



Future Schools for Ukraine

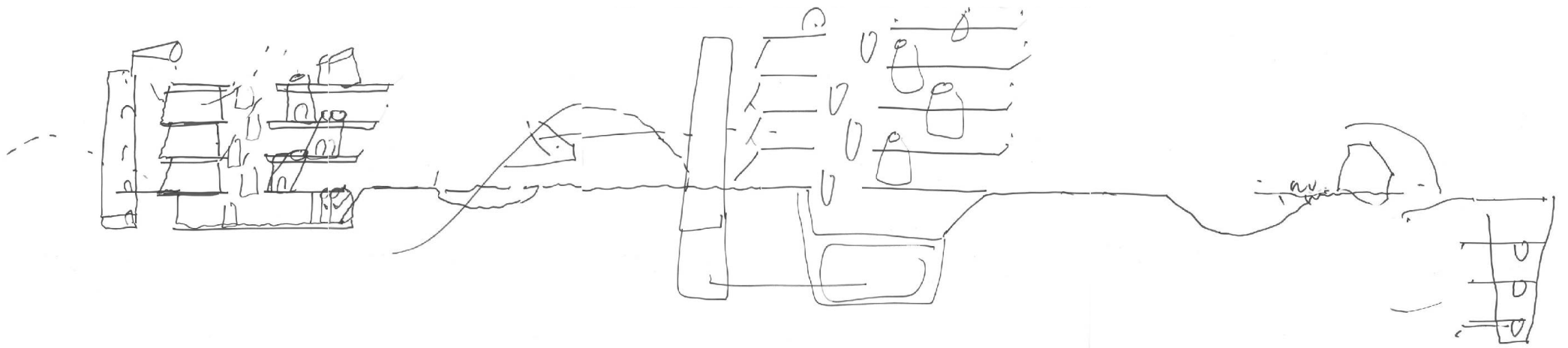
City into School - School into Town

Introduction

The School is drawn as required in a notional urban municipality – the design is a most ambitious school building. A utopia for children to be realized. The school represents the very best in modern learning spaces and also for its ecologically sustainable design. The architecture and creative space design create a learning environment that supports modern pedagogy fit for 21c learning.

The school has a high functional, spatial and tectonic quality. It would become a new landmark for whichever district – a landmark that is both aesthetically and functionally adapted to the unique locations and the central role the school plays in the districts it may be built in. Where water is also considered and the central role the school will play in the district.

The new schools have been designed with sustainability and resilience at the centre of the approach.



notional site section

Sustainability

Inter seasonal Heat Store

Passive solar heating combined with inter seasonal heat storage will provide beneficial low carbon energy sources to maintain comfort conditions. Heat from the sun is collected into the structure and transferred into the earthen banks surrounding the school. The earthen banks utilise the passive annual heat storage (PAHS) technology well proven in Europe and North America.

Earth Tube Ventilation

Earth tube ventilation systems are installed within the ground around the building to provide naturally tempered fresh air – draw from a fresh air reservoir of the bioclimatic park spaces within the school property. The park spaces further creating habitat as well as soothing the sensory needs of mixed community.

Geo Exchange and PV's

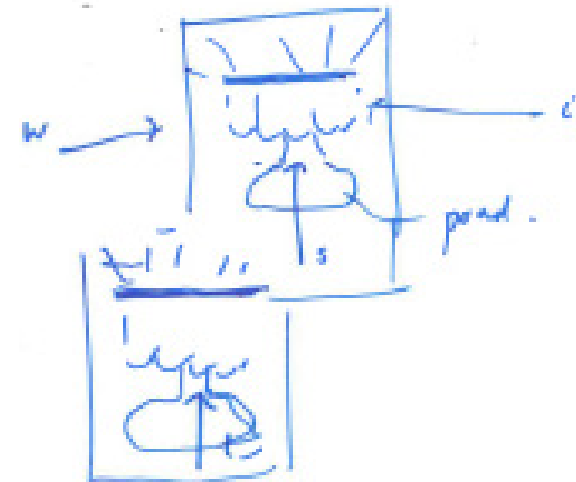
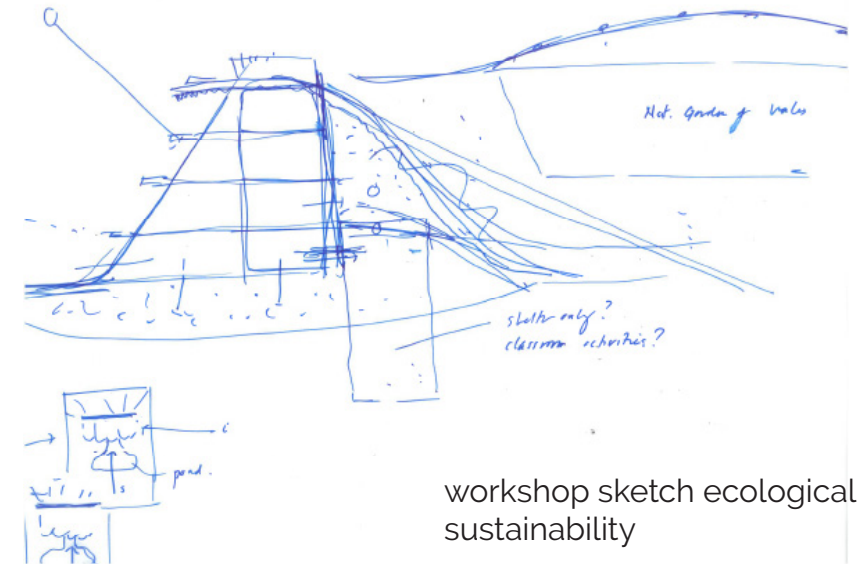
Additional energy needs are provided by geexchange through the ground and powered by solar photo voltaic (PV) panels. The south orientated roof allows for maximum efficiency form the PV panels that will generate all of the electricity needs of the school.

Water

Rainwater is celebrated and stored in cisterns for re-use as flushing, irrigation and features for landscape. All in all the sustainability of the new schools are driving the design and the resilience will ensure safe, inspiring places for learning for years to come.

Orientation

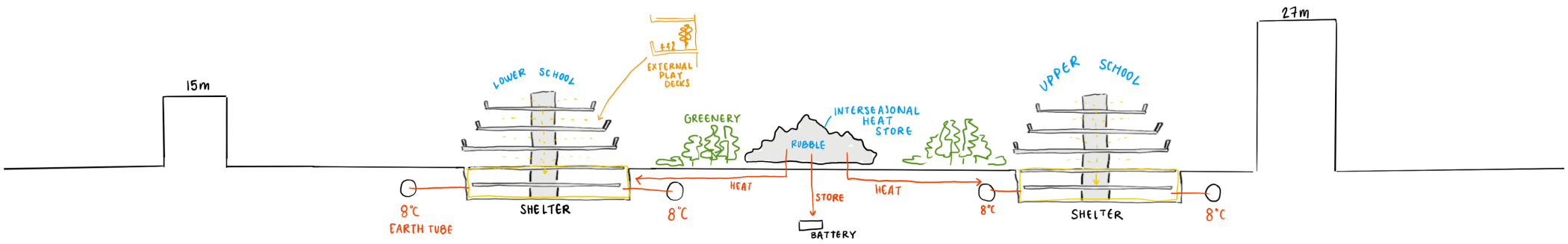
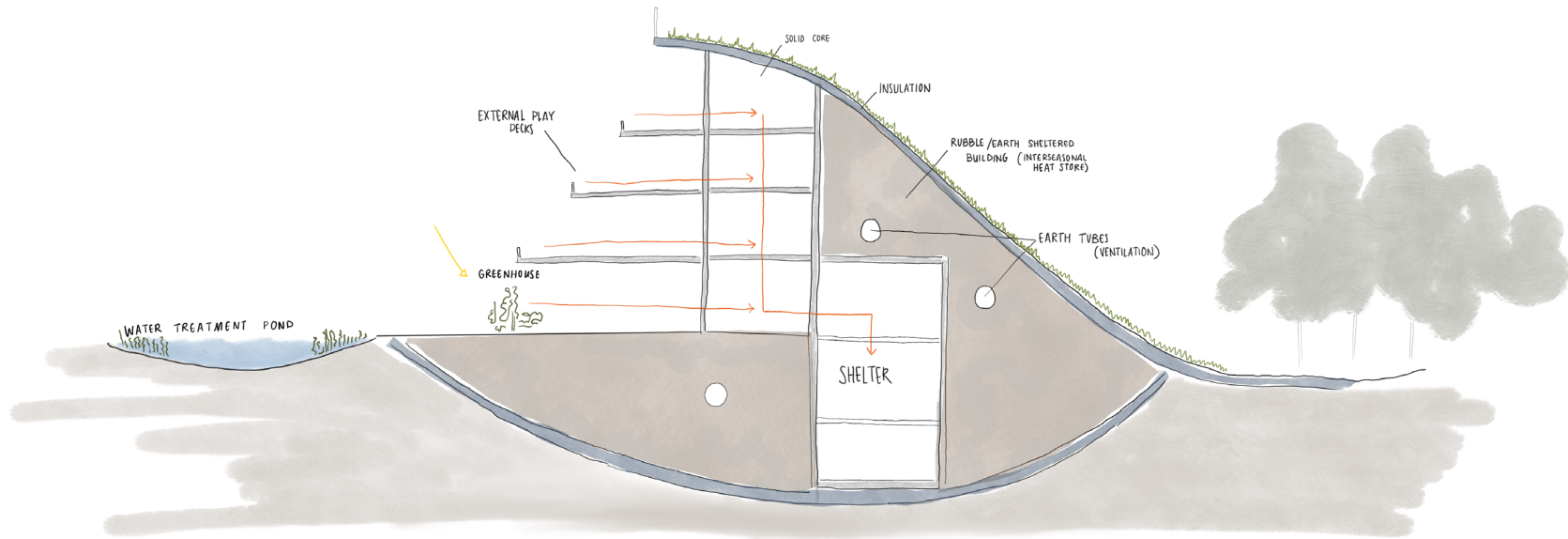
Windows are open-able along with high level vents to increase natural ventilation when the outside climate conditions are suitable. Typically this would be in the spring/autumn shoulder seasons.



