

PASSIVE GREEN BUILDING STRATEGIES REPORT

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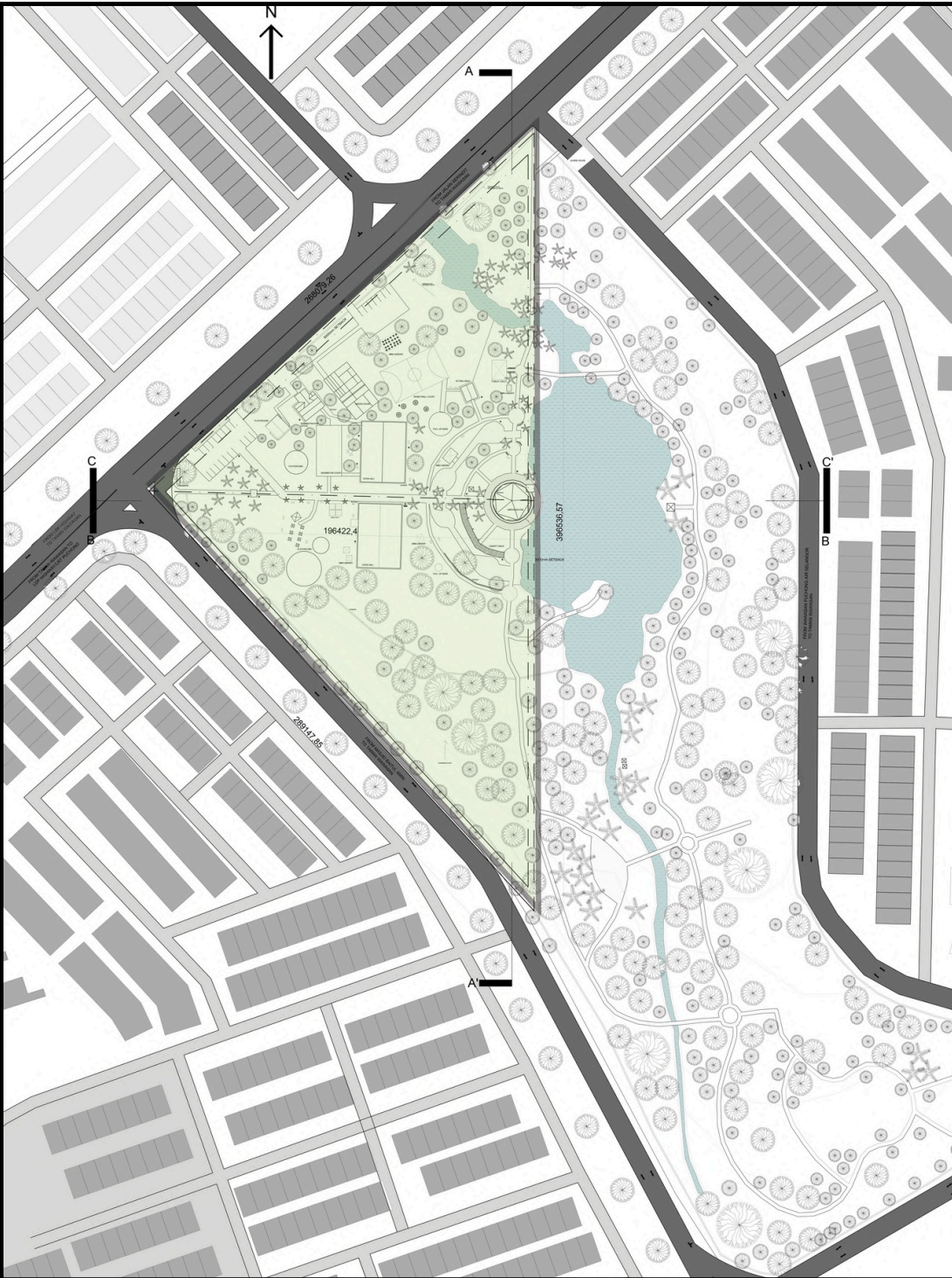
GREEN STRATEGIES FOR BUILDING AND DESIGN
ARC61804
ASSIGNMENT 2

