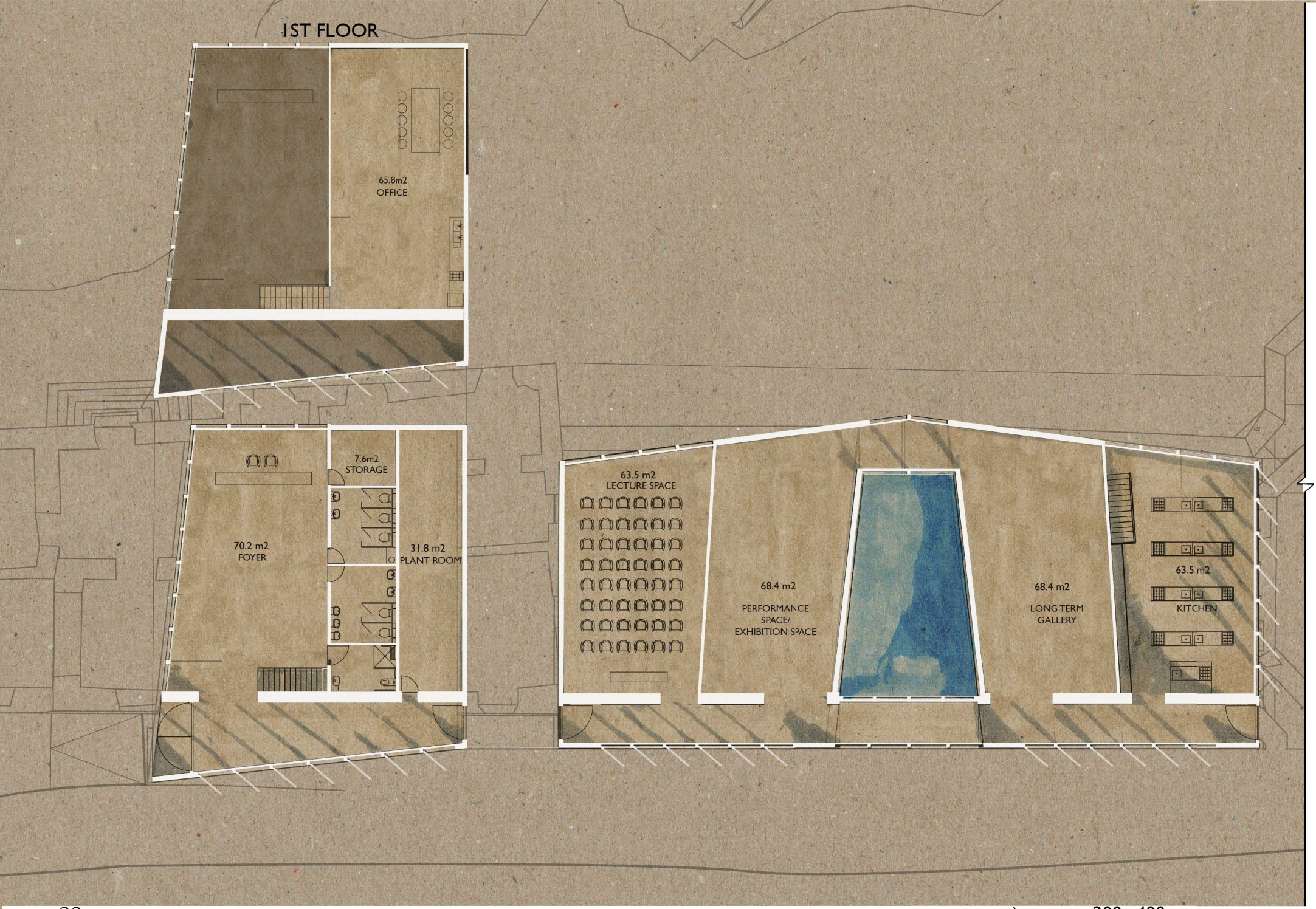
BACK

200 400 1000



RIGHT

1ST FLOOR



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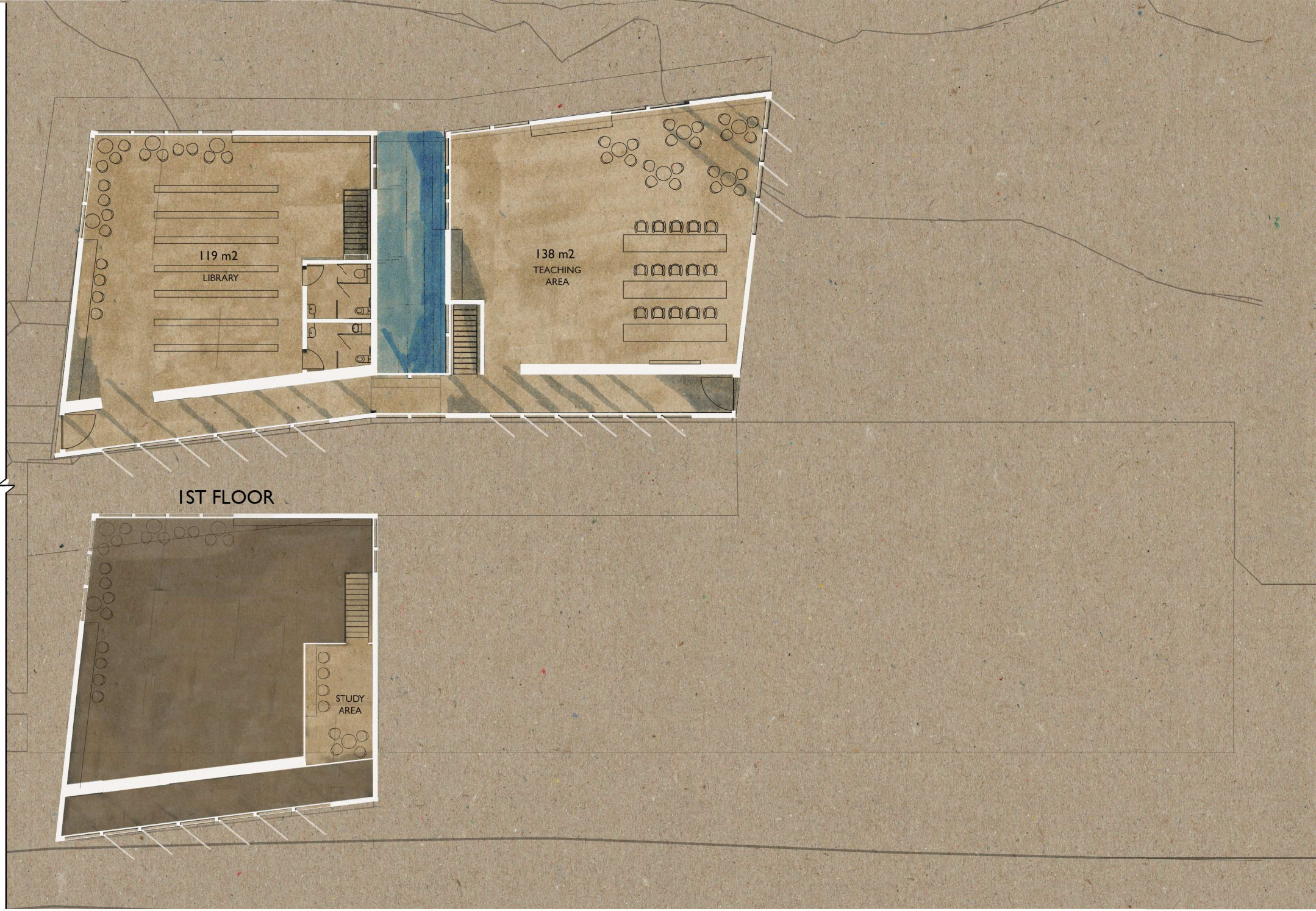
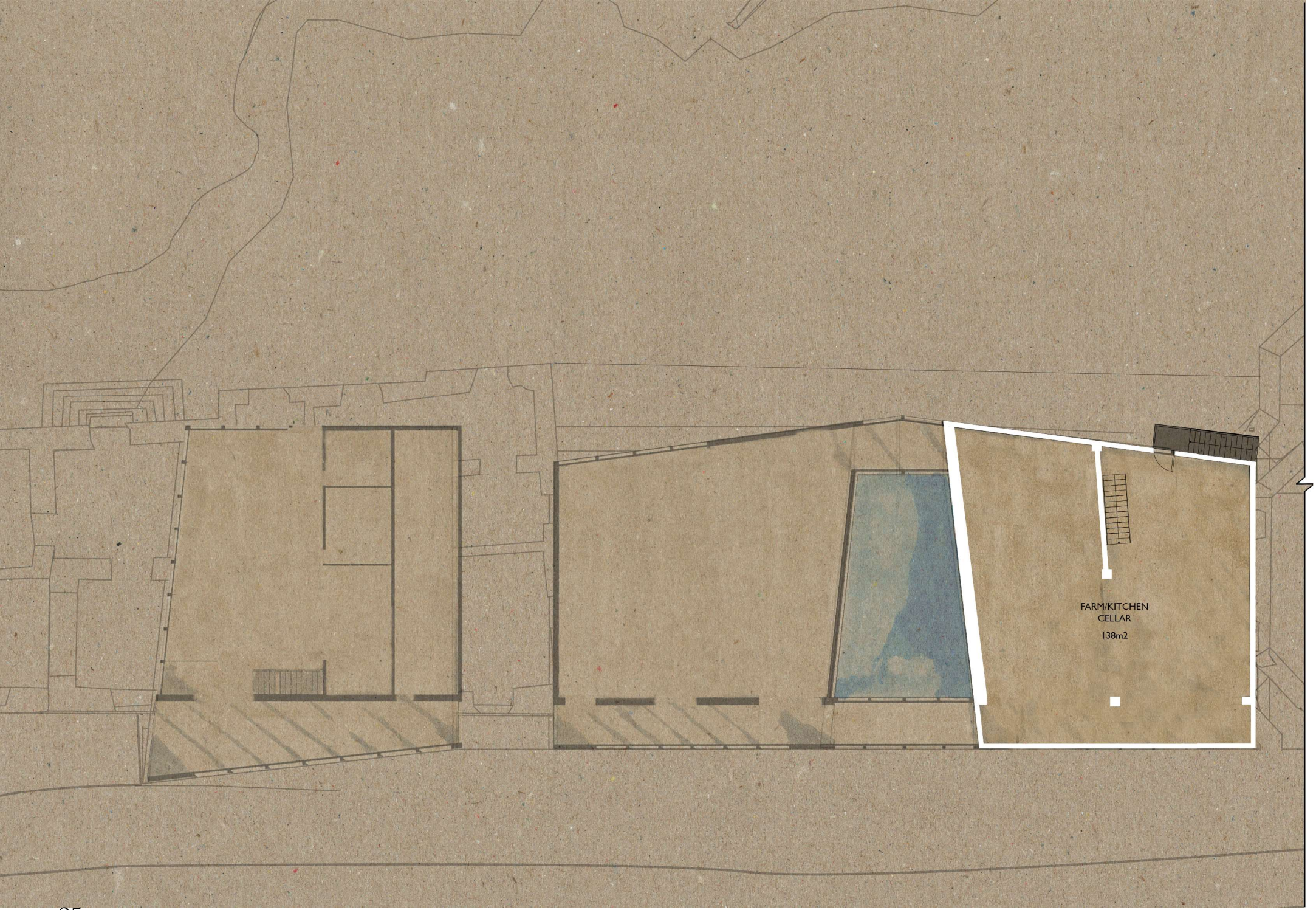