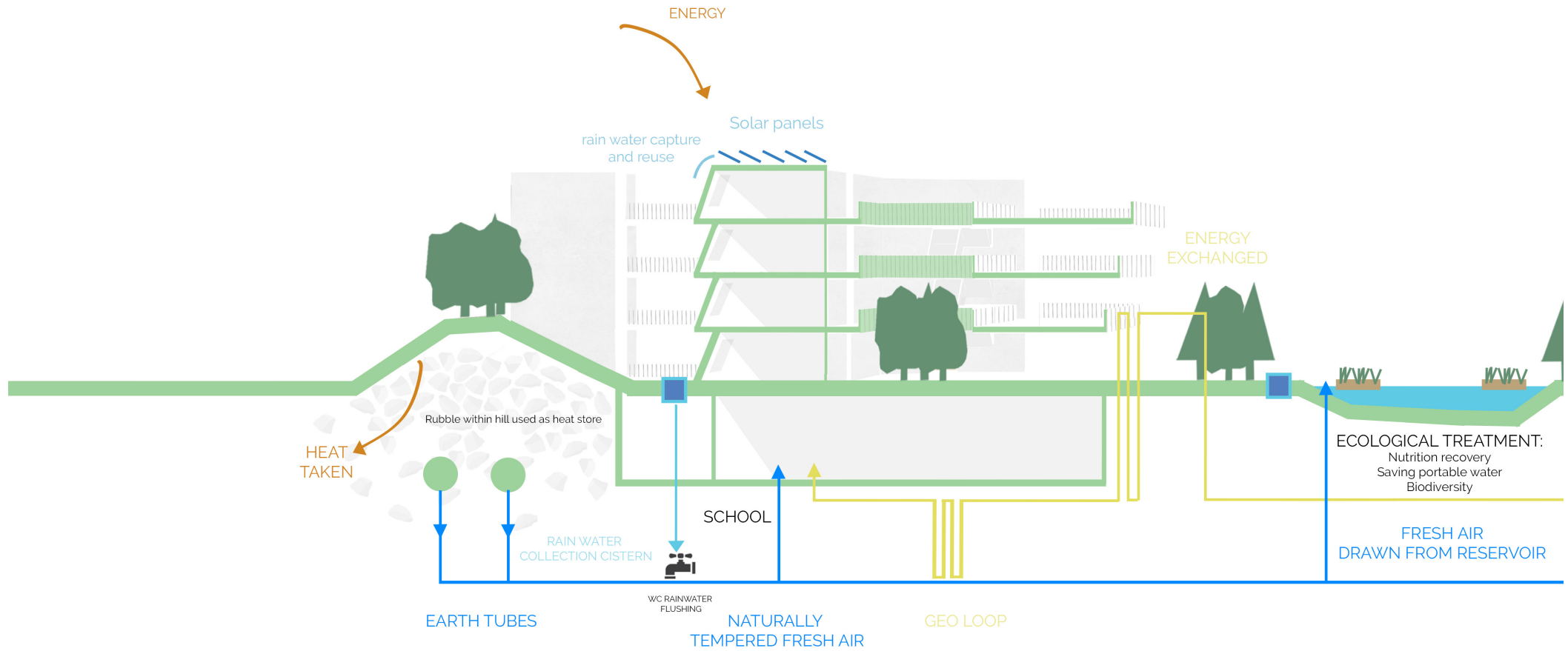
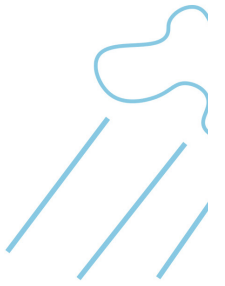
light, air, water

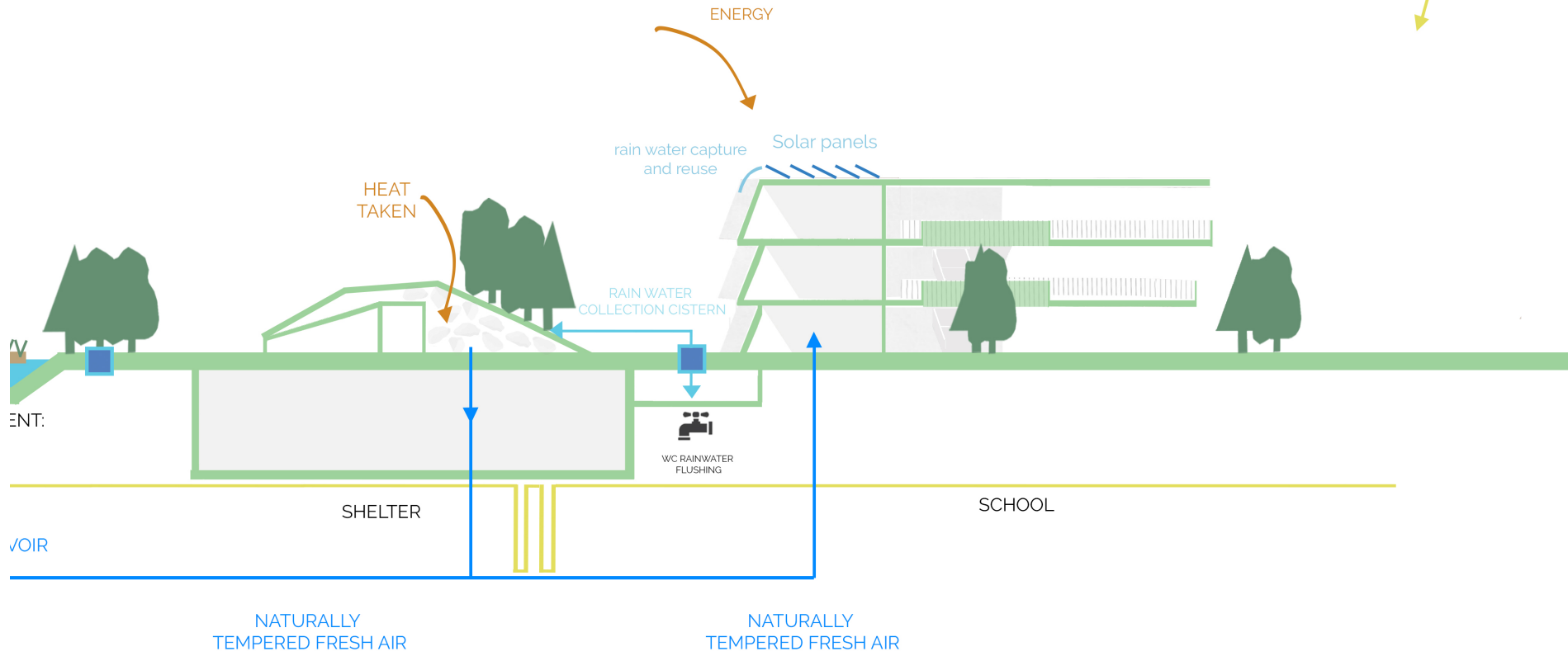
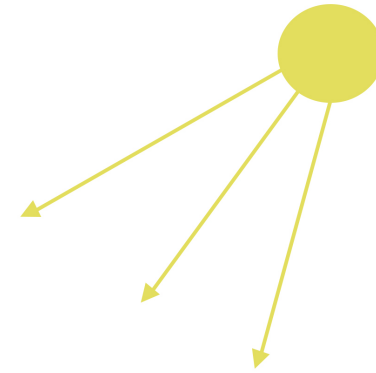