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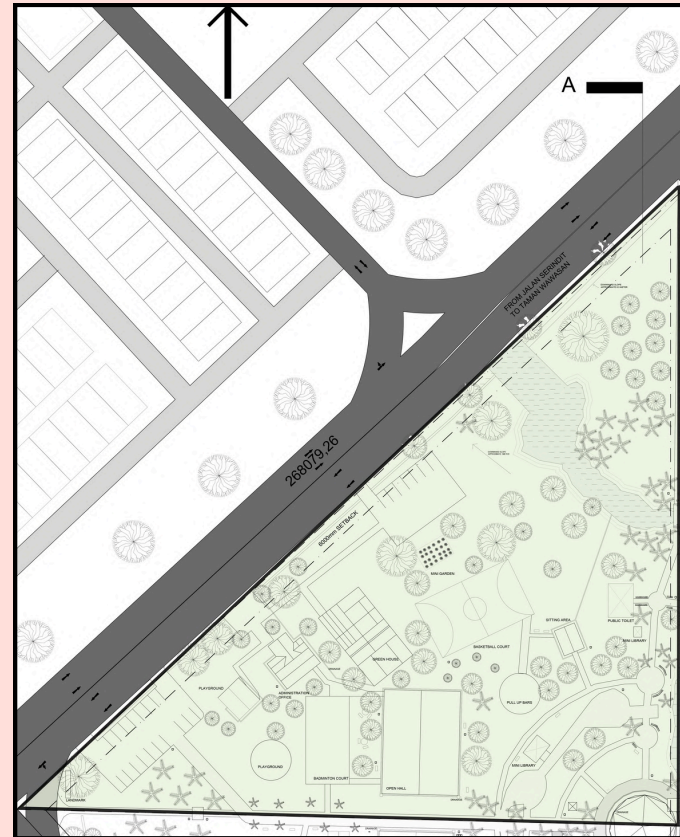
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INTRODUCTION TO THE SITE

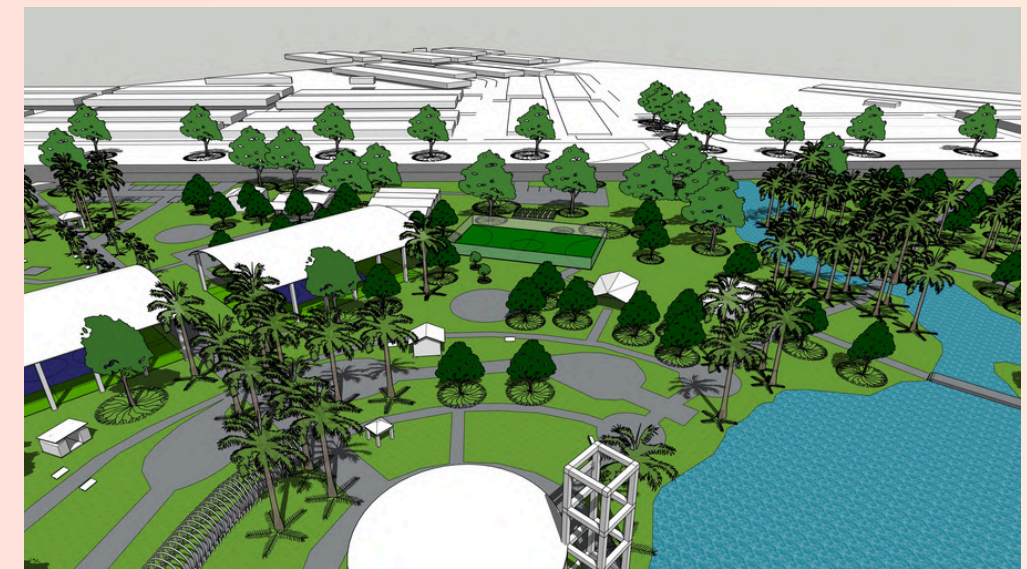
TAMAN WAWASAN, PUCHONG, SELANGOR



Microsite Context



The northern section of the site is densely organized and houses essential facilities such as parking bays, sports courts, seating areas, and community gathering spots. Acting as the primary activity zone within the park, this area features mostly flat terrain, with gentle slopes near drainage channels and water features that help direct surface runoff naturally.