119 m2
LIBRARY
138 m2
TEACHING
AREA
1ST FLOOR
STUDY
AREA



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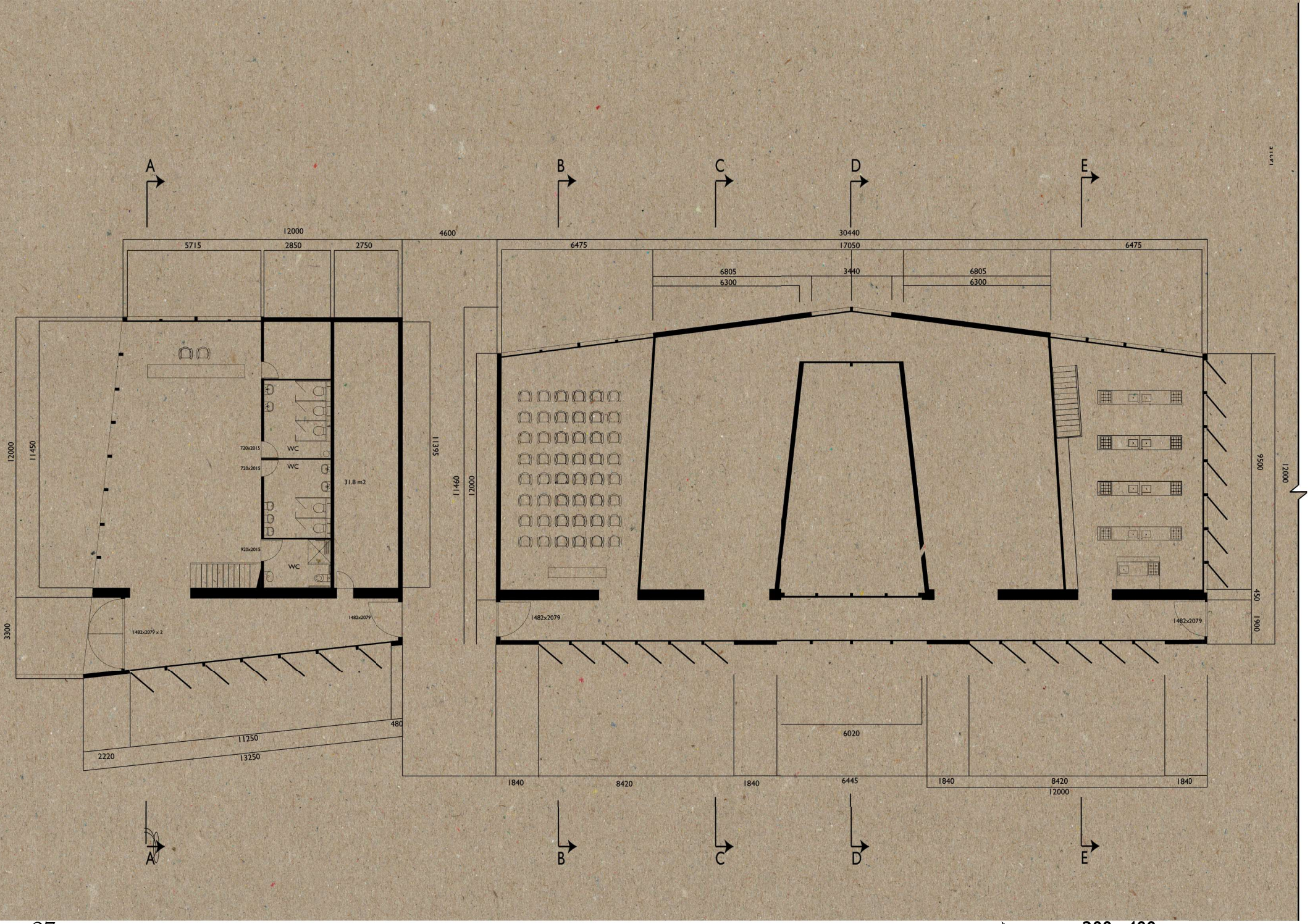
BIOLOGICAL
LABORATORY
138m2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12000
11395
11460
12000
9500
12000
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WC
720x2015
WC
31.8 m2
920x2015
WC
1482x2079 x 2
1482x2079
1482x2079
1482x2079
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1900
480
11250
2220
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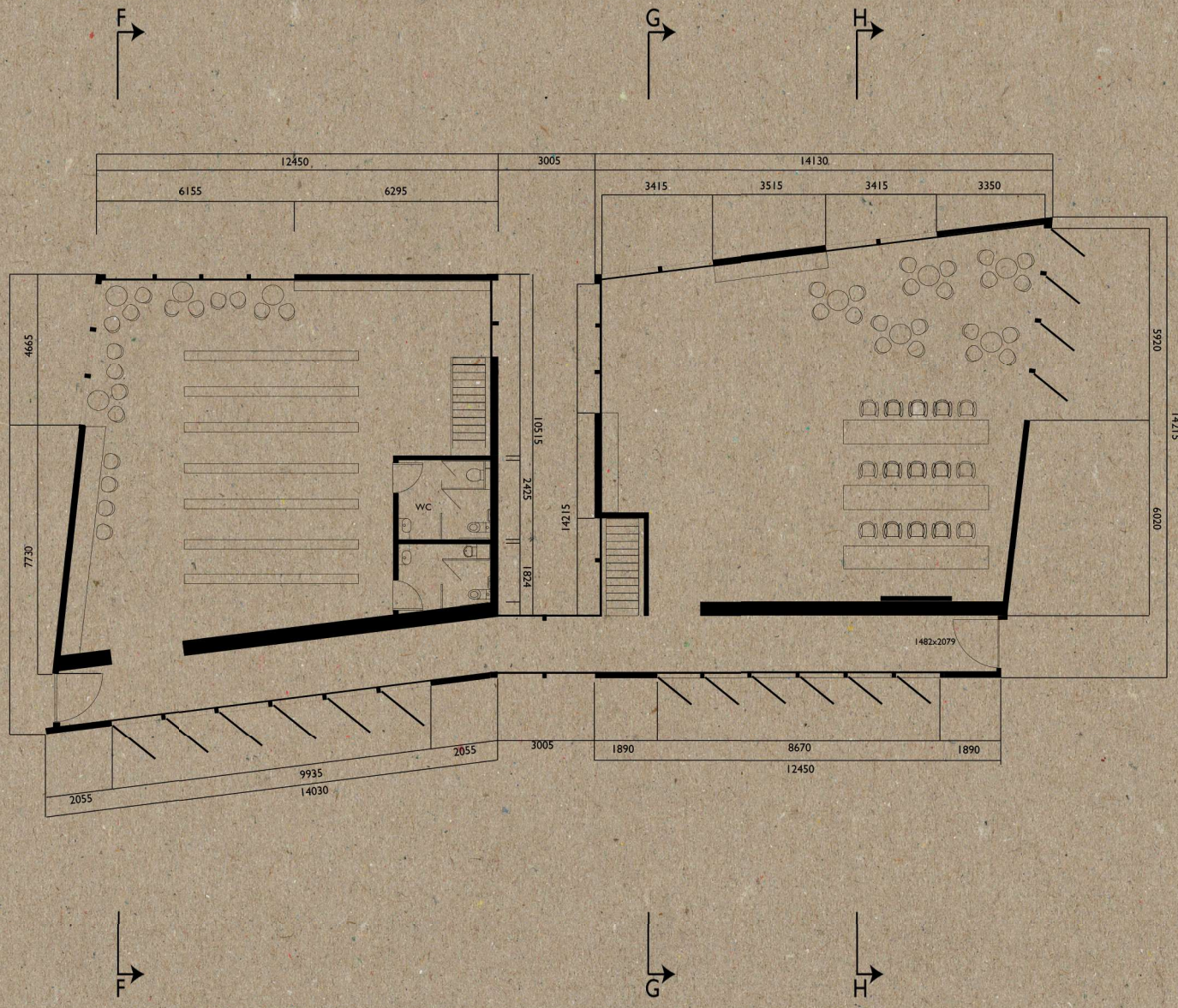
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G
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1890
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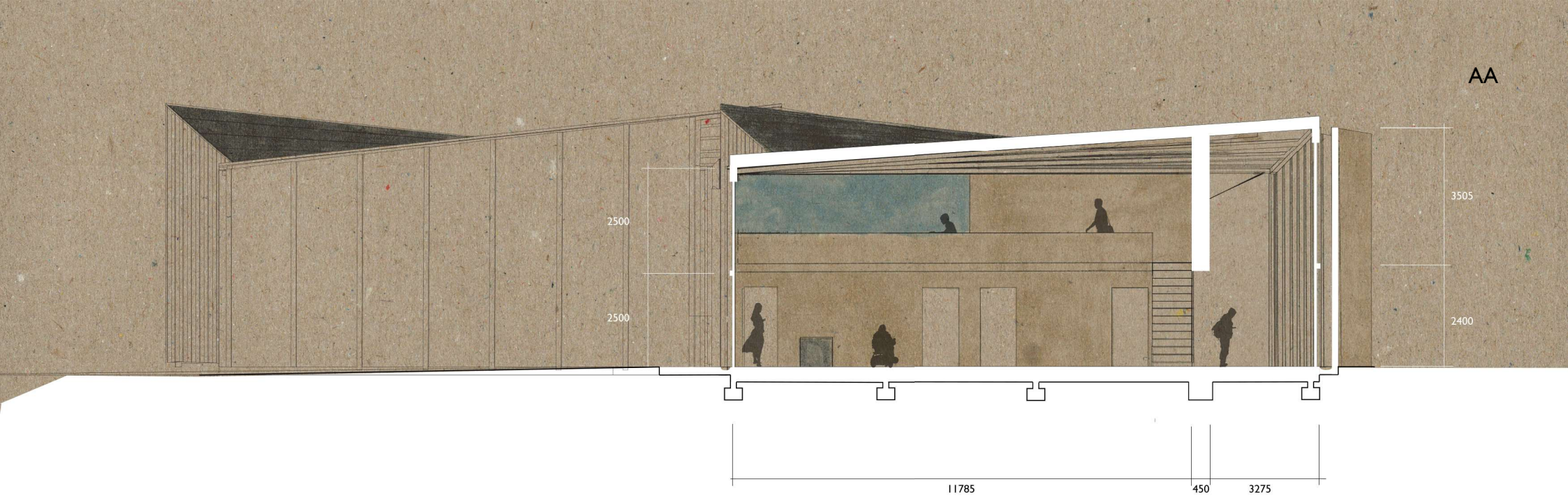
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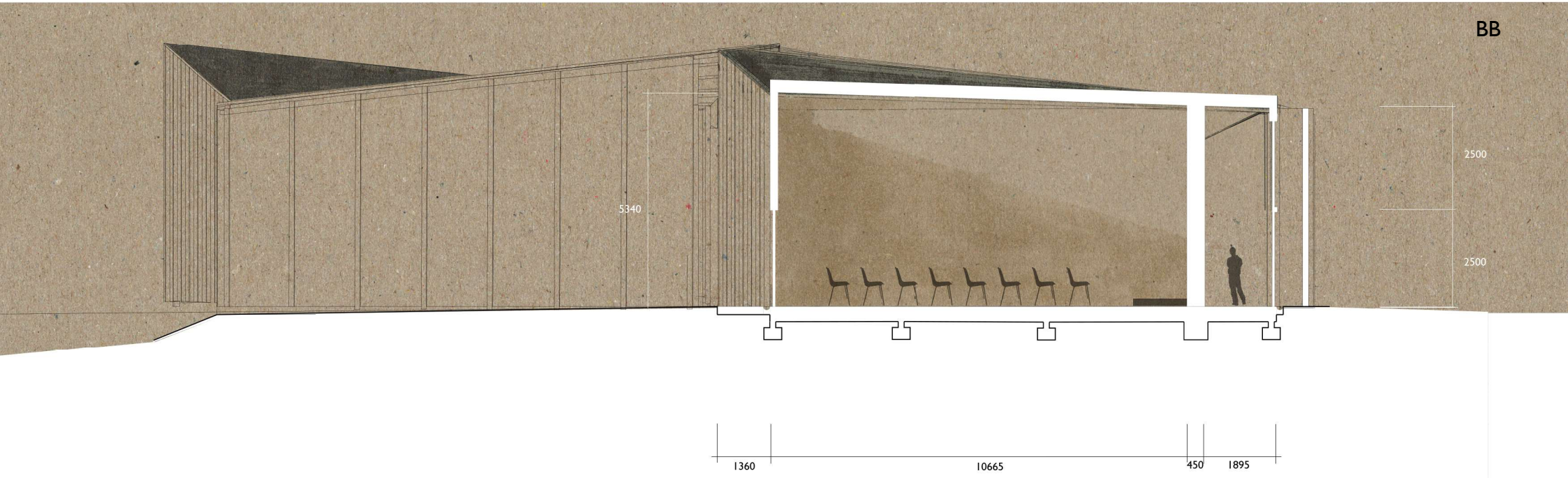
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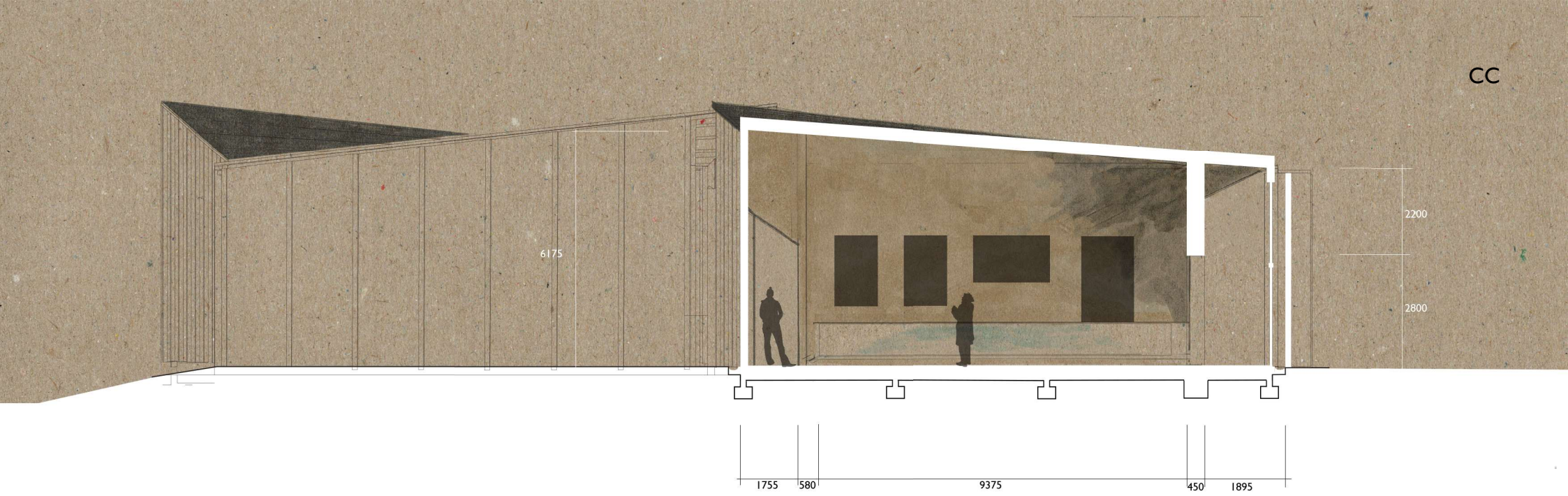
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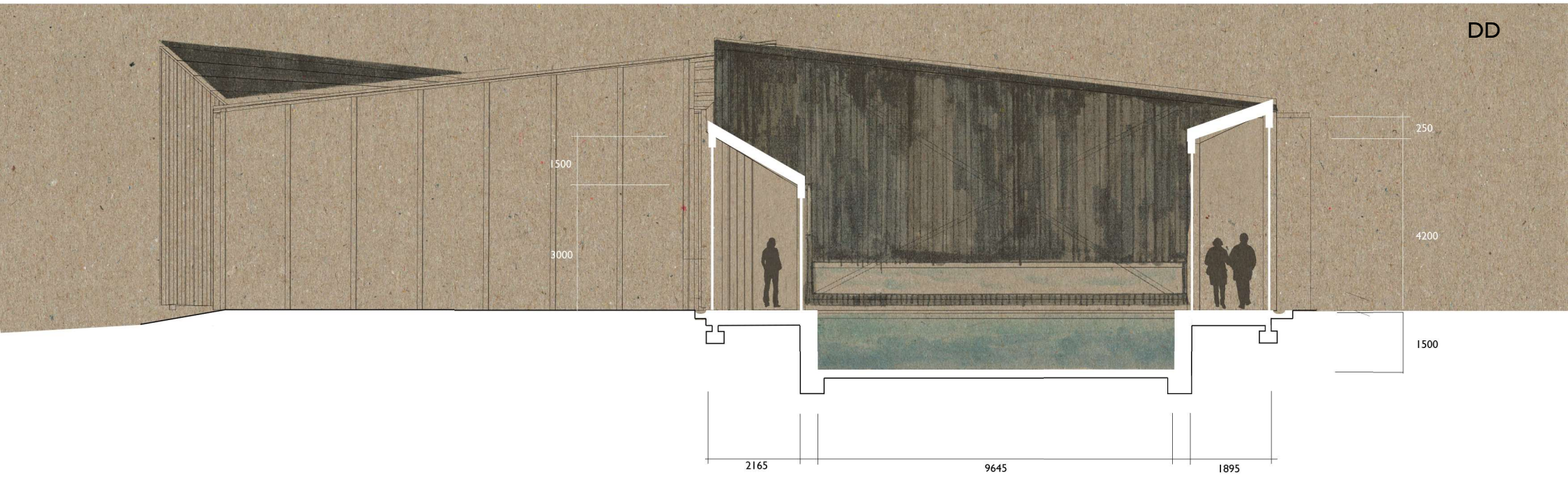
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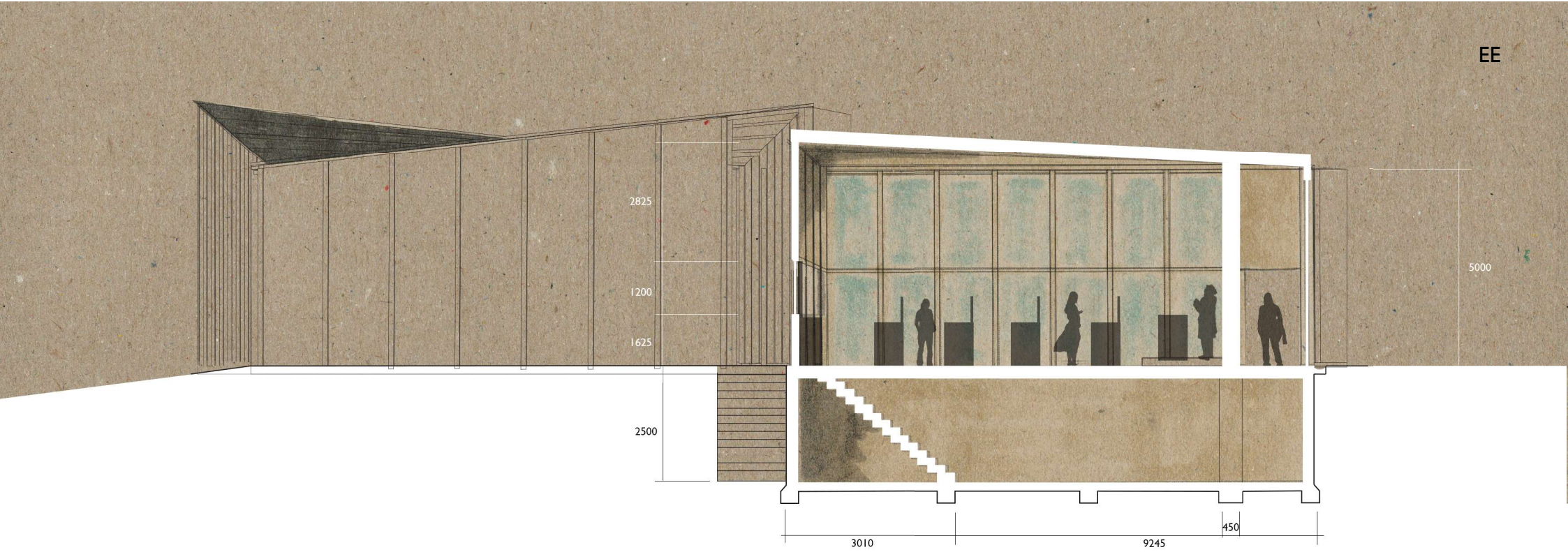