SOUTH FACING
CLASSROOMS AND
OUTDOOR SPACES



Bio integrated section



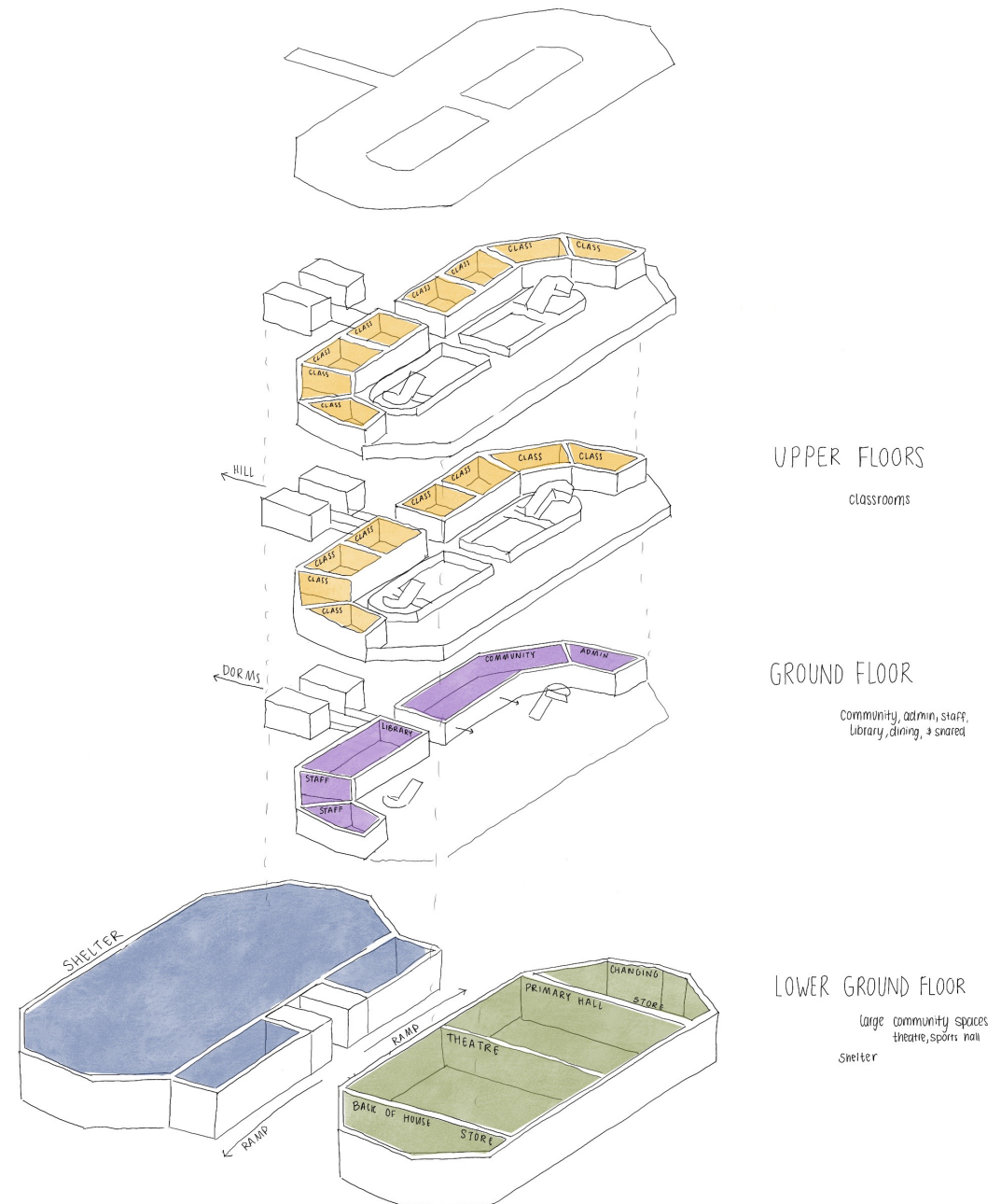


Adaptability

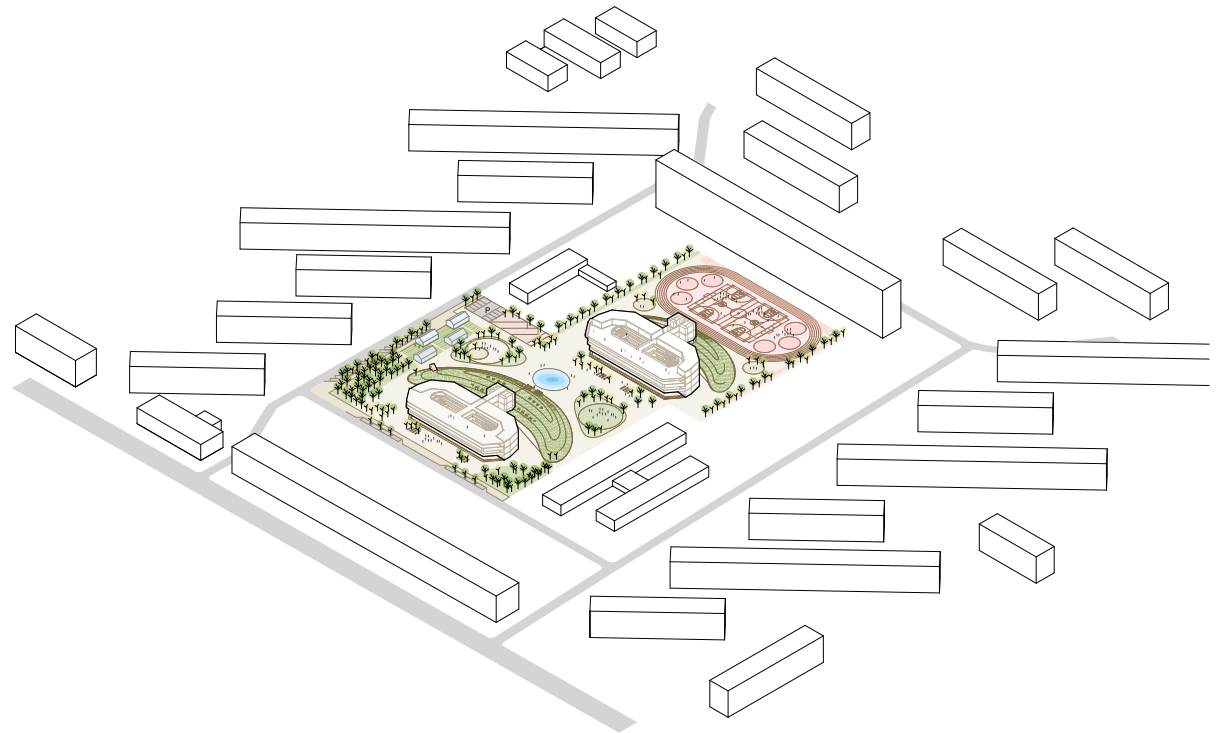
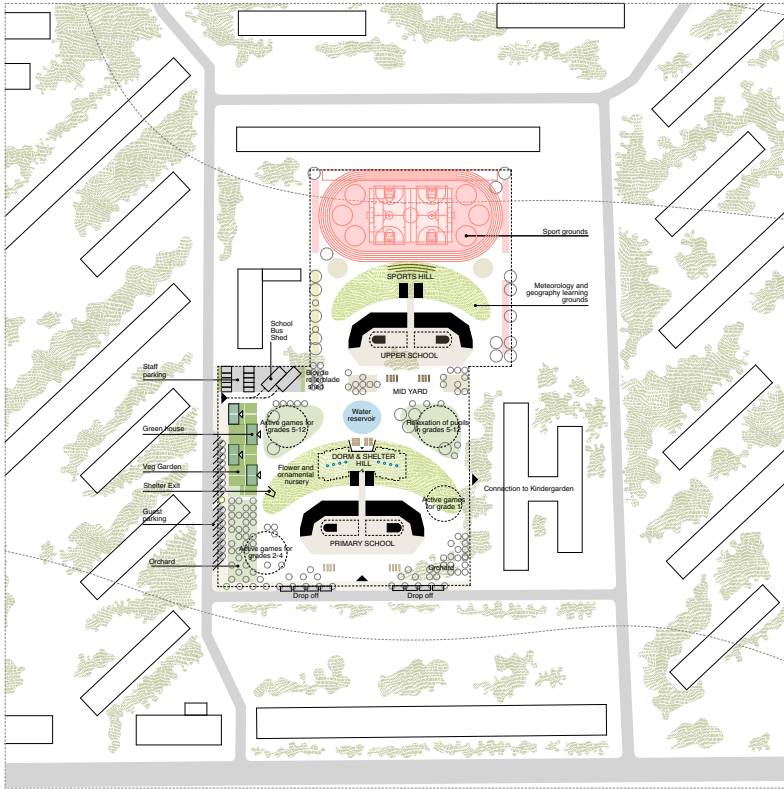
The design of the school building is future proofed for flexible use, open, semi open, or closed didactic layouts. Each floor of classrooms has its own external play deck, facing south to maximise sunlight, while classrooms face north/east/west to minimise glare. The lower ground floor contains large community spaces, halls, theatre etc, with direct connection to outdoors and sports fields. The ground floor contains the community functions, dining, library, general community, staff and admin, and a central agora and assembly space, allowing both student and the wider community to access the spaces. The upper floors contain classrooms, that have the ability to change according to user; primary, general learning or specialised classrooms. Depending on each schools needs and size, the site can contain 1, 2, 3 etc of these flexible buildings and depending on size can add or remove the amount of classroom floors required. The small atriums provide light and visual connections between floors and classrooms, and unify the children of all age groups as they learn and grow through the school building.

The central core contains circulation that connects the community and classroom levels to the shelter below, minimising travel time between class and simplifying the route below ground. The core also contains amenity spaces.

The dual use shelter is placed under the hill, allowing for protection, and access from the school circulation. There is a secondary entrance that allows for egress away from the buildings.