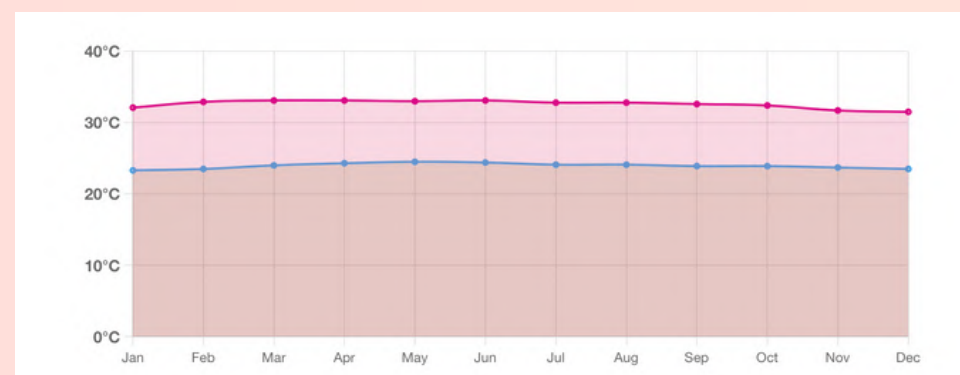


SITE ENVIRONMENT

Temperature

Average maximum daytime temperatures range from a very warm 33°C in March to 32°C in the coolest month, January. Nights are cooler, with lows often dropping to around 23°C during the colder months.

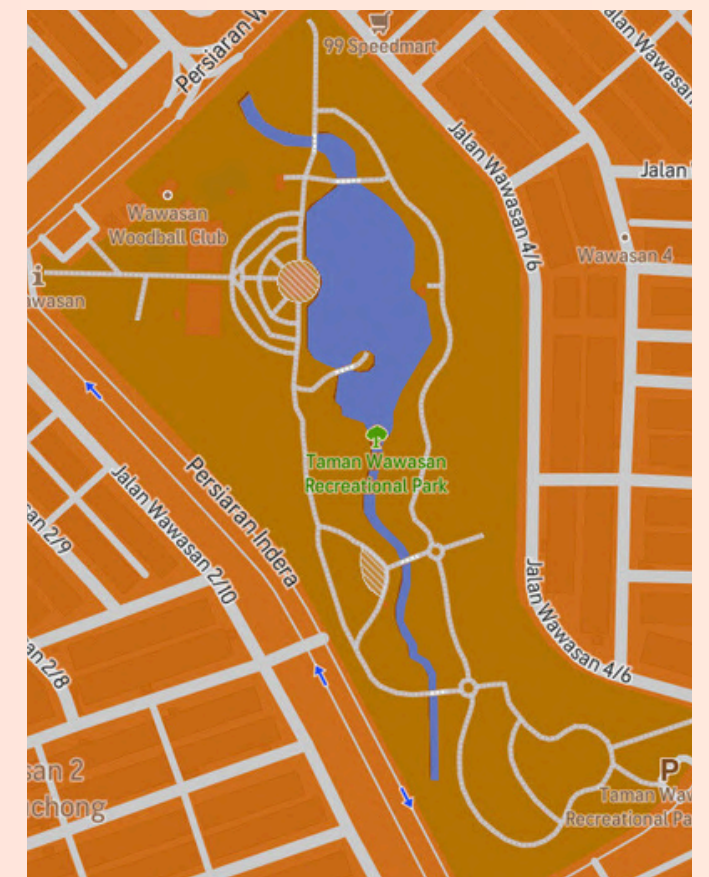
The lowest temperatures hours are typically between 4 a.m. and 6 a.m., while 3 p.m marks the highest temperatures time of the day.