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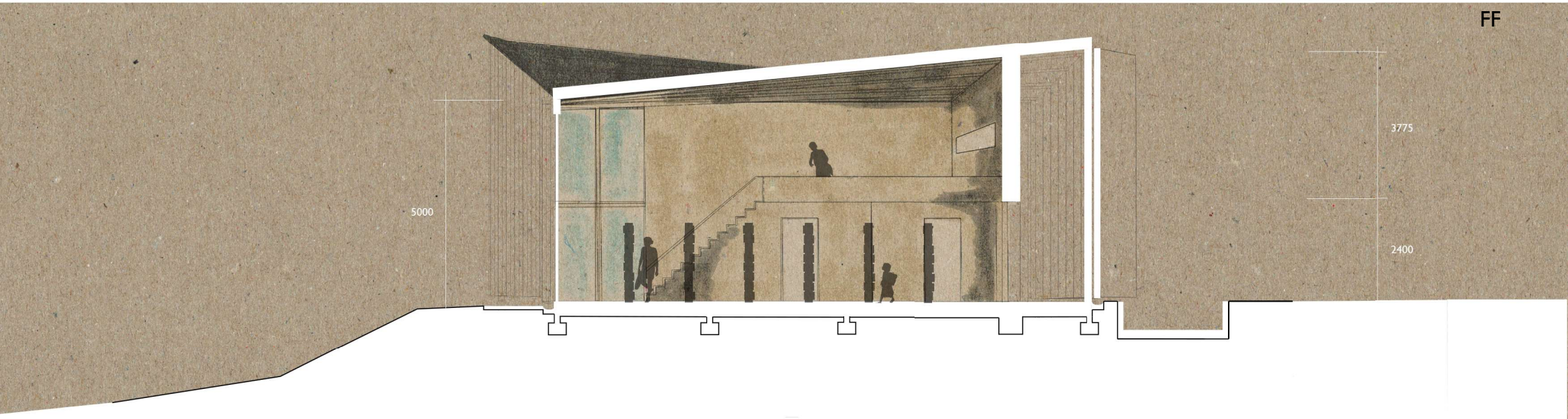