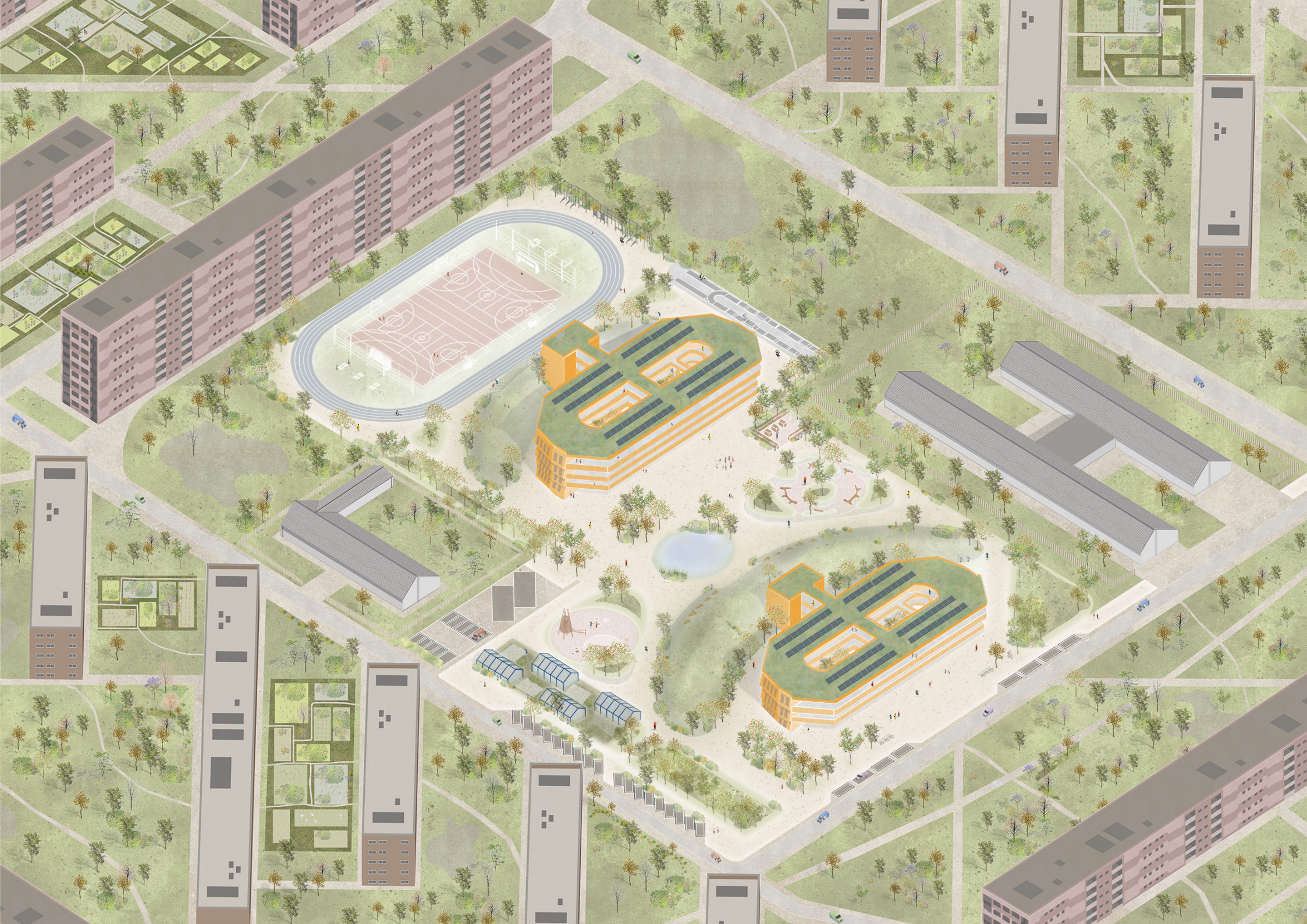
Hypothetical Site A

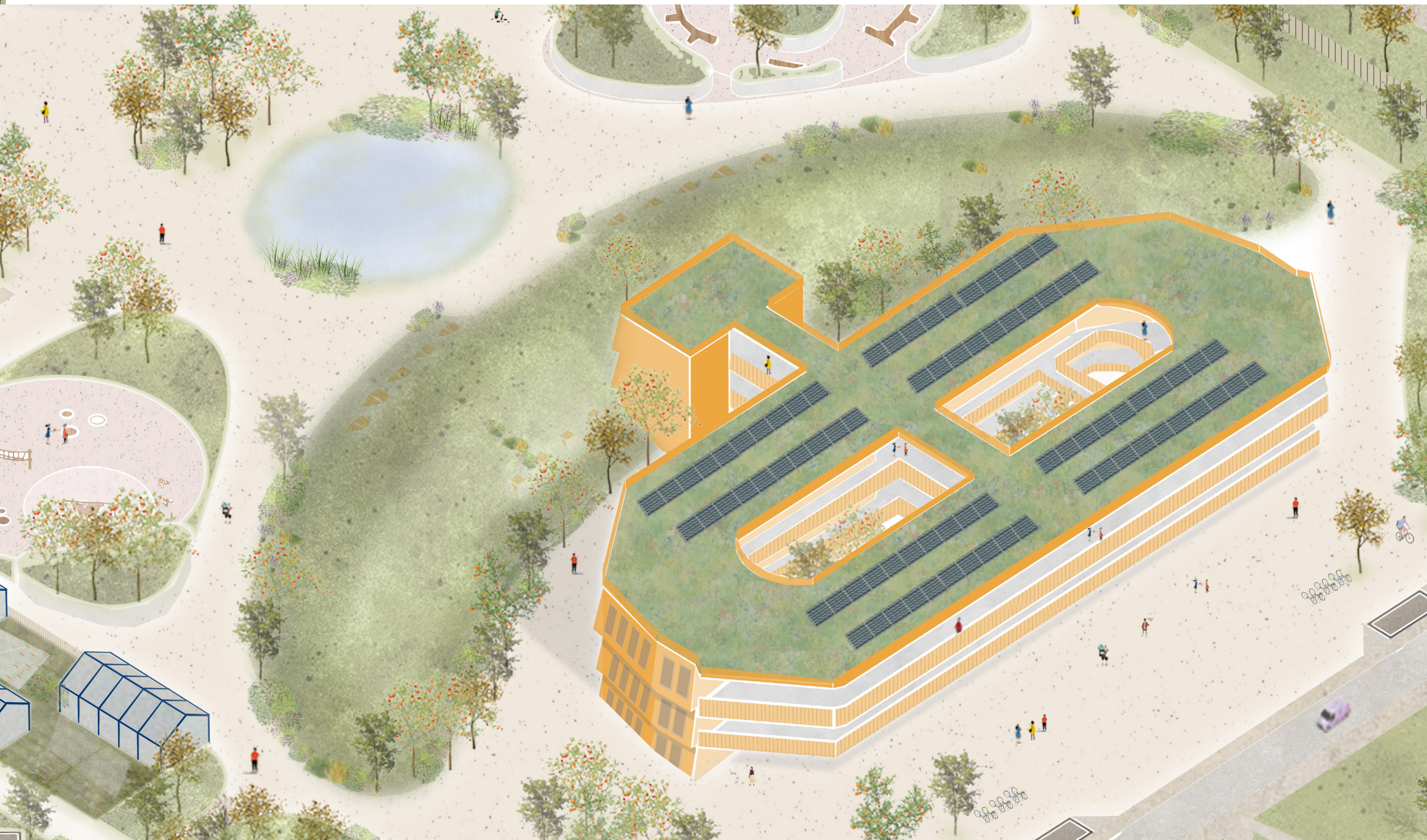




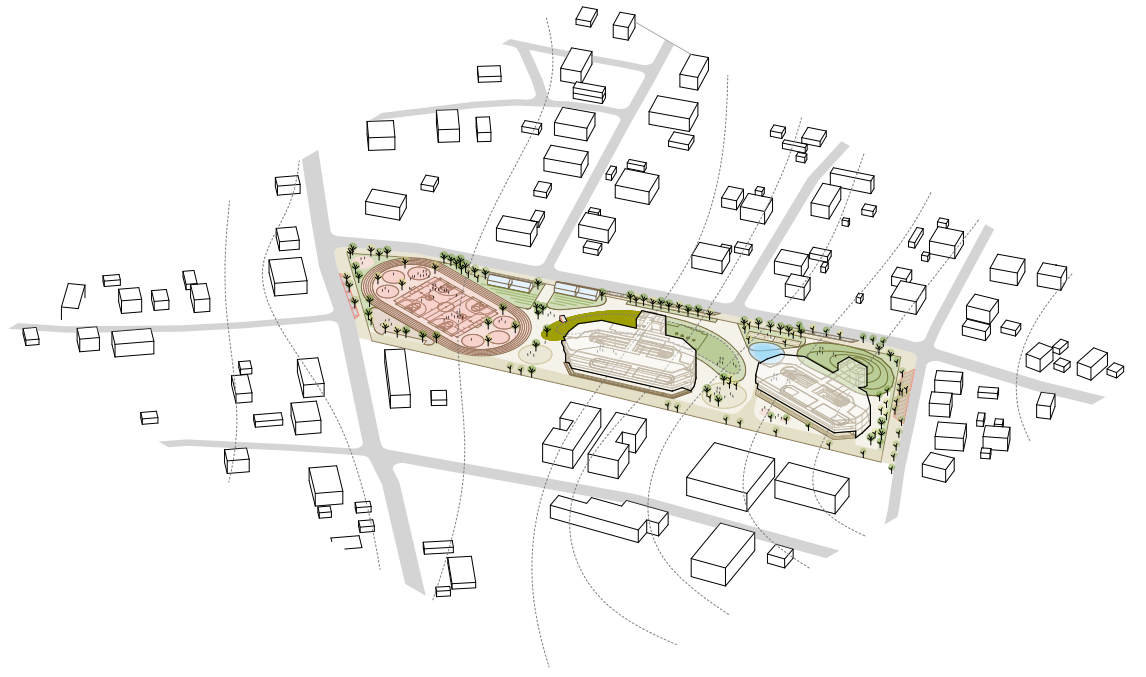
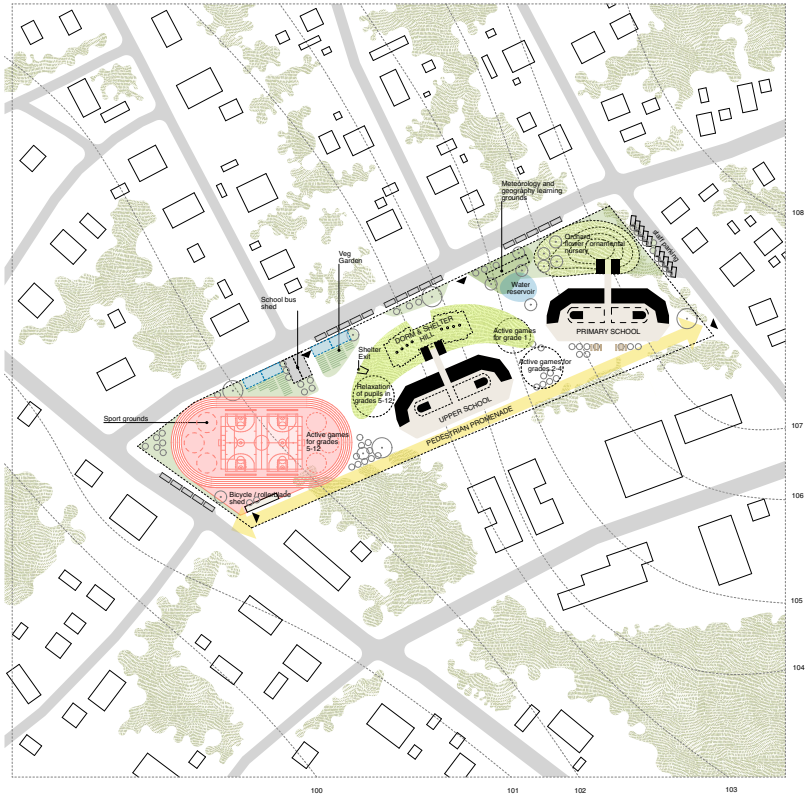
Site A Master plan

- 1 Main entrance
- 2 Community square
- 3 Dorm hill
- 4 Bike parking
- 5 Playground, grades 2-4
- 6 Playground, grades 1-2
- 7 Playground, grades 5-12
- 8 Recreation, grades 5-12
- 9 Garden
- 10 Greenhouses
- 11 Lawn
- 12 Water reservoir and research area
- 13 Meteorology
- 14 Study tables
- 15 Hill
- 16 Amphitheater
- 17 Multifunctional stand with run track 250 m
- 18 Trainings
- 19 BMX trace
- 20 Parking for guests
- 21 Parking for staff
- 22 Parking for buses
- 23 Shelter entrance
- 24 Dormitory entrance
- 25 Bike line





Hypothetical Site C

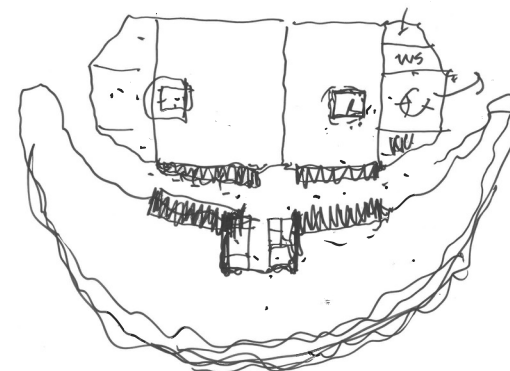
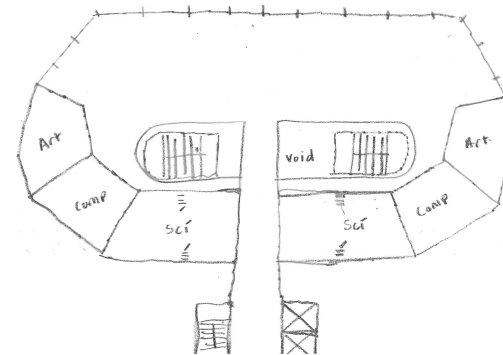
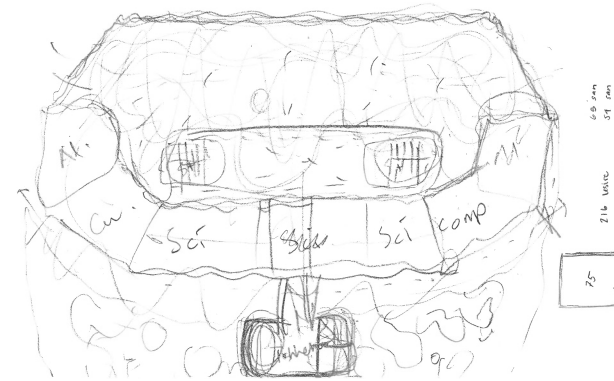