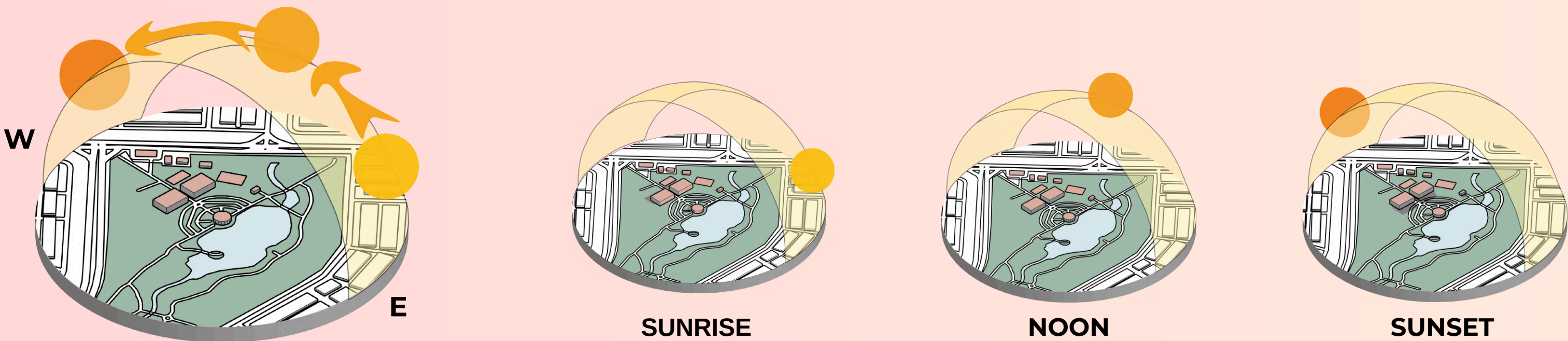
Average Day & Night Temperature

Macrosite Context

Taman Wawasan Recreational Park is located in the residential township of Taman Wawasan, Puchong, Selangor. It sits within a well-connected suburban area, easily accessible via major roads like the LDP and close to amenities such as schools, shops, and housing areas. The park is bordered by mature trees and natural greenery, creating a buffer from surrounding urban activity. Its central location within the neighborhood makes it a convenient and popular spot for both residents and visitors seeking outdoor recreation.



Sun Path



The sun rises in the east and sets in the west, casting soft morning light from the northeast and warm evening light from the southwest. This influences light, shade, and user comfort throughout the day.

In the early morning, soft golden light and long shadows create a calm, refreshing atmosphere, welcoming joggers, walkers, and families to peaceful moments.

At noon, bright sunlight makes the open areas lively but hot, while shaded paths provide a cool, comfortable retreat from the heat.

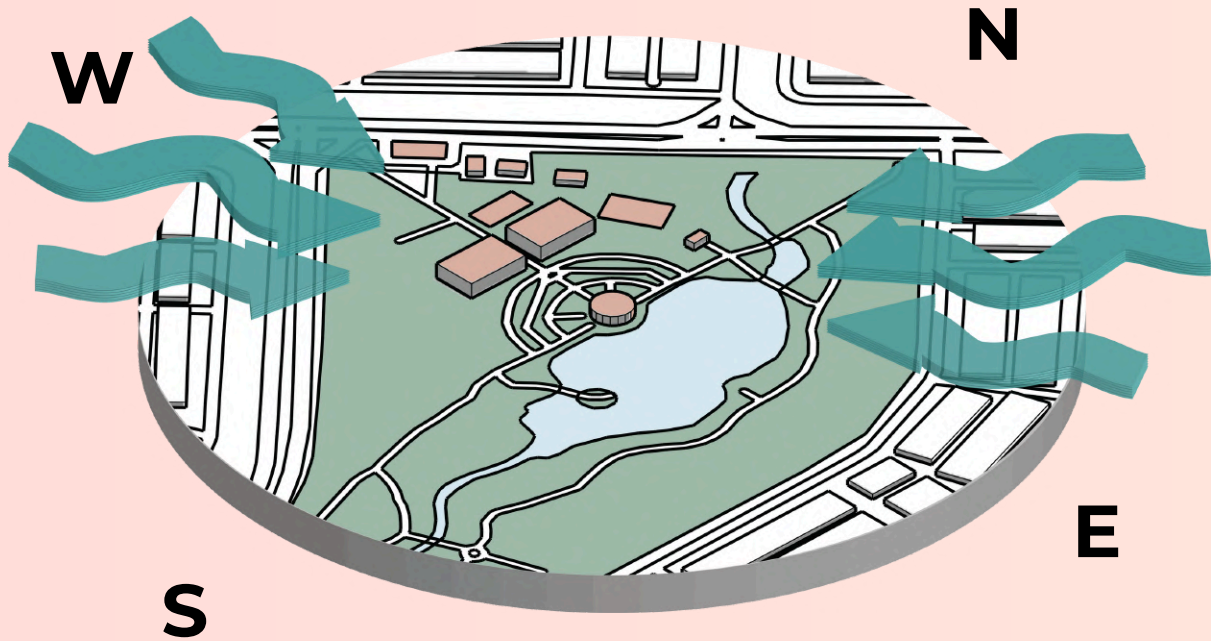
In the late afternoon, soft warm light and cooler air create a calm, intimate setting as families and friends gather to unwind and enjoy the day's end.

Wind Direction

Southwest Monsoon

- (April - September).
- Wind speeds are usually below 7m/s.

The Southwest Monsoon winds at Taman Wawasan Recreational Park **offer a cool and refreshing break from the heat** as it occasionally blows over the park, its softer breeze creates a peaceful and relaxing environment, with tree leaves rustling as the wind passes through.