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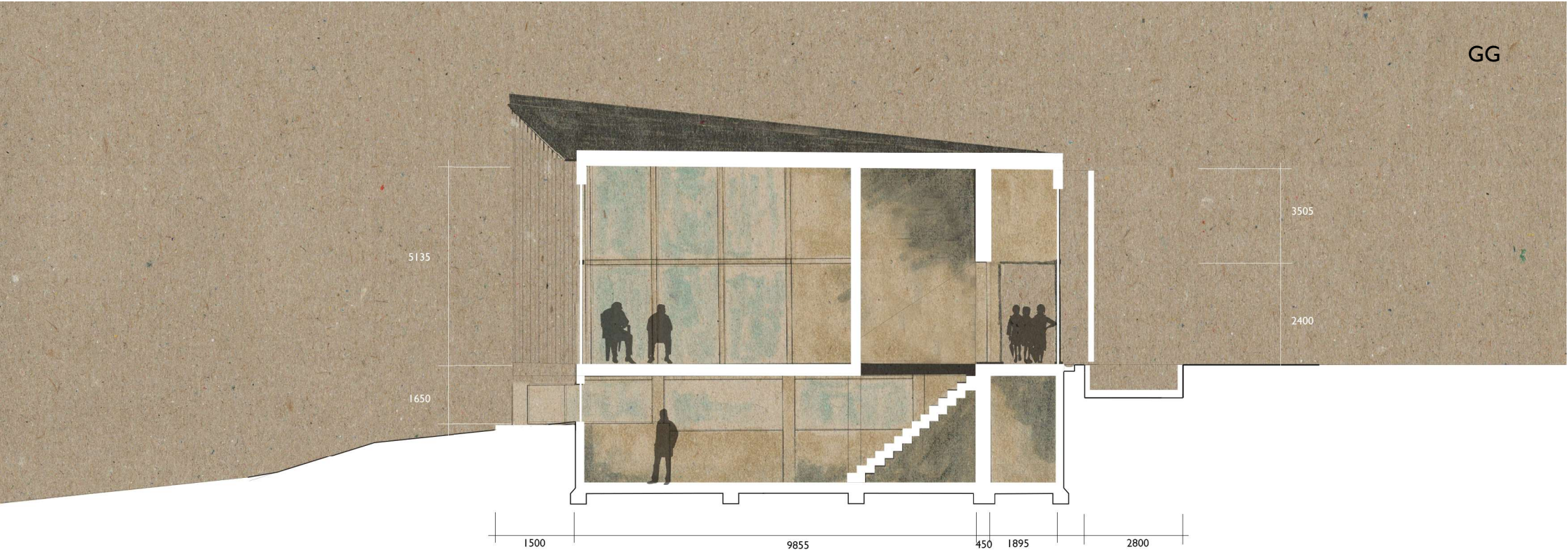
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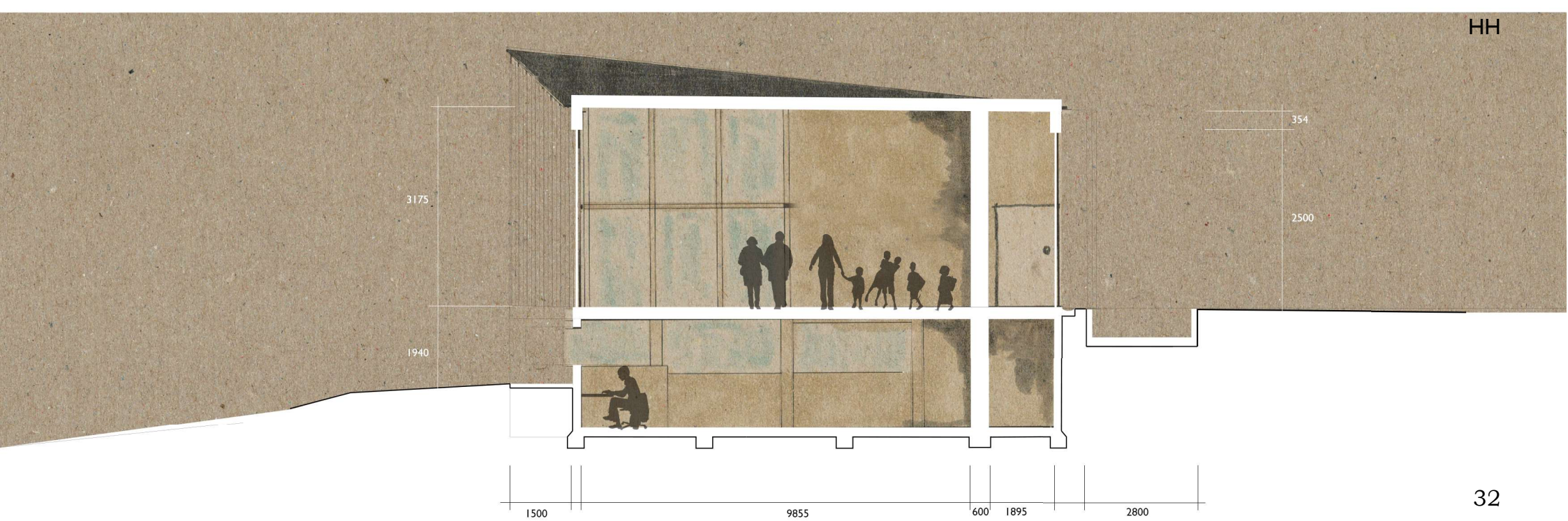
3175
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THE LIVING BUILDING CHALLENGE

WHAT IS IT

It is an internationally recognised program that aims to push for the most sustainable built environments in the world and differs heavily from other building certifications in that it aims for a regenerative process. The idea of "Not doing less bad" is a key tenant and forces creative design solutions to regenerate rather than dominate the site that the building presides in.
It is a philosophy, advocacy tool, and certification program that addresses development at all scales. The underlying principle of the Living Building Challenge (LBC) is that all development projects should use nature as the ultimate measurement for performance. The Challenge says what if every single act of design construction made the world a better place? That a re-generative design framework can create spaces that, like a flower, give more than they take. It is called a challenge for a reason. It is the most rigorous and difficult certifications in the world and is an driving design principle for this Project.

OBJECTIVE

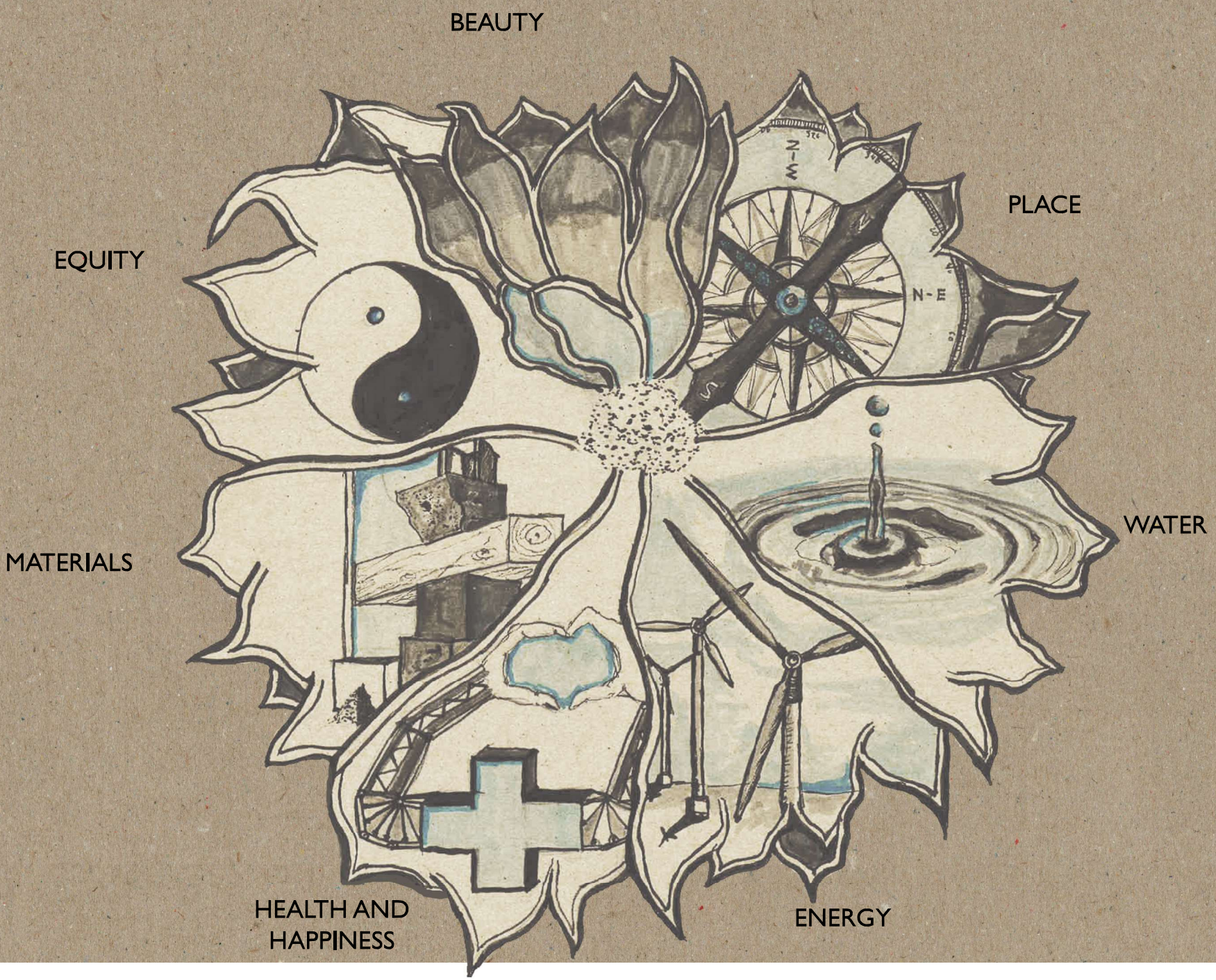
Petals- The Petals: The LBC is organized into seven performance areas.
All of the elements required for a self-sustaining building are dependent on these criteria Place – Restoring a healthy inter-relationship with nature
Water- Creating developments that operate within the water balance within a given place or climate
Energy- Relying only on current solar income
Health and Happiness- Creating environments that optimise physical and psy-chological health and wellbeing.
Materials – Endorsing Materials that are safe for all species through time.
Equity- Supporting a Just and Equitable World
Beauty- Celebrating design that uplifts the human spirit.

OUTPUTS

Two Rules.
-All Imperatives assigned to a Typology are mandatory.

-Living Building Challenge certification requires actual, rather than anticipated, performance demonstrated over twelve consecutive months.

For a project to be certified as "Living", all Imperatives assigned to a Typology must be met. For the purpose of the Project the LBC is being a stringent measure to create a truly sustainable building.


BEAUTY
PLACE
EQUITY
WATER
MATERIALS
HEALTH AND
HAPPINESS
ENERGY

PLACE

IMPERATIVE

Limits to Growth

-Projects may only be built on greyfields or brownfields:
previously developed sites
-Wetlands: maintain at least 15 meters separation
-Old-growth forest: maintain at least 60 meters of separation -Prime Farmland: must not be developed
-Floodplain: Not be built on 100 year Floodplain

Urban Agriculture

-The project must integrate opportunities for agriculture apropriate to its scale and density

Human Powered Living

-Each new project should contribute toward the creation of walk able, pedestrian-oriented communities and must not lower the density of the existing site.

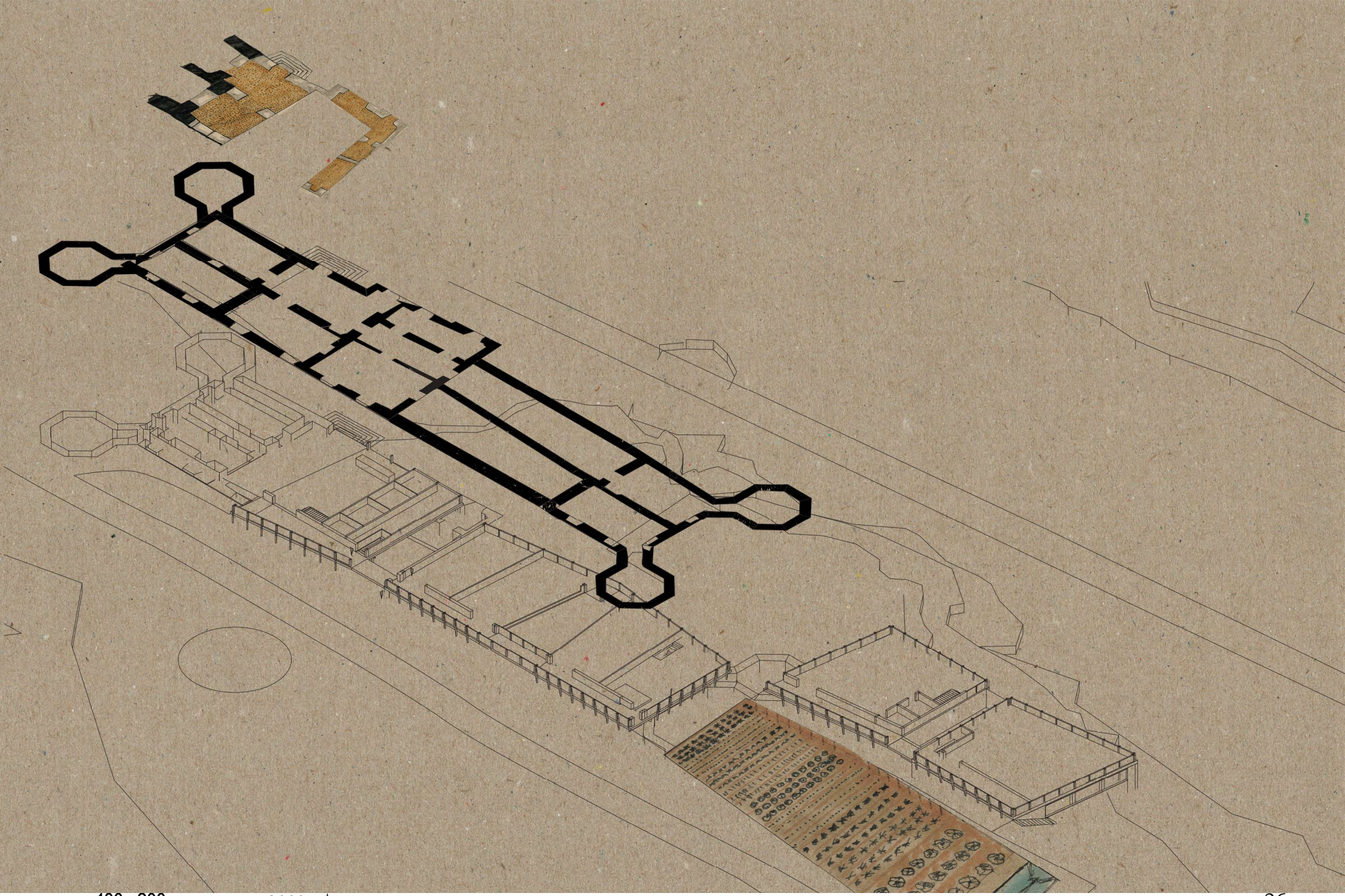
DESIGN

The project uses the old foundation plans of the original Hrad to inform where the buildings would be situated. This helps create a connection with the History of the land and follow the imperative of the LBC.