Building Plans

Structure

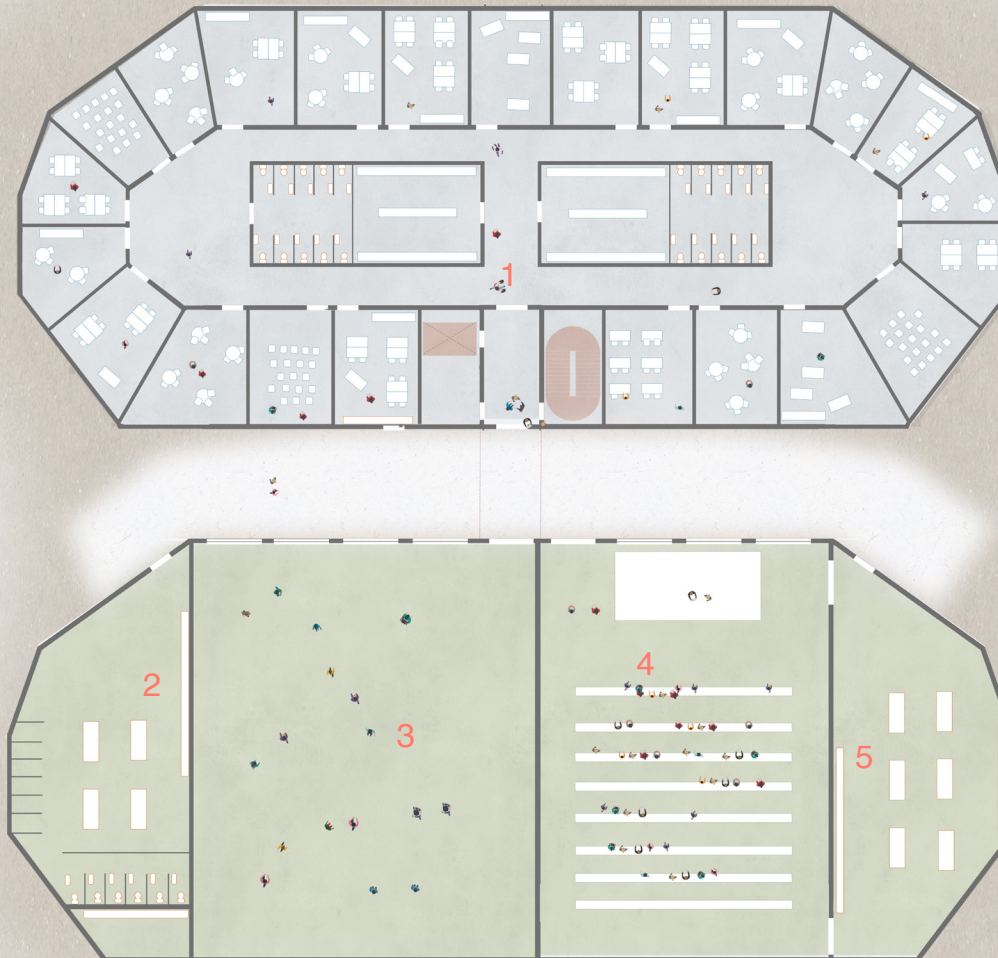
The concept of sustainability is supported by the use of large quantities of renewable raw materials. Locally sourced timber is proposed through the building, using a mixture of gluelam and CLT. Wood is sustainable, energy efficient and contributed to the indoor environment. Timber structure enables flexible use and free organisation of the spaces. Walls made of CLT delimit the rooms and also serve as bracing.

Initial Plan Sketches



Below Ground Primary School

- 1 Shelter
- 2 Changing
- 3 Primary Sports Hall
- 4 Theatre
- 5 Store/Theatre Back Of House
- 6 Dormitorys
- 7 Admin/Staff/Medical Etc
- 8 Dining Hall
- 9 Kitchens
- 10 Open assembly space and courtyard
- 11 Primary Classes Grade 1-4
- 12 Play deck
- 13 Flexible Multipurpose Hall
- 14 Sports stand seating
- 15 Library
- 16 Community Space
- 17 Lyceum and Gymnasium Classrooms (grade 5-9, 6-12)
- 18 Specialised class, science, art etc



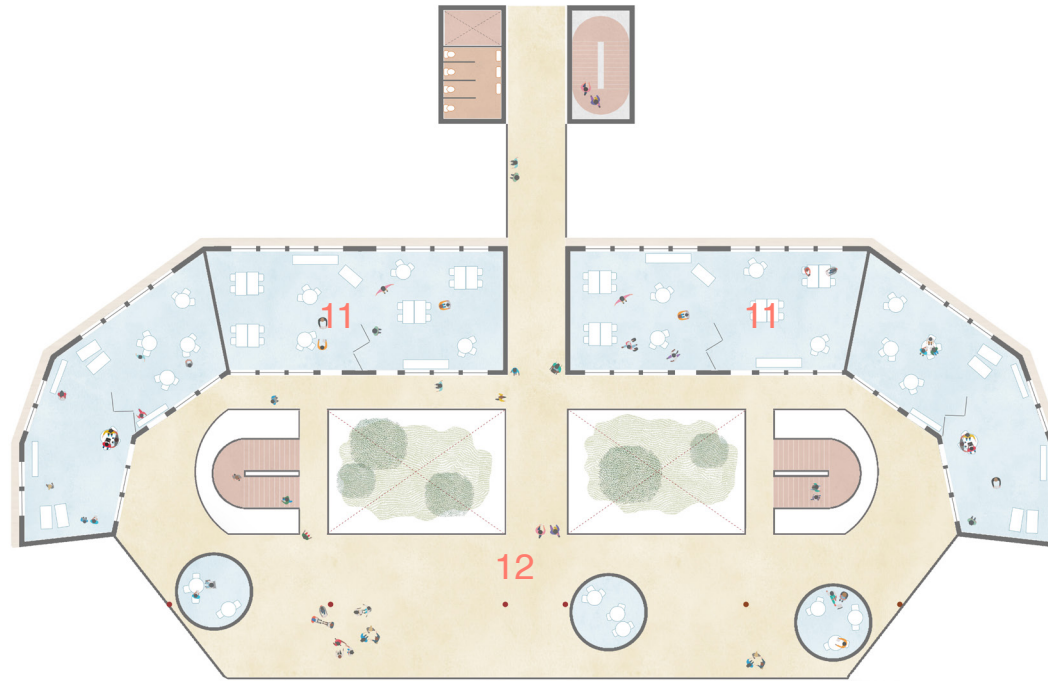
Ground Floor Primary School

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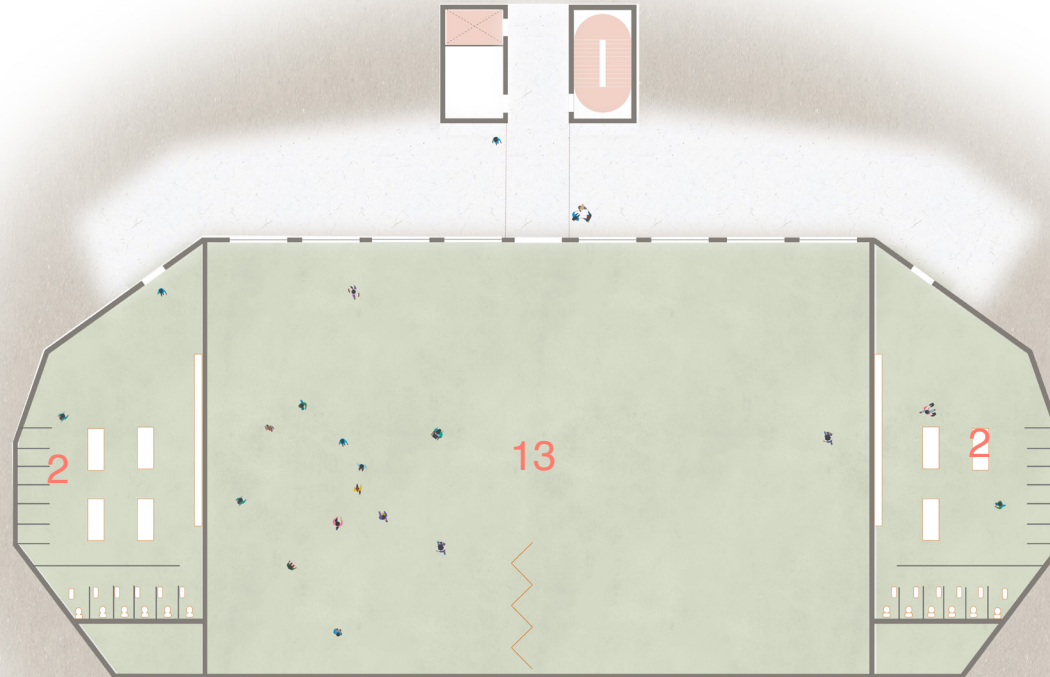
First/Upper Floor Primary School