Northeast Monsoon

- (October - March).
- Wind speeds can reach 15m/s.

In Puchong, Malaysia, the prevailing wind direction is from the south-westerly and is light, with wind speeds usually below 15 knots.

INTRODUCTION TO THE BUILDING

About the project

This project proposes the design of a Creative and Recreational Hub within Taman Wawasan Recreational Park, aimed at fostering social interaction, creative expression, and well-being among diverse user groups. Rooted in the principles of environmental sensitivity and spatial poetics, the design responds directly to the site’s natural and built context, integrating passive strategies and sustainable materials to minimize impact while maximizing user comfort. By incorporating complex spatial organisation typologies and focusing on shared experiences, the building serves as a communal anchor, supporting learning, leisure, and creativity in a setting that nurtures both environmental awareness and a strong sense of community.

Outcome



ECOPATCH Community Centre is a creative and recreational hub nestled within the greenery of Taman Wawasan Recreational Park. The three-story structure aims to reconnect urban dwellers with nature through nature-based activities, such as gardening, cooking, and education. Serving a broad and diverse community—from children and families to elders and local hobbyists—the space fosters indiscriminate learning and ecological awareness. More than just a building, it is a living system where architecture, nature, and community grow together.

The design of the community centre aspires to cultivate a meaningful relationship between people, nature, and place by integrating gardening, food, and shared experiences into a cohesive architectural language. Rooted in the themes of growth, interaction, and sustainability, the building is conceived not only as a space for activity but as an ecosystem of connection, where architecture and environment are intertwined. A key intention is to integrate a public pathway as part of the architecture, allowing the surrounding park to flow seamlessly through the structure. This pathway invites both visitors and locals to move freely through the building, encouraging spontaneous engagement with its diverse programs. The existing greenhouse and adjacent mini garden are seen as an extension to the building as they serve as catalysts for the centre's core functions: learning, growing, cooking, and sharing.