The use of the interstitial spaces of the building follows the old foundations lines and creates visual corridors between the creek side and old forest to the South.

A large area is devoted to agricultural practices next to a water filtration reed bed. The plots get the full southern sunlight for growth and use water stored on site for growth.

The old dirt paths that exist today are improved and sealed for easier public access.


400 800
2000
N

WATER

IMPERATIVE

Net Positive Water

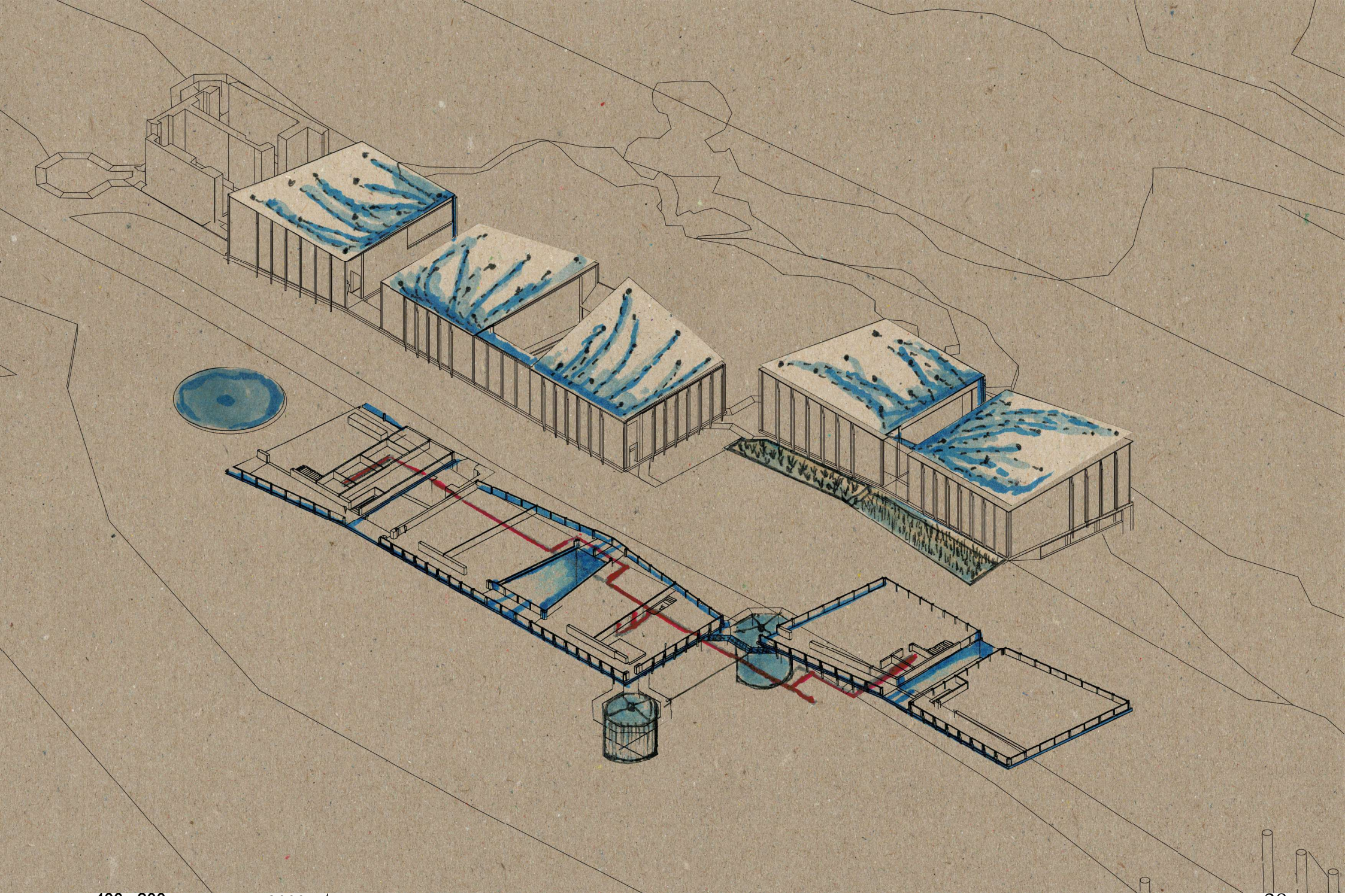
Project water use and release must work in harmony with the natural water flows of the site and its surroundings. All stormwater and water discharge, including grey and black water, must be treated onsite and managed either through re-use, a closed loop system, or infiltration.

DESIGN

The Centre is designed to catch and store all water that has fallen on the built surfaces as required by the Living Building Challenge. With the use of an extensive gutter system combined with sloped roofs the aim is collect 100% of water fallen on the site. The water is first stored in one of the collection areas within the building.

It is designed to be a visual cue as to the state of rainfall for the area as well as a reminder of the importance of water within the landscape. The water stored is to be used for agricultural purposes on the site. In the event of surges overflow tanks are located close to the agricultural area.

Grey water is also collected from the toilets and kitchen to be processed by the artificial wetlands located with southerly sunlight at the end of the complex to then be reused.



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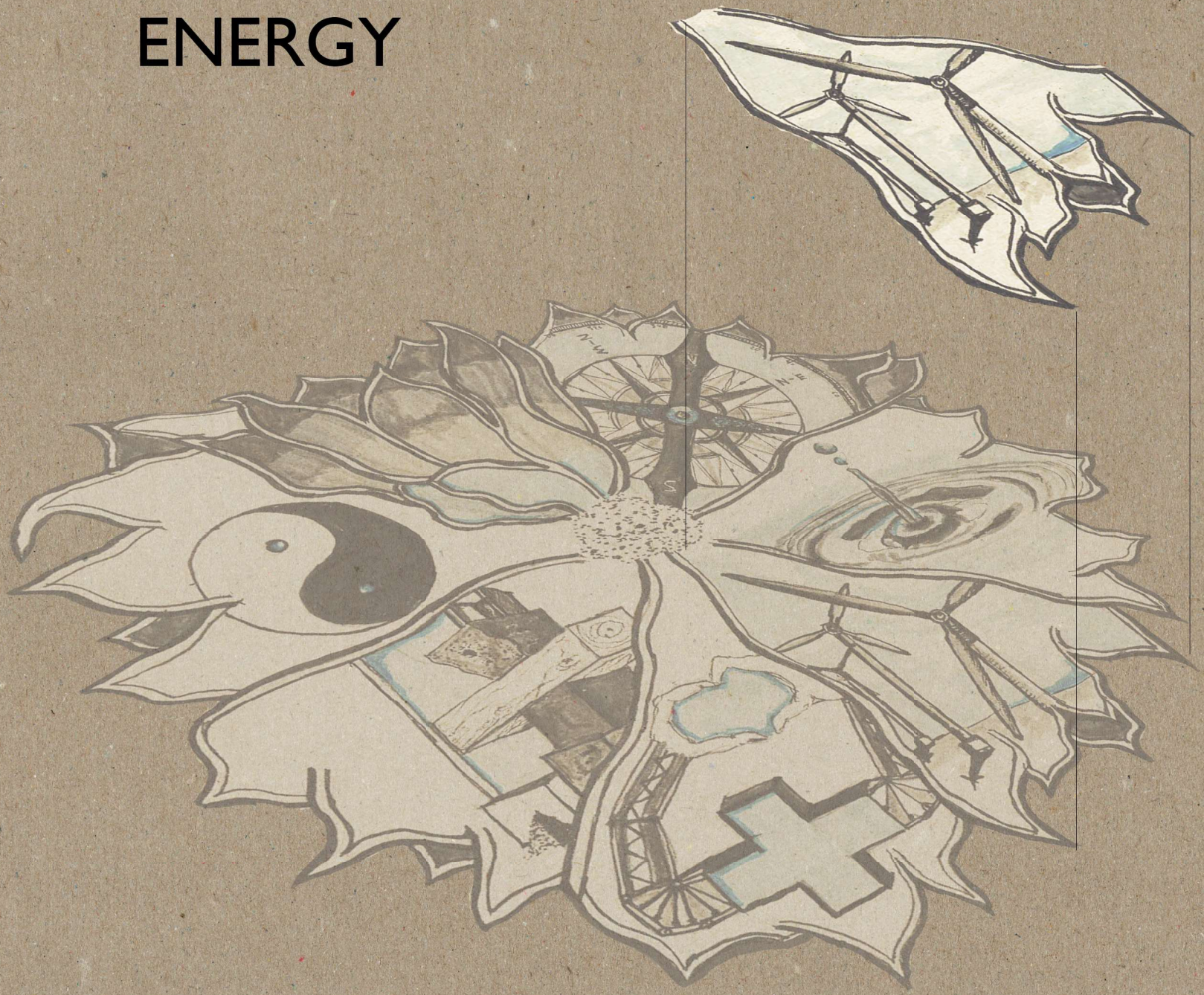
ENERGY



IMPERATIVE

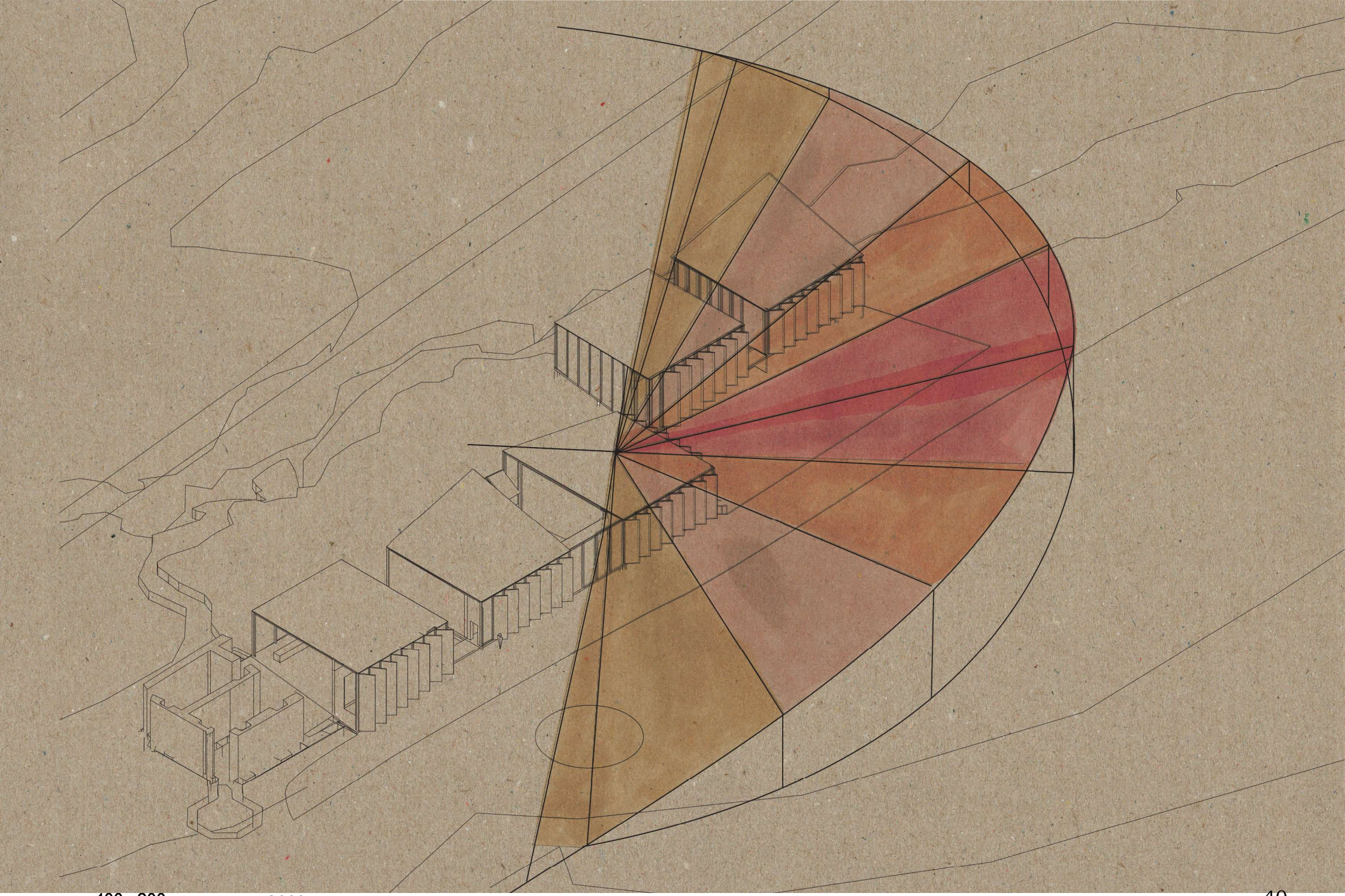
Net Positive Energy

One hundred and five percent of the project's energy needs must be supplied by on-site renewable energy on a net annual basis, without the use of on-site combustion. Projects must provide on-site energy storage for resiliency.