- 1 Shelter
- 2 Changing
- 3 Primary Sports Hall
- 4 Theatre
- 5 Store/Theatre Back Of House
- 6 Dormitorys
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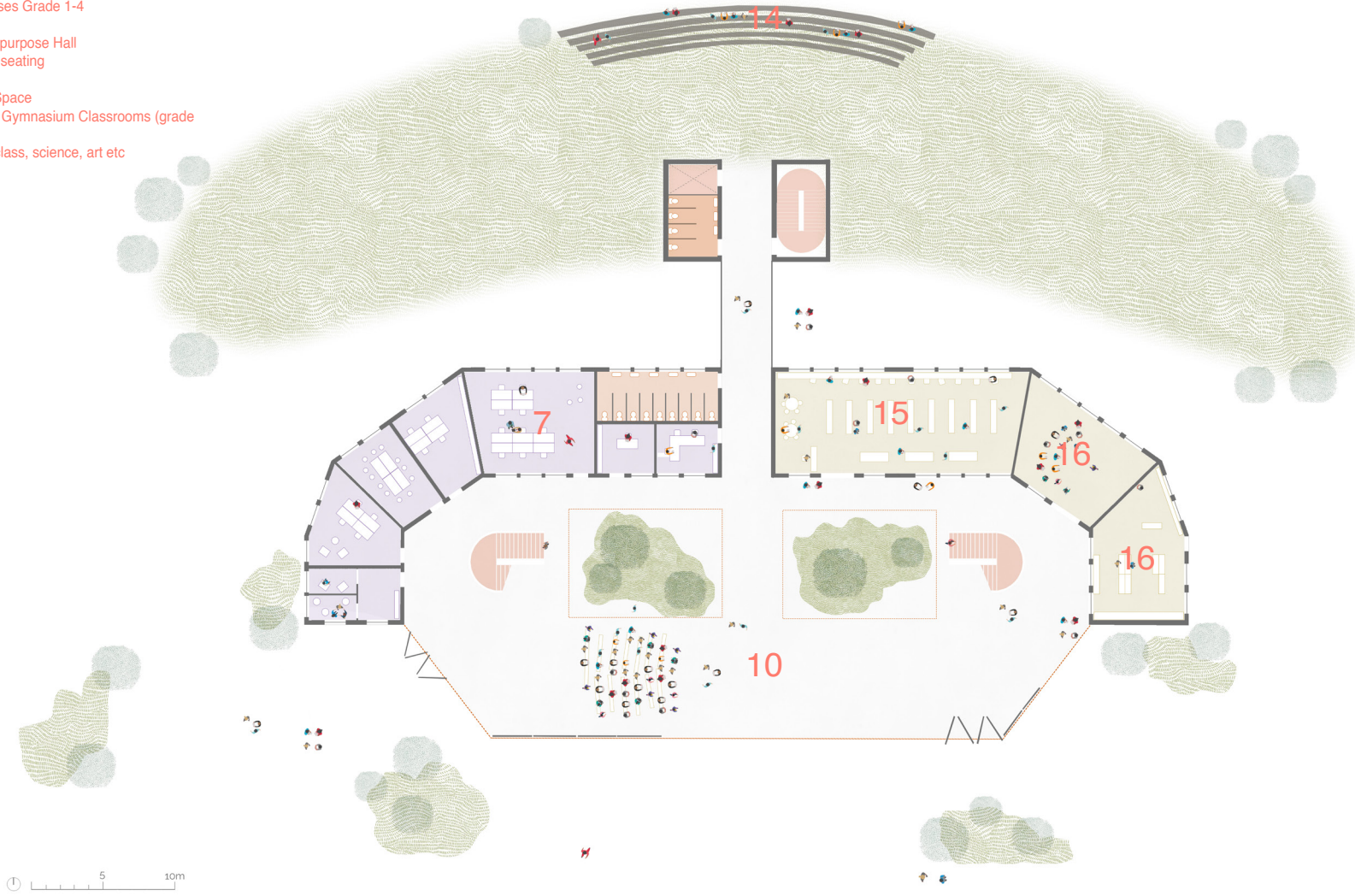
Below Ground Scondary School

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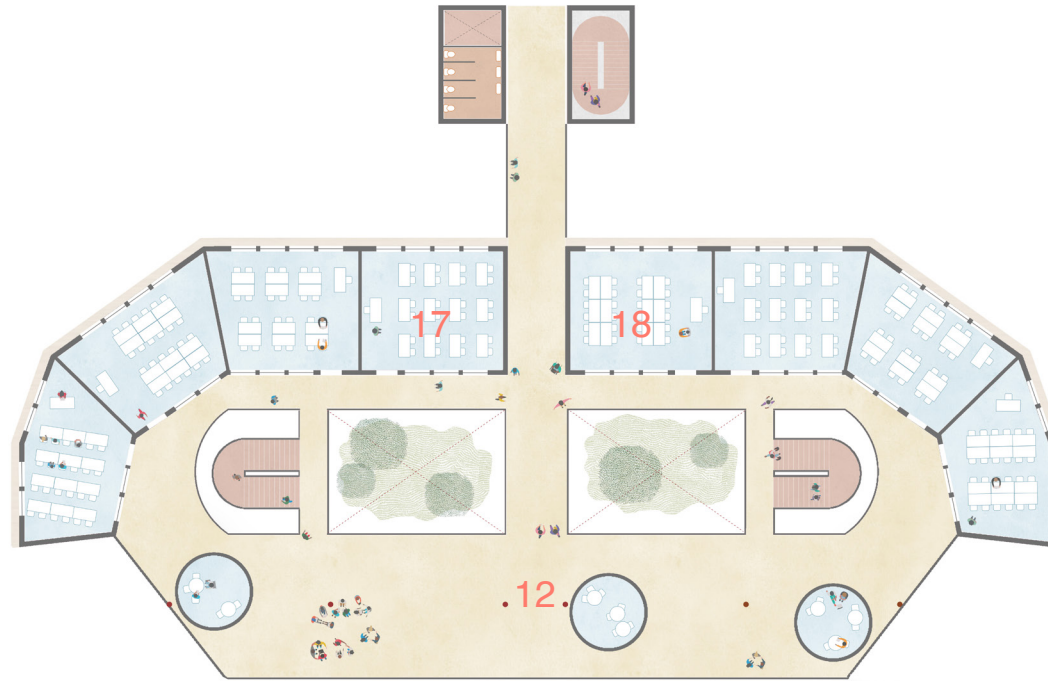
Ground Floor Secondary School

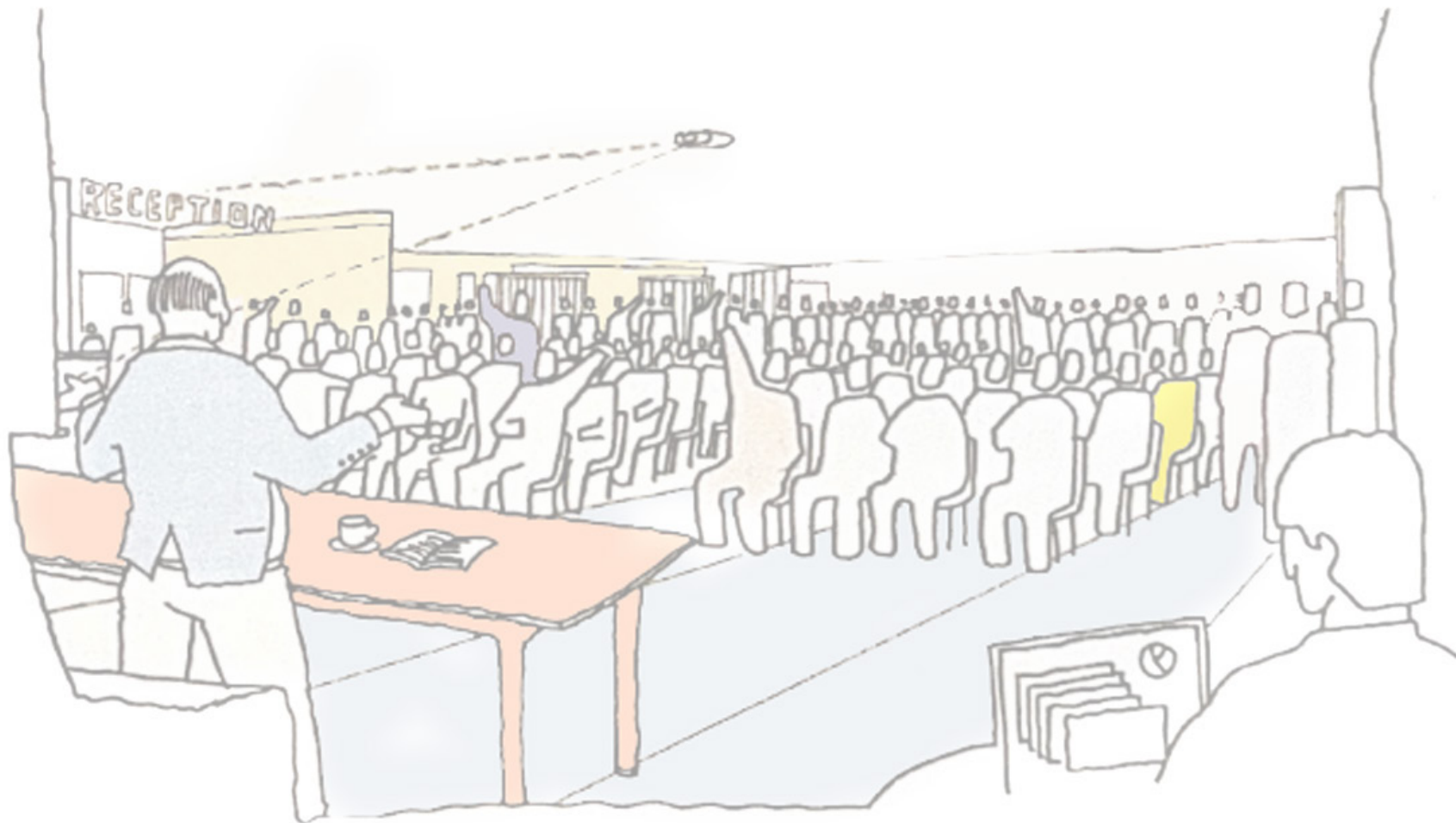
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First Floor Secondary School

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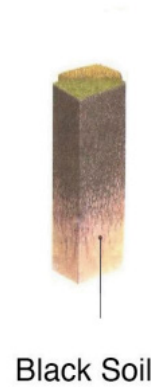




Ground floor communal space
09:15 All school Assembly! Good Morning Everyone!

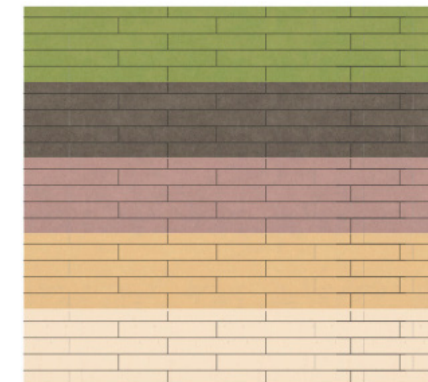
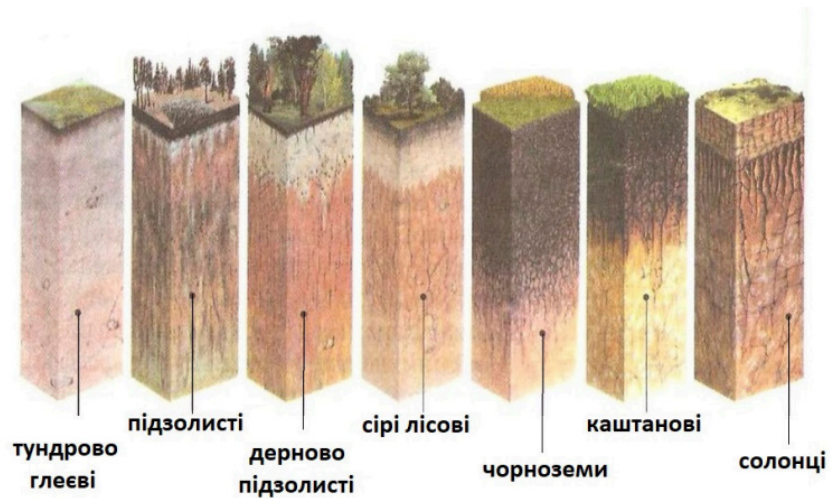
Elevations

When looking at the elevation and materiality, we seek to incorporate the idea that the building is within the hill, and the relationship to the ground and soil. We created a colourful building that emulates the soil profiles of the regions of Ukraine, allowing for the adaptability of the colours depending on the soil of the region in which the school is being realised.