SECTION A-A 1:150

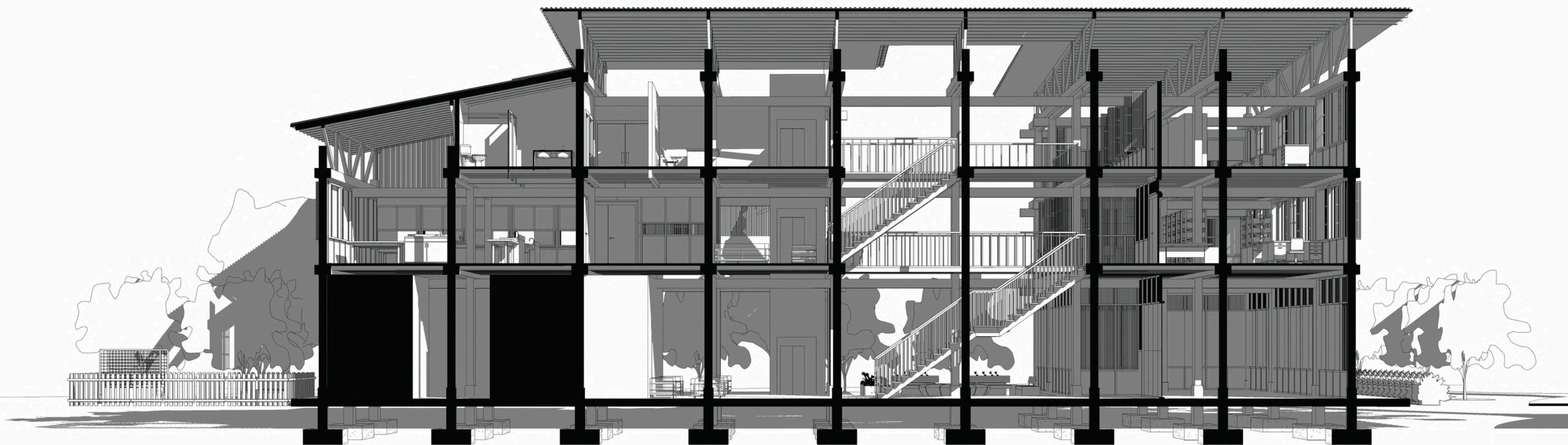
NORTH EAST
ELEVATION
1:150



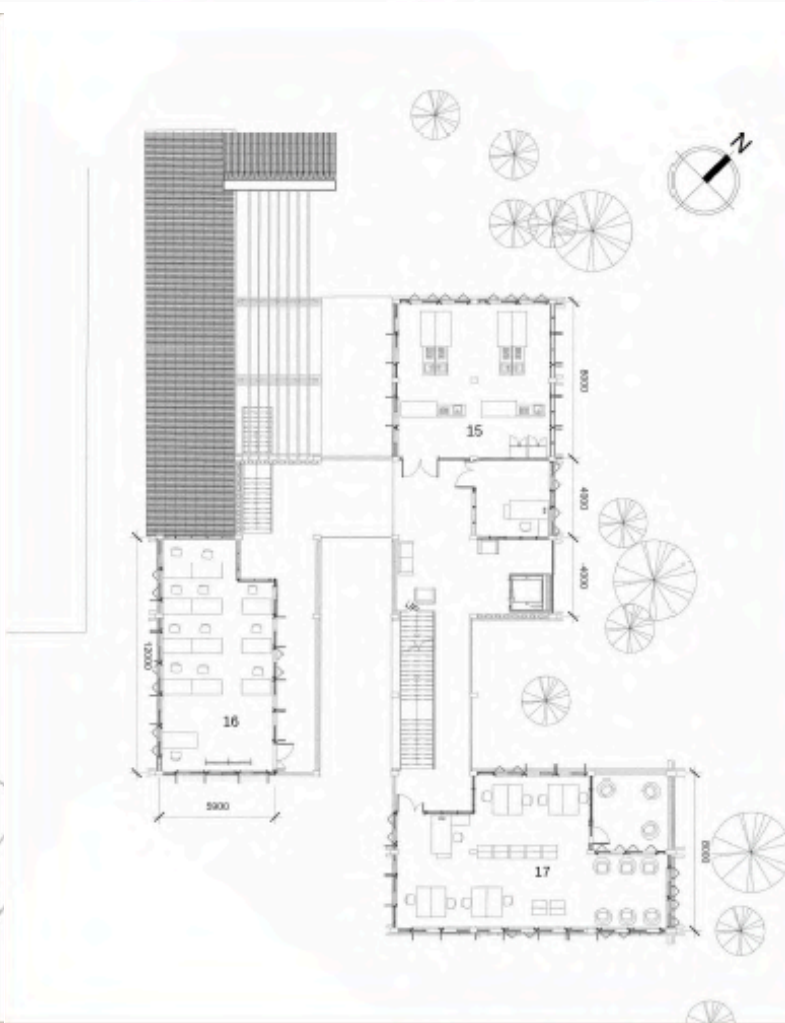
SOUTH WEST
ELEVATION
1:150



INTRODUCTION TO THE BUILDING



GROUND FLOOR PLAN 1:150



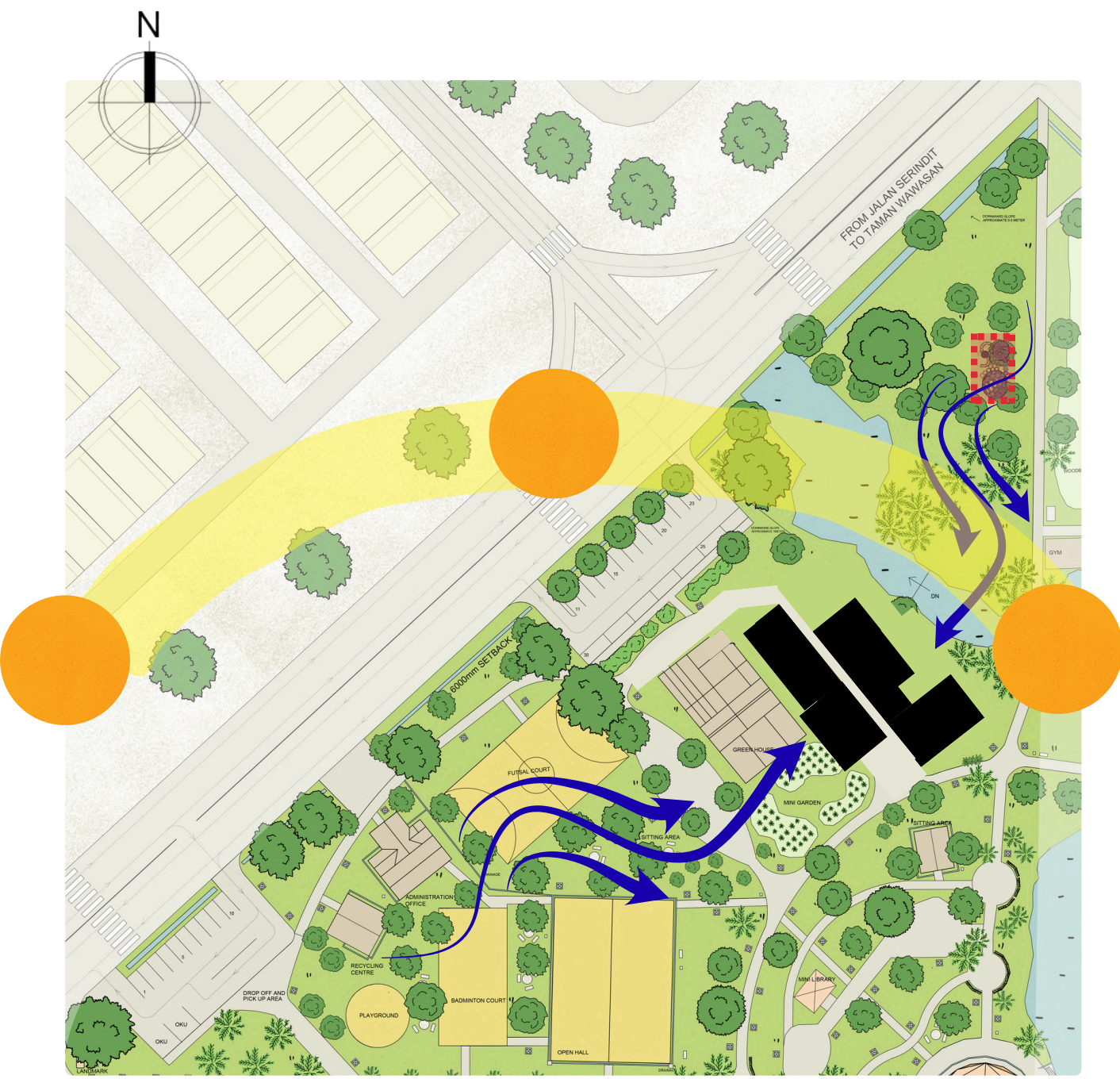
FIRST FLOOR PLAN 1:150



SECOND FLOOR PLAN 1:150

Room Schedule			
Name	Number	Area	Level
Entenerce	1	Not Placed	Not Placed
Market	2	95 m²	ground lvl
Event Hall	3	103 m²	ground lvl
Seed Library	4	32 m²	ground lvl
Courtyard	5	39 m²	ground lvl
OKU Toilet	6	5 m²	ground lvl
Refuse	7	6 m²	ground lvl
Outdoor Garden	8	24 m²	ground lvl
Janitor room	9	3 m²	ground lvl
M&E	10	4 m²	ground lvl
Garden Workshop	11	63 m²	ground lvl
Lift Lobby	12	27 m²	ground lvl
Womens Toilet	13	12 m²	ground lvl
Mens Toilet	14	11 m²	ground lvl
Communal Kitchen	15	60 m²	Level 1
Class Rooms	16	66 m²	Level 1
Library	17	105 m²	Level 1
Cafe	18	94 m²	level 2
Pantry	19	6 m²	level 2
Kitchen	20	28 m²	level 2
Womens Toilet	21	7 m²	level 2
Mens Toilet	22	8 m²	level 2
Exhibition	23	93 m²	level 2