DESIGN

The orientation of the building allows passive solar heating to utilised. The design of the shading lattices takes advantage of the sun's heat by capturing it in a Thermal Mass wall of rammed earth and diffuses the heat slowly into the building's spaces. This will limit the need for energy to be consumed in heating. In opposite effect the lattices block direct sunlight in summer to keep the structure well shaded.

There is also ample angled roof space for solar panels to capture the buildings energy requirements. Battery storage is to be provided in the plant room of the first structure to be used in the day to day running of the Center. The segmented nature of the building and spine corridor allows unused spaces to be isolated and closed off as to not requiring energy when not in use but still allowing the Center to function unimpeded.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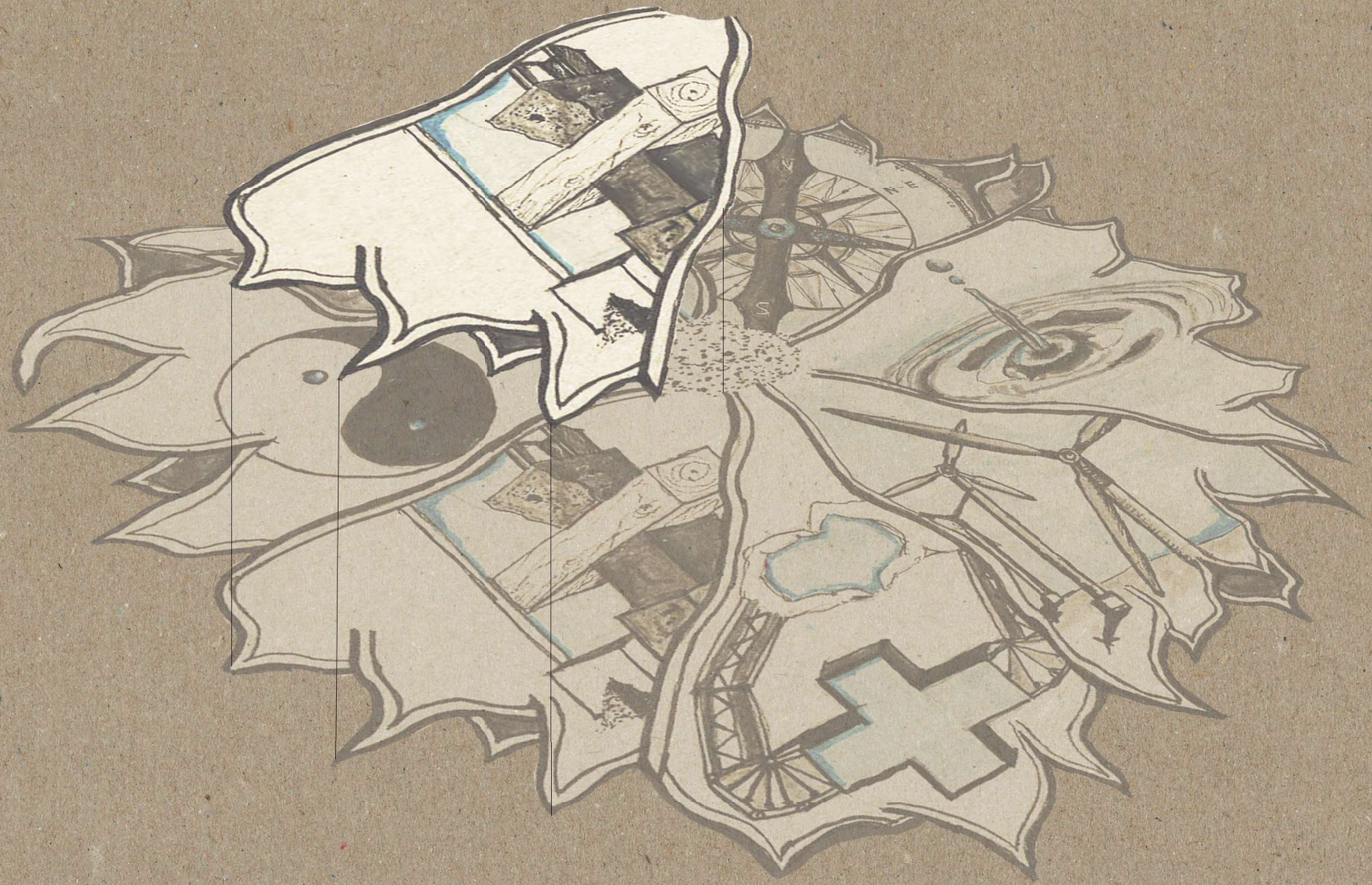
MATERIALS



IMPERATIVE

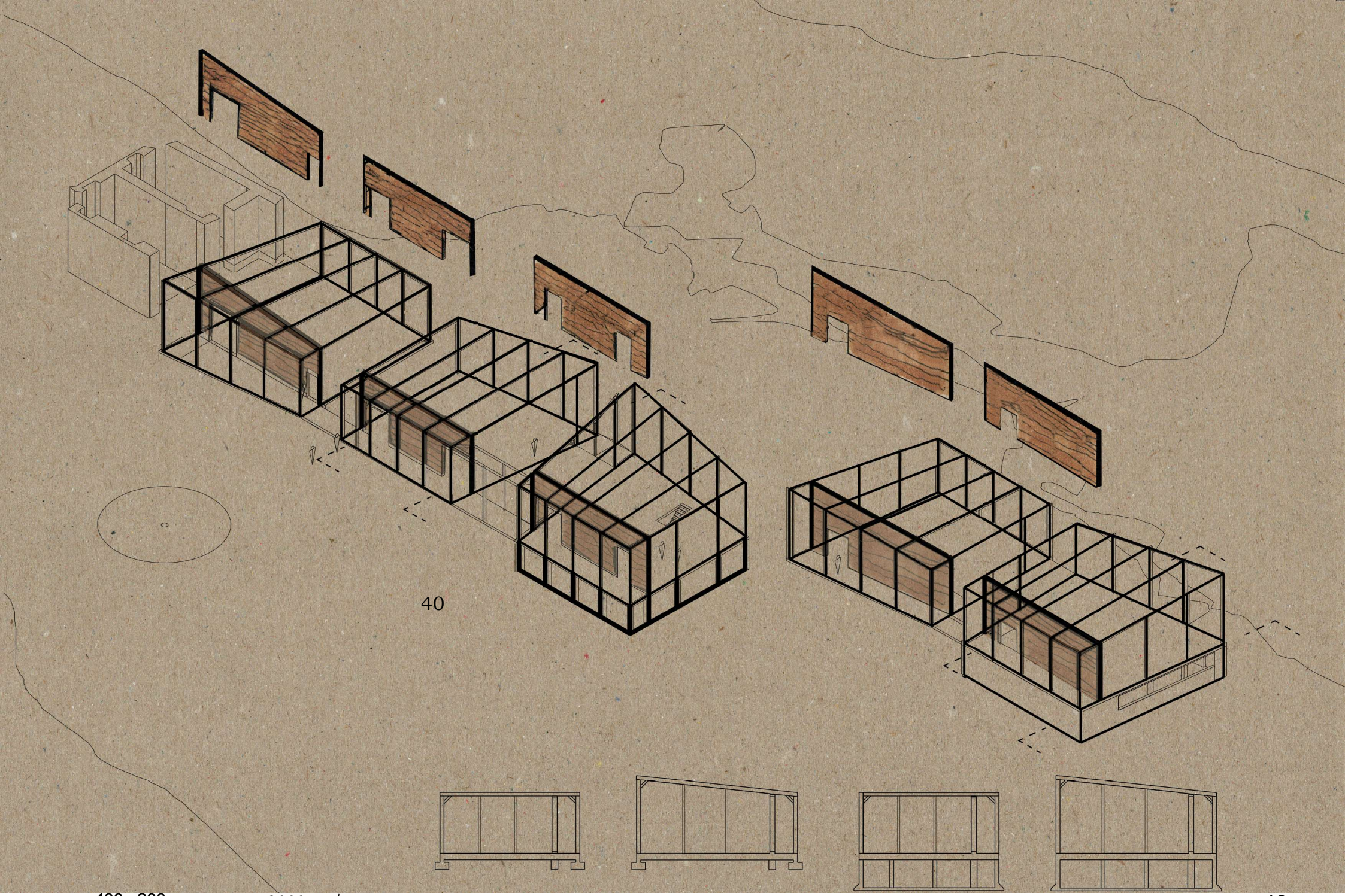
RED LIST

The intent of the Materials Petal is to help create a materials economy that is non-toxic, ecologically regenerative, transparent and socially equitable. Throughout their life cycle, building materials are responsible for many adverse environmental issues, including personal illness, habitat and species loss, pollution, and resource depletion. The Imperatives in this section aim to remove the worst known offending materials and practices and drive business towards a truly responsible materials economy.

DESIGN

The building construction will be of sustainble sources which are not on the Living Building Challenges - RED LIST. The design will utilise rammed earth of which eath is in abundant supply, Sustainble sourced Cross Laminated Timber, Double Glazing, Common Insulation types and Conrete. All the material that are planned to be used are widely avaliable and sustainably found.
All waste material from site excavation will be used in Landscaping and majority of material will be able to be docunstructed at the end of the buildings life time.