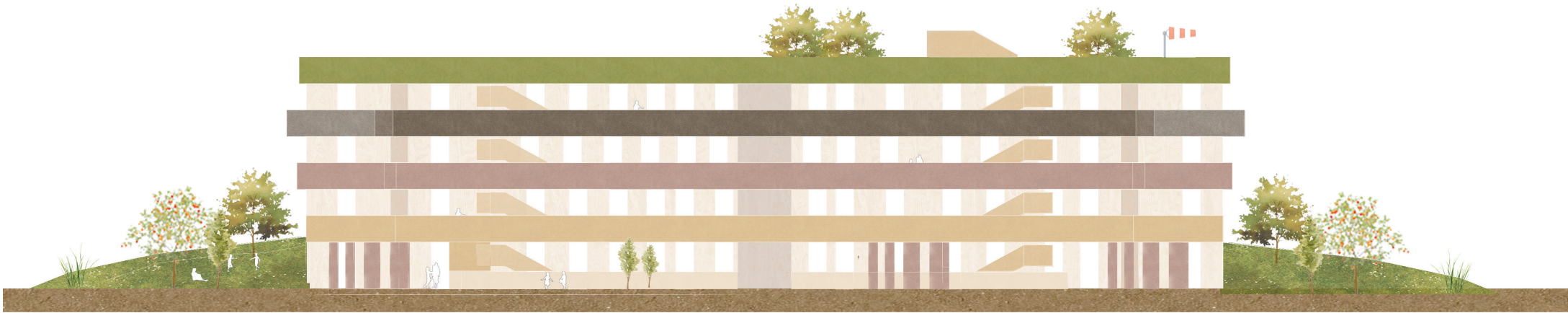


The colour palette is adapted to match the colour of the soil profile according to the construction region.

Soil Profiles by Region

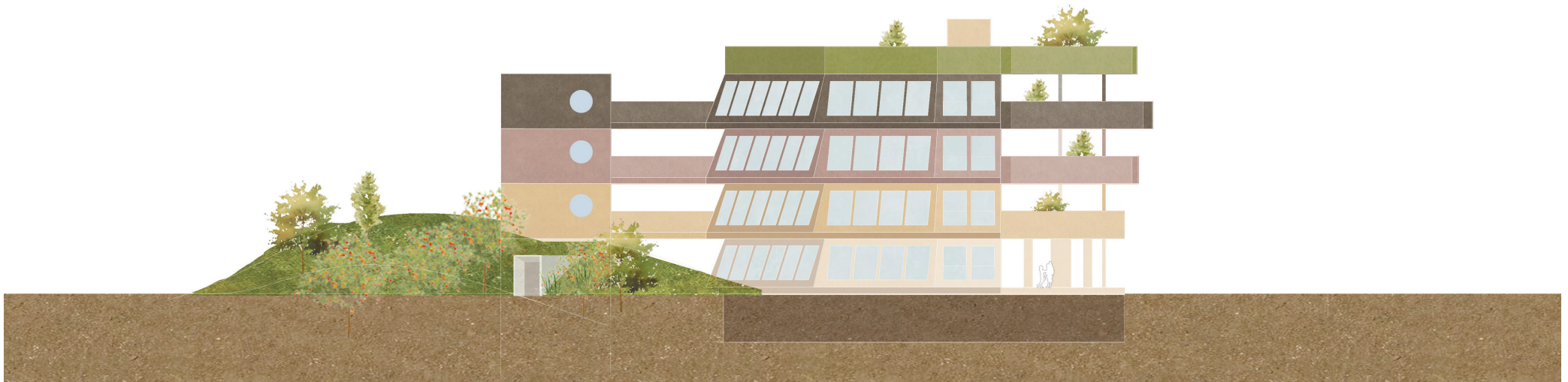


Resilient low maintenance, vitreous enamel cladding



Entrance Elevation (South Facade)

Strong Horizontal Banding



Side Elevation (West Facade)

Circulation core

Teaching House

Play/multi use deck



Rear Hill Elevation (North Facade)