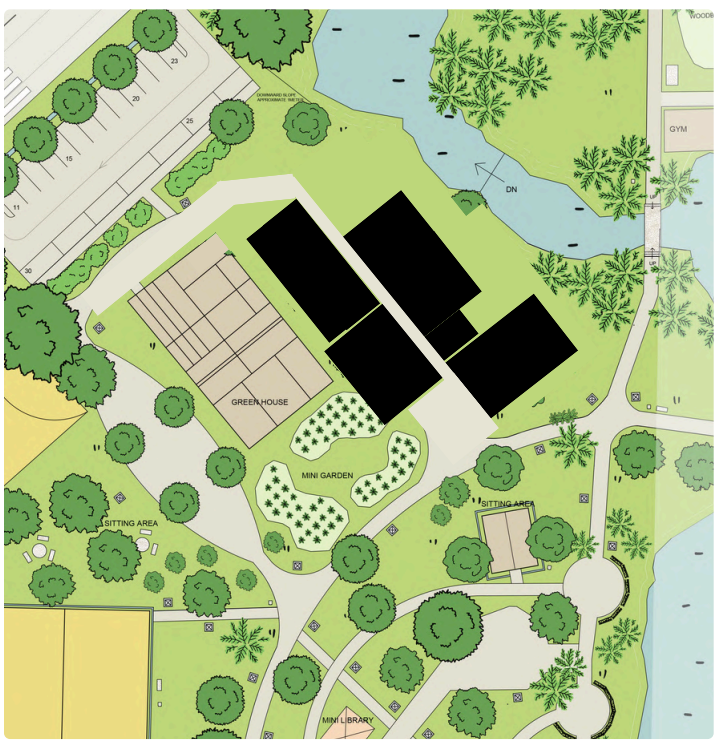
SITE PLANNING AND ORIENTATION



Building Orientation

- Sun Path Alignment: The building is oriented to optimize daylight exposure while providing self-shading throughout the day, allowing interior spaces to benefit from natural light without overheating, and casting shade onto adjacent outdoor areas for comfort.
- Wind Direction: The building's facades that are oriented toward the northeast and southwest align with the prevailing wind directions of the Northeast and Southwest Monsoons. This orientation allows for effective cross-ventilation throughout the year, as natural wind flow enters from one side and exits through the other, reducing reliance on mechanical cooling and enhancing indoor air quality

Site context

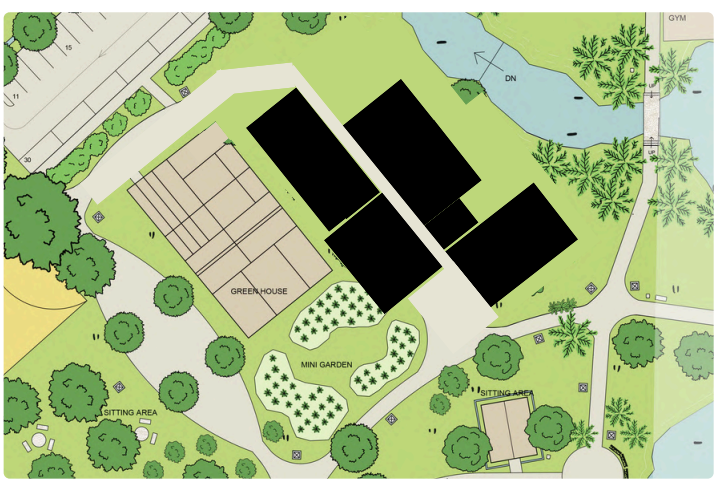


Accessibility: The centre is positioned along a main public pathway within Taman Wawasan, ensuring high walkability and ease of access from surrounding recreational areas.

Proximity to Nature: Its siting within the park's greenery preserves existing vegetation and maximises visual and physical connection to nature.



Path Integration: The public pathway passes through and around the building, encouraging interaction between passers-by and programmed spaces. Active, social functions are positioned closer to the main circulation spine, while quieter areas are placed on upper levels.



Existing structures: The existing greenhouse and adjacent mini garden are seen as an extension to the building as they serve as catalysts for the centre's core functions: learning, growing, cooking, and sharing.

DAYLIGHTING

DAYLIGHTING STRATEGIES USED IN THE BUILDING

- NE–SW Orientation for Optimal Sunlight
- Self-Shading Elements
- Operable Louvers for Light Control
- Double-Height Kitchen for Light Distribution
- Clerestory Windows & High-Level Openings
- Light Filtering Through Semi-Open Spaces.



The ECOPATCH Community Centre is oriented along a northeast–southwest axis to optimise daylight exposure throughout the day. This alignment allows the northeast façade to capture soft morning light, creating a bright yet comfortable environment for early activities, while the southwest façade benefits from warm, low-angle evening light for communal gatherings.



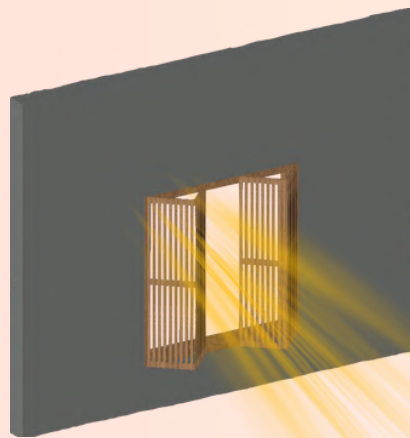