The design ideal is to be where all materials in the built environment are regenerative and have no negative impact on human and ecosystem health.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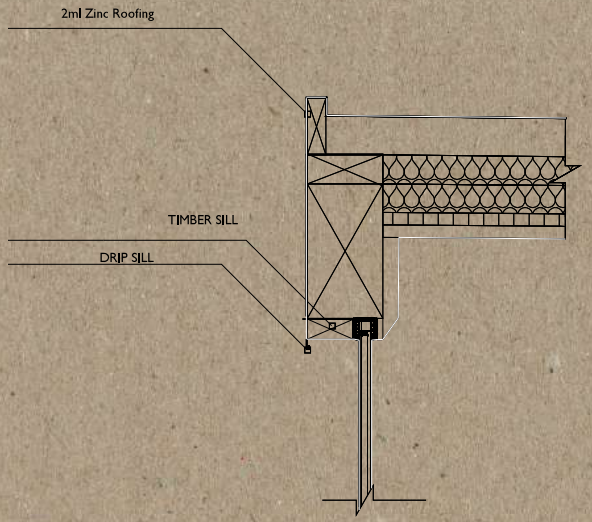
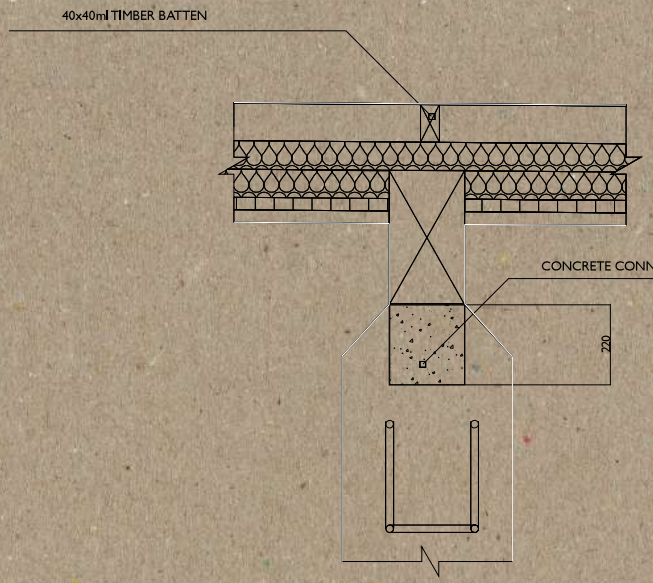
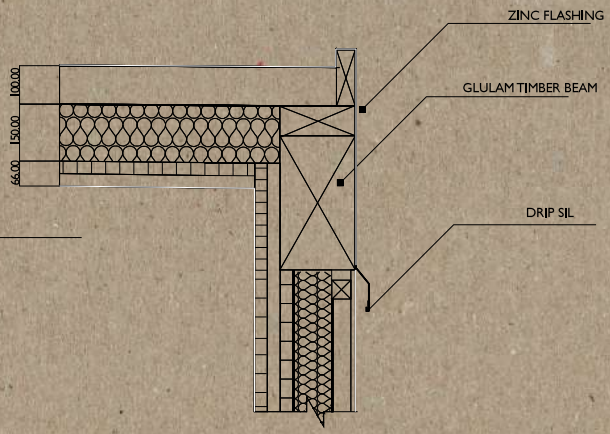
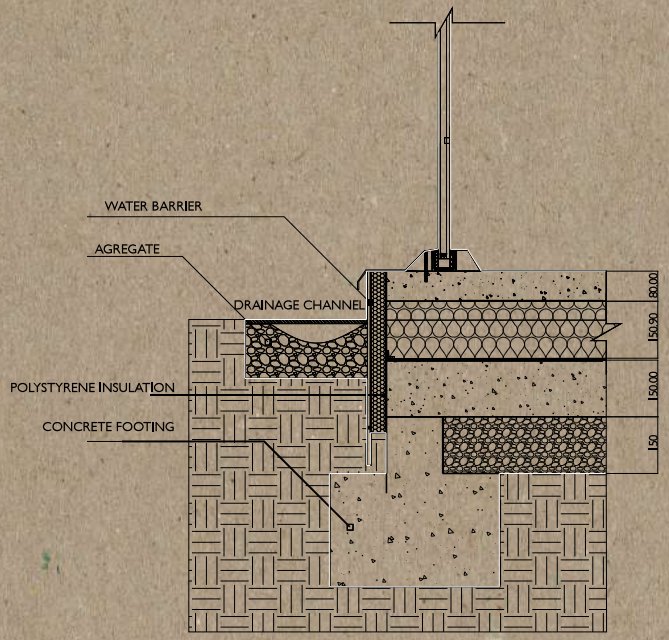
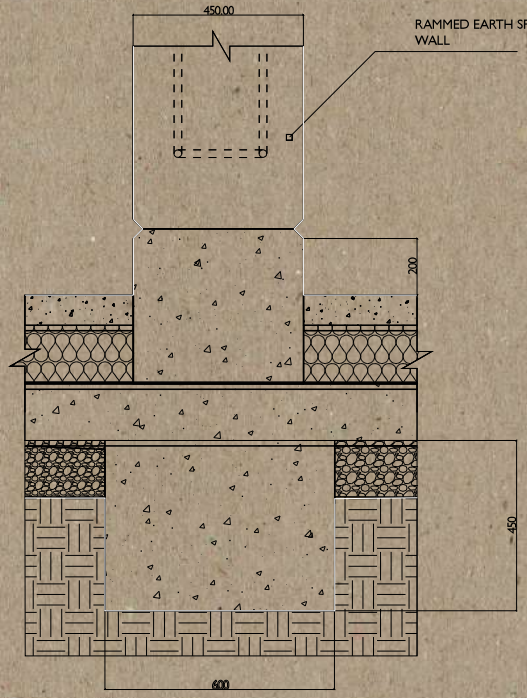
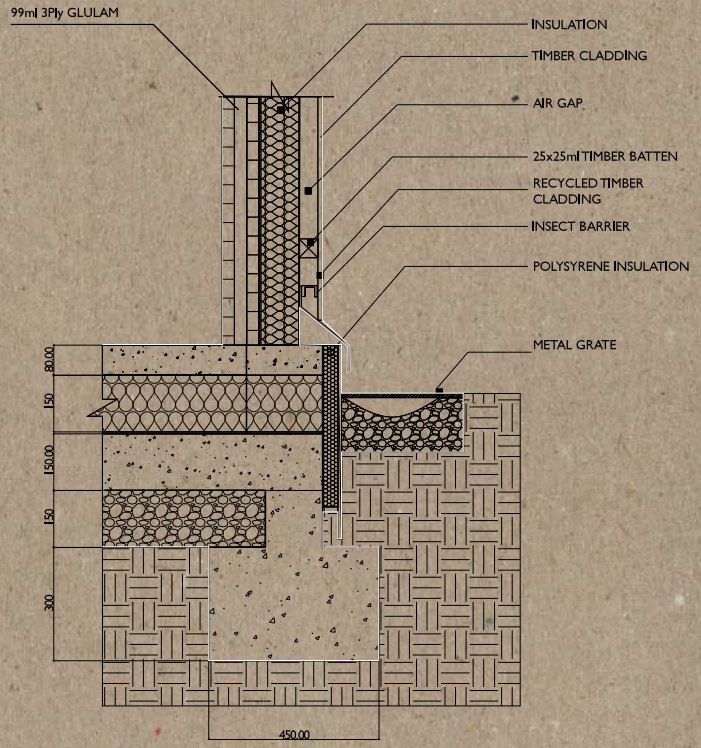

2ml Zinc Roofing
TIMBER SILL
DRIP SILL


40x40ml TIMBER BATTEN
CONCRETE CONNECTION
220


ZINC FLASHING
GLULAM TIMBER BEAM
DRIP SIL
100.00
150.00
66.00

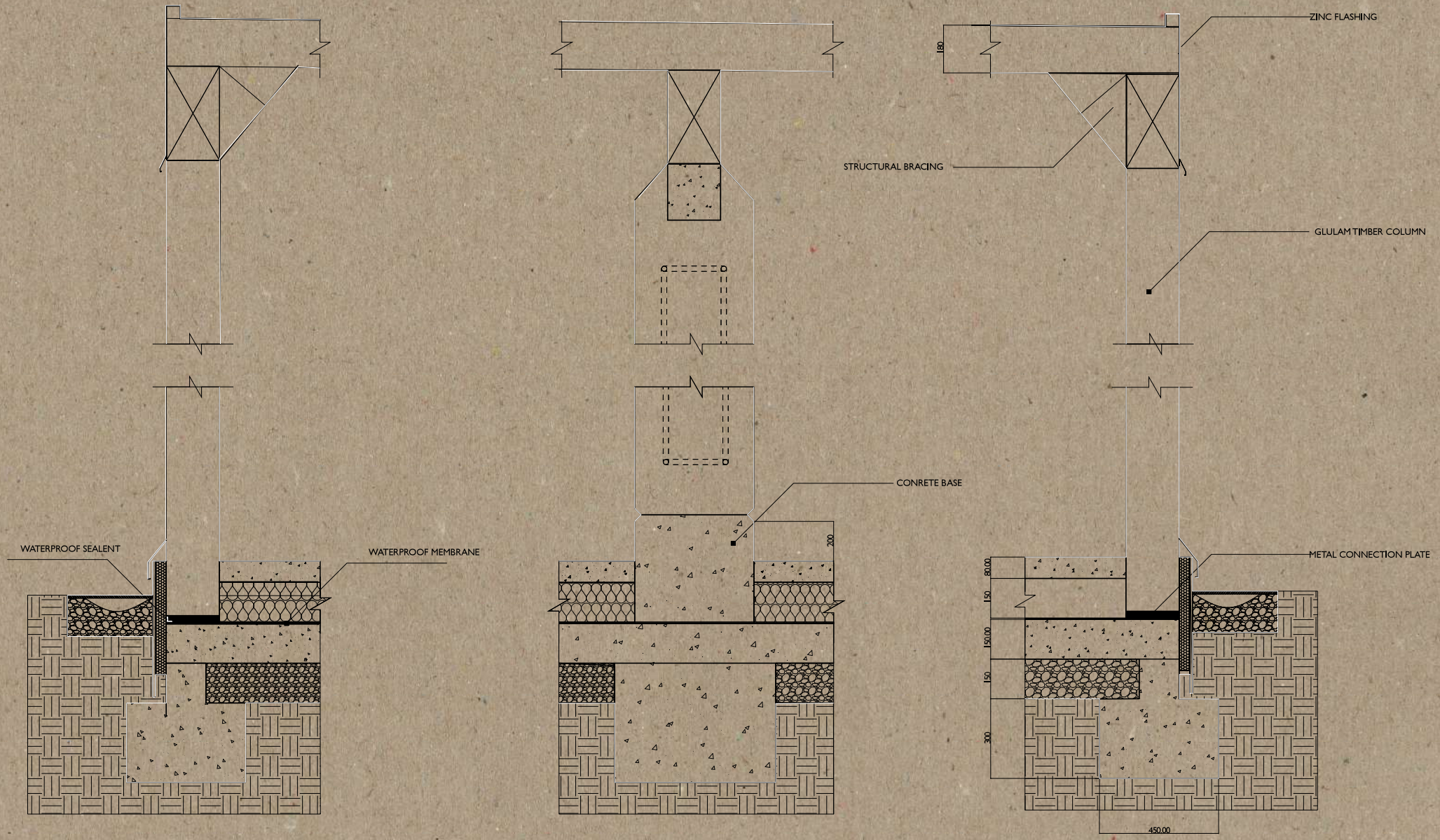

WATER BARRIER
AGREGATE
DRAINAGE CHANNEL
POLYSTYRENE INSULATION
CONCRETE FOOTING
80.00
150.00
150.00
150


450.00
RAMMED EARTH SPIINE WALL
200
450
600


99ml 3Ply GLULAM
INSULATION
TIMBER CLADDING
AIR GAP
25x25ml TIMBER BATTEN
RECYCLED TIMBER CLADDING
INSECT BARRIER
POLYSYRENE INSULATION
METAL GRATE
80.00
150
150.00
150
300
450.00