Dorms

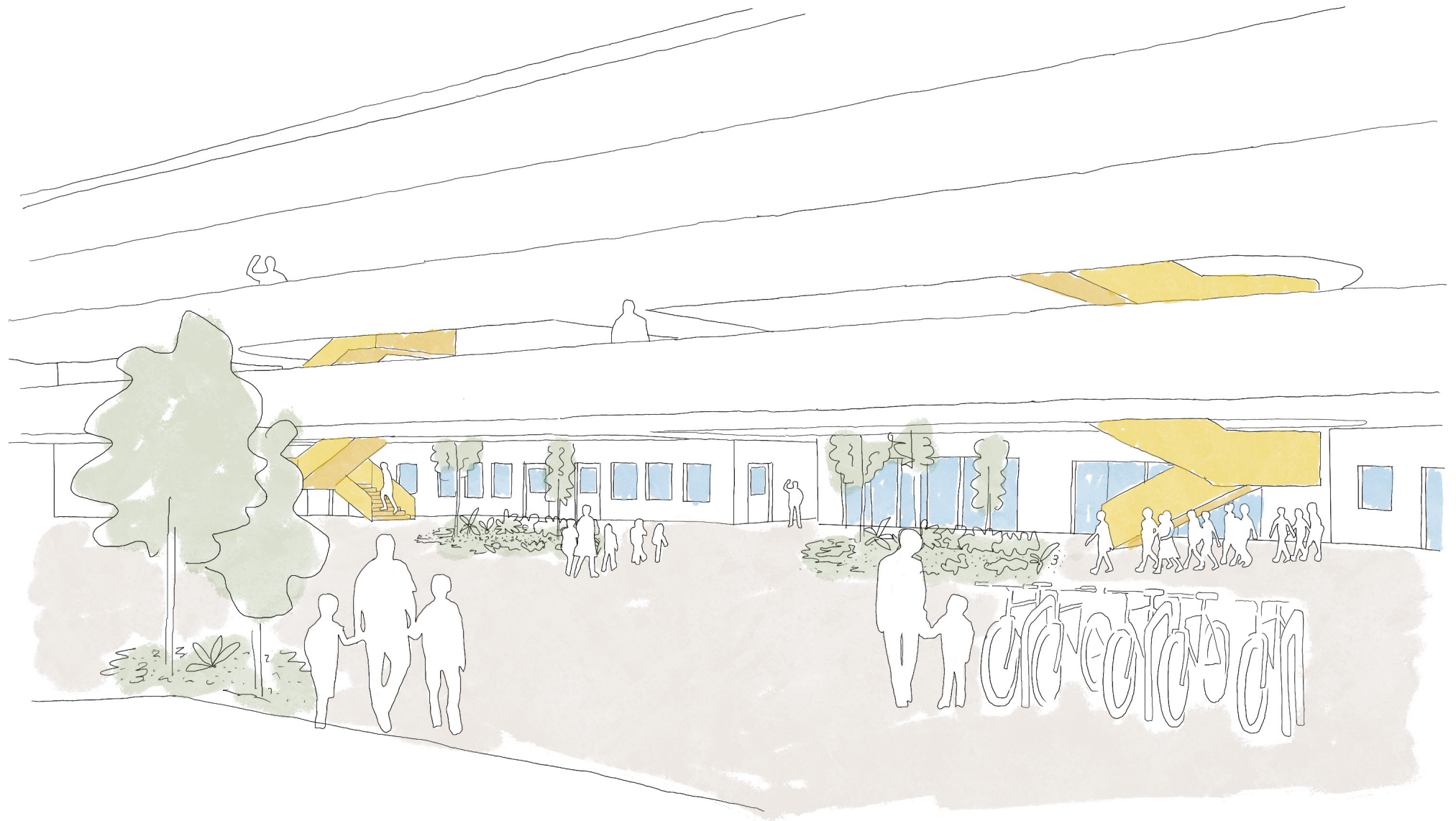
Hypothetical Site B



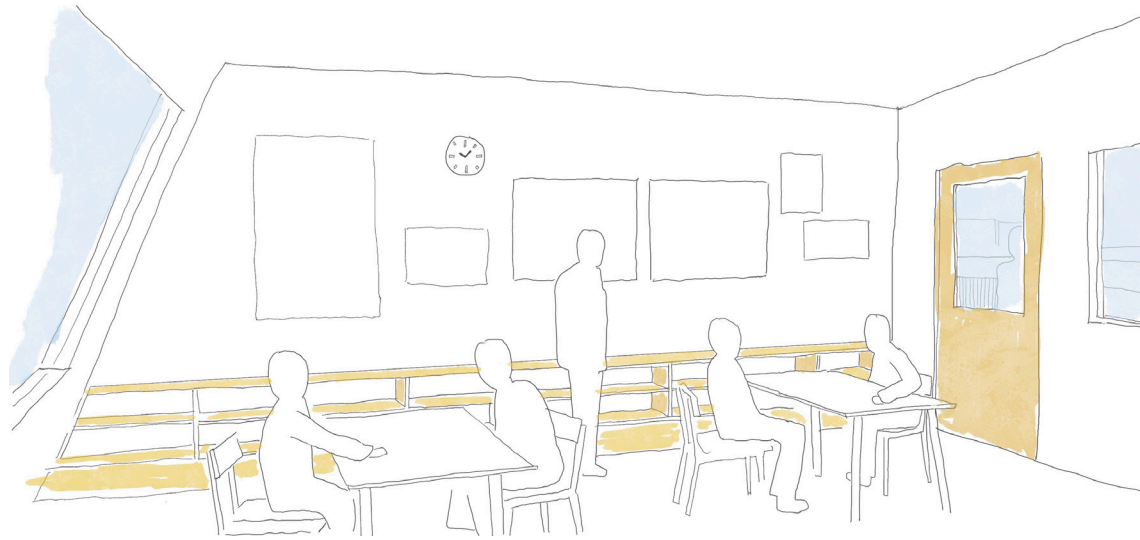
Heat store and earth cooling tubes



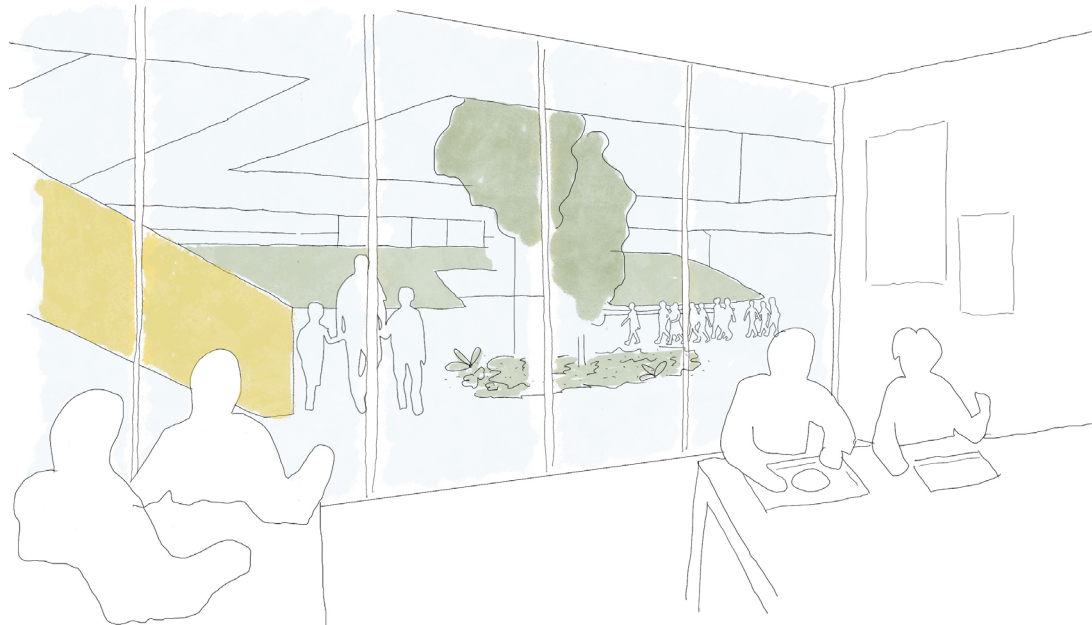
A day in the School Life



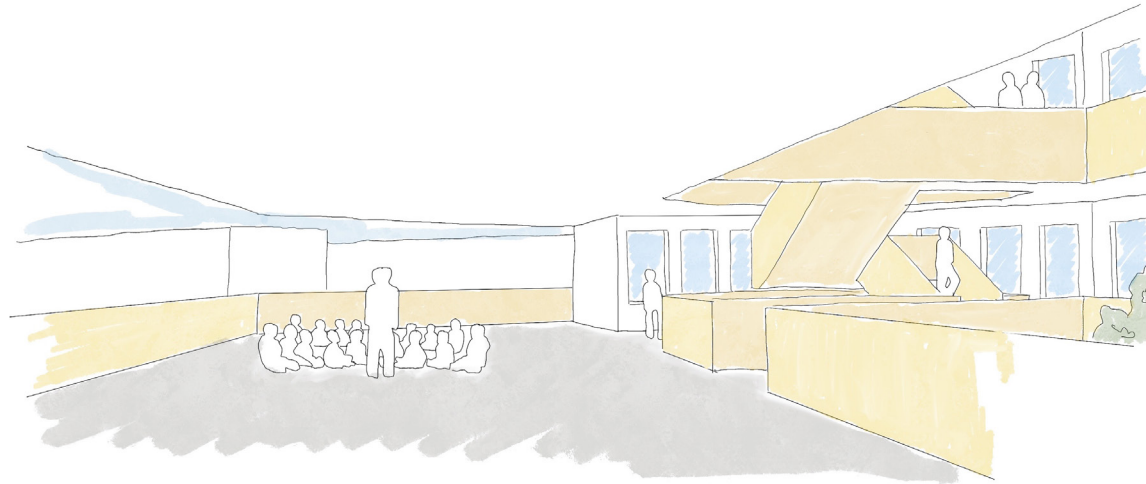
Approach, entrance, arrival - welcoming!



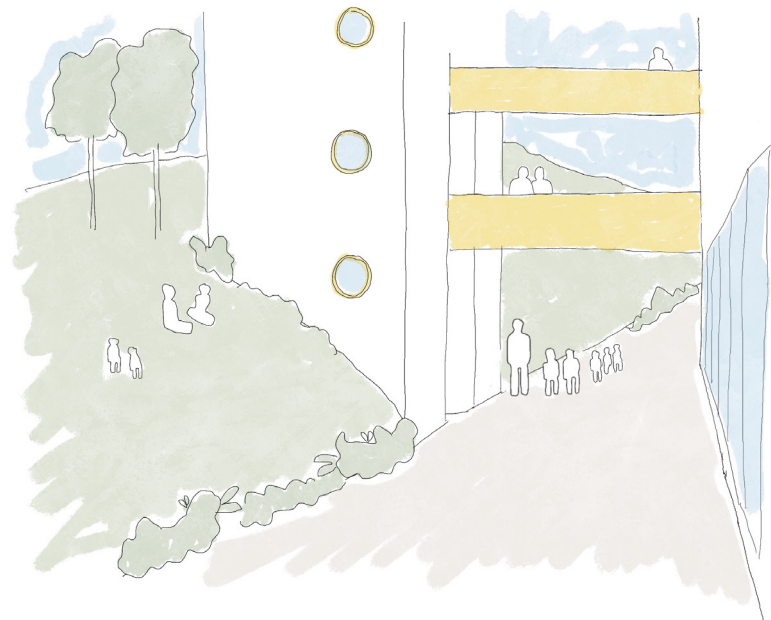
Classroom

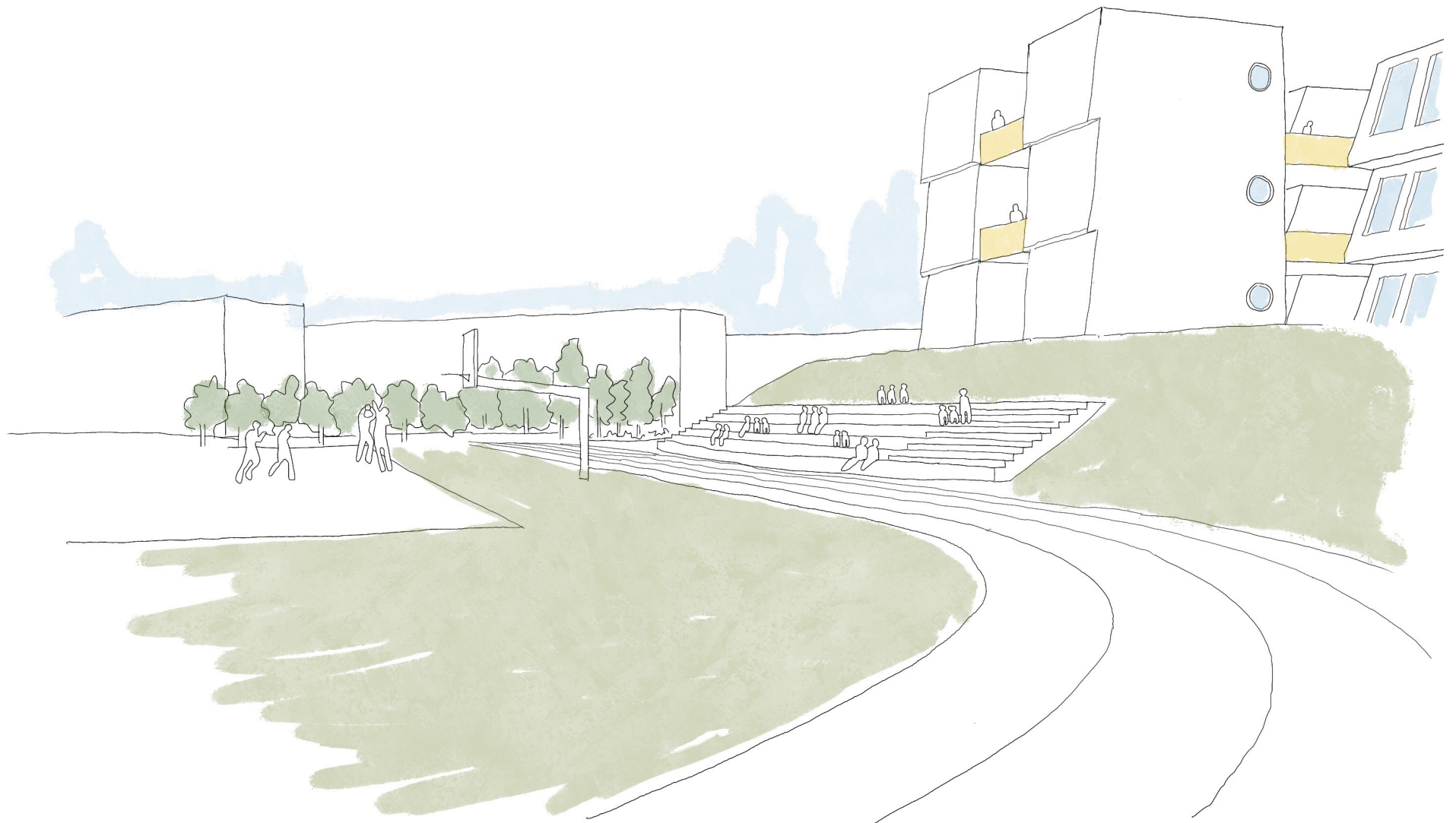


Dining Hall



Play Decks





Sports Stadium

Areas

Site (in hypothetical situation A)		
	Unit of measurement	Quantity
Site surface area	sq.m.	22,800
Site development intensity	%	11
Site development density	%	46
Green portion of the site	%	44
Building(s) / part of the building(s)		
Primary education		
Total floor area	sq.m.	1300
Usable floor area	sq.m.	1000
Volume of the building / part of the building	cubic metres	4550
Number of floors	pcs.	3
Height of the building / part of the building	m	12
Secondary education, Lyceum, Shared education and community spaces		
Total floor area	sq.m.	7000
Usable floor area	sq.m.	5500
Volume of the building / part of the building	cubic metres	24500
Number of floors	pcs.	4
Height of the building / part of the building	m	16

Accommodations. Dormitory		
Total floor area	sq.m.	530
Usable floor area	sq.m.	480
Volume of the building / part of the building	cubic metres	1850
Number of floors	pcs.	1
Height of the building / part of the building	m	4200
Civil Protection. Dual-use shelter		
Total floor area	sq.m.	1500
Usable floor area	sq.m.	1300
Dual-use floor area	sq.m.	850
Volume of the building / part of the building	cubic metres	5250
Number of floors	pcs.	1
General data of the building(s) / parts of the building(s)		
Total floor area	sq.m.	10280
Usable floor area	sq.m.	8280
Dual-use area in the civil protection structure	sq.m.	850
Volume	cubic metres	35980
Number of floors	pcs.	3 or 4
Building height	m	12 or 16