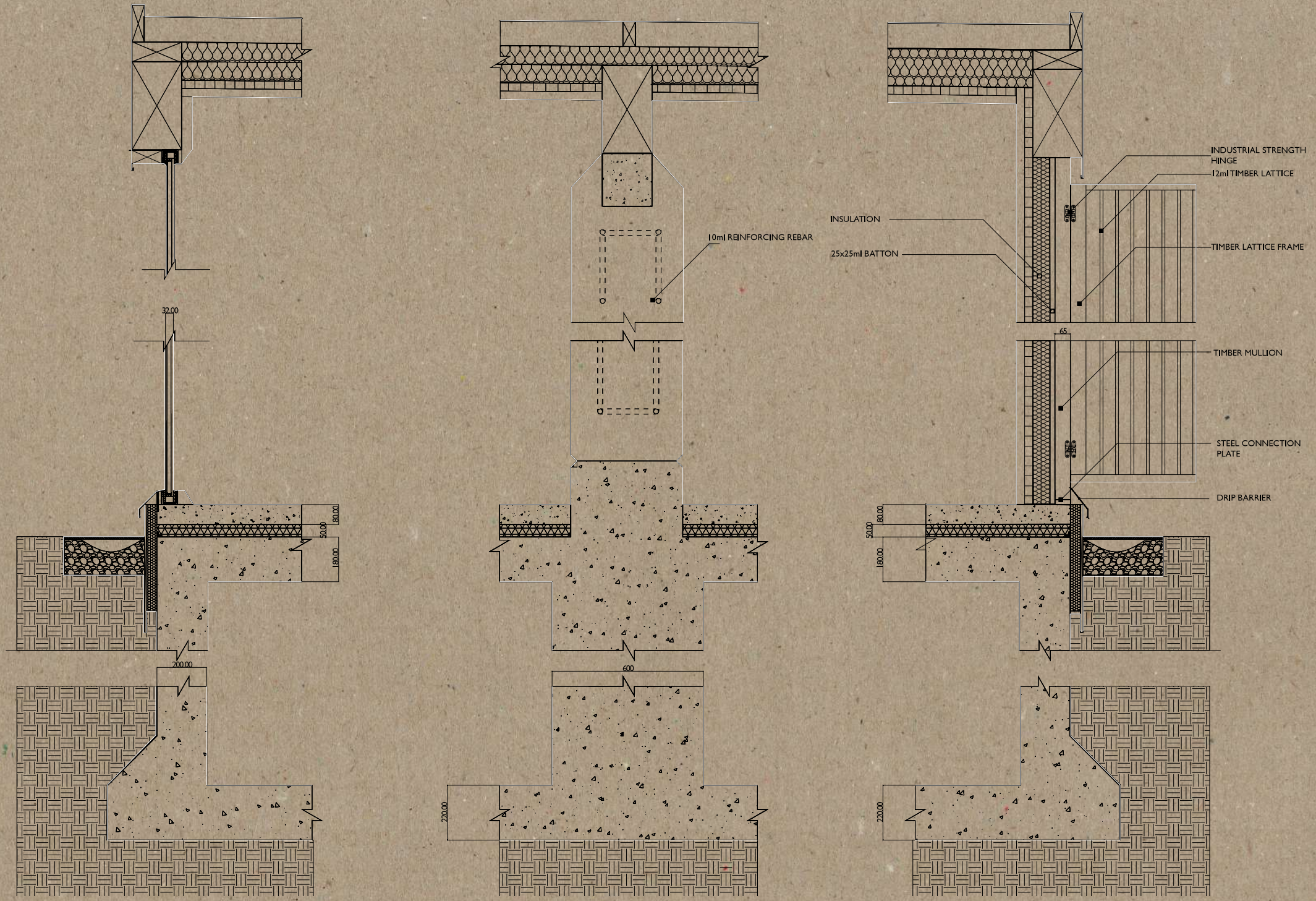
AA

20 40 100


ZINC FLASHING
180
STRUCTURAL BRACING
GLULAM TIMBER COLUMN
WATERPROOF SEALENT
WATERPROOF MEMBRANE
CONRETE BASE
200
METAL CONNECTION PLATE
80.00
150
150.00
150
300
450.00

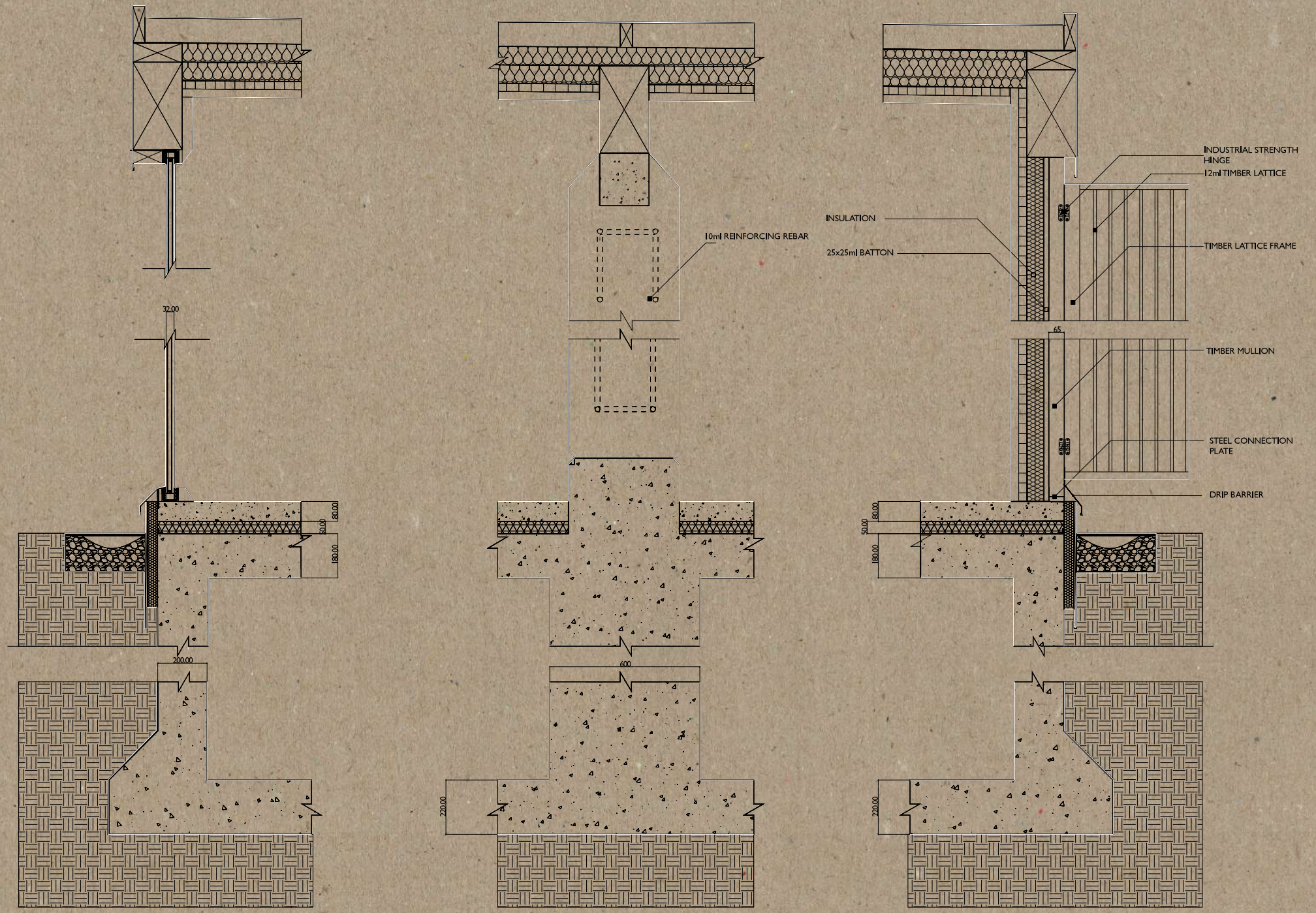
20 40 100

BB


INDUSTRIAL STRENGTH HINGE
12ml TIMBER LATTICE
INSULATION
25x25ml BATTON
TIMBER LATTICE FRAME
65
TIMBER MULLION
STEEL CONNECTION PLATE
DRIP BARRIER
10ml REINFORCING REBAR
32.00
80.00
50.00
180.00
200.00
600
220.00

CC

20 40 100


INDUSTRIAL STRENGTH HINGE
12ml TIMBER LATTICE
INSULATION
25x25ml BATTON
TIMBER LATTICE FRAME
10ml REINFORCING REBAR
TIMBER MULLION
STEEL CONNECTION PLATE
DRIP BARRIER
32.00
65
80.00
50.00
180.00
200.00
600
220.00

20 40 100

DD

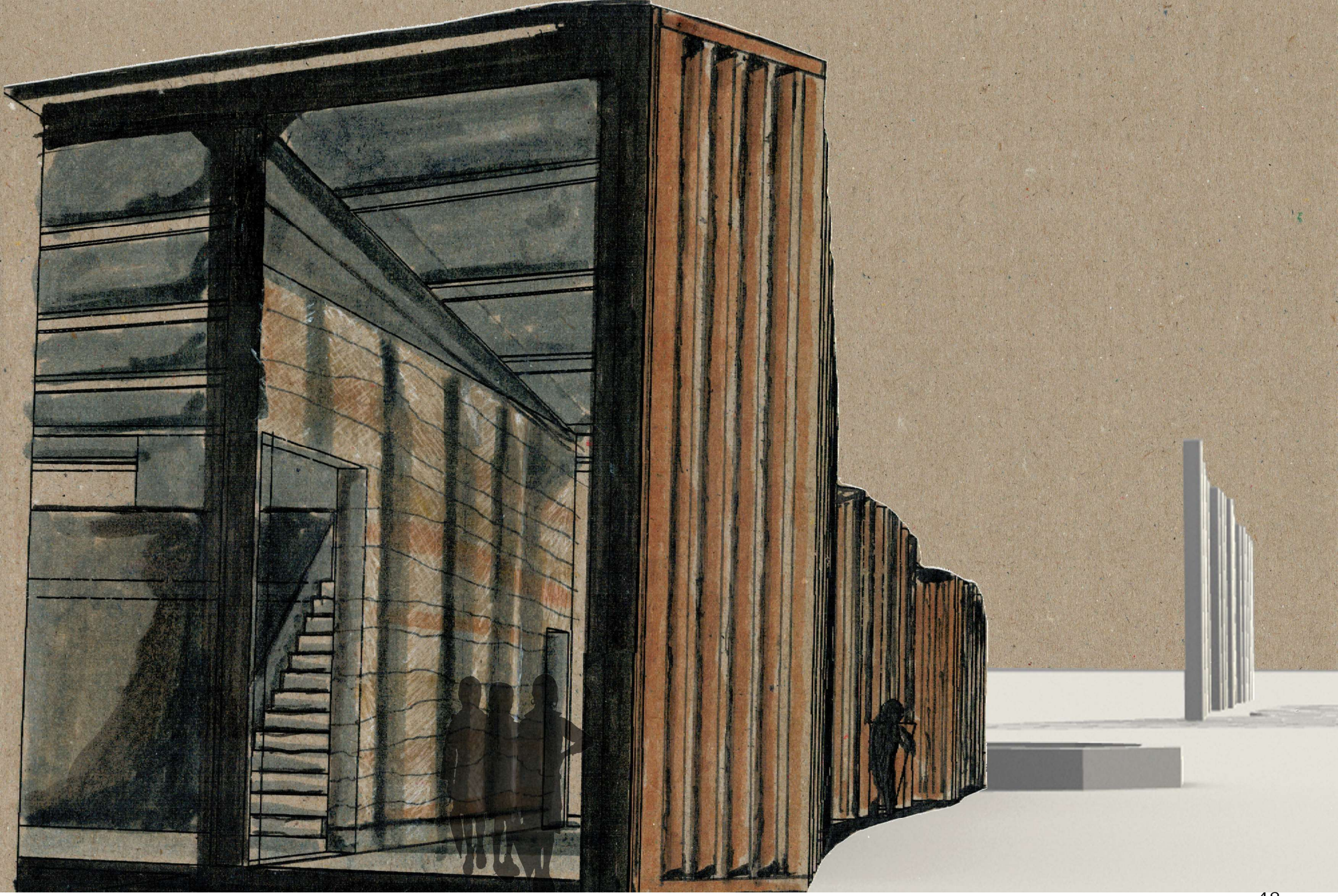
BEAUTY

IMPERATIVE

The product must contain design features intended solely for human delight and the celebration of culture and spirit appropriate to its function. The product must be artfully designed and pleasing to use.

DESIGN

The rammed earth wall anchors the building to the landscape around it. Providing warmth and a flowing pattern to lead you through out the building. It is the beautiful spine of the building.



SPECIAL THANKS

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BIBLIOGRAPHY

http://www.centreforthefuture.cz/

http://www.pragueviennagreenways.org/cycle.html

http://www.slavonice-mesto.cz/

https://living-future.org/lbc/

http://www.europeangreenbelt.org/

https://www.cuzk.cz/

https://www.keramika-mariz.cz/

Katarina Gyoreova, Diploma: Rehabilitace Pohraniční Vesnice

“Ohrožené hrady, zámky a tvrze Čech. 2. díl, N-Ž , Úlovec, Jiří, 1957- Praha : Libri, 2005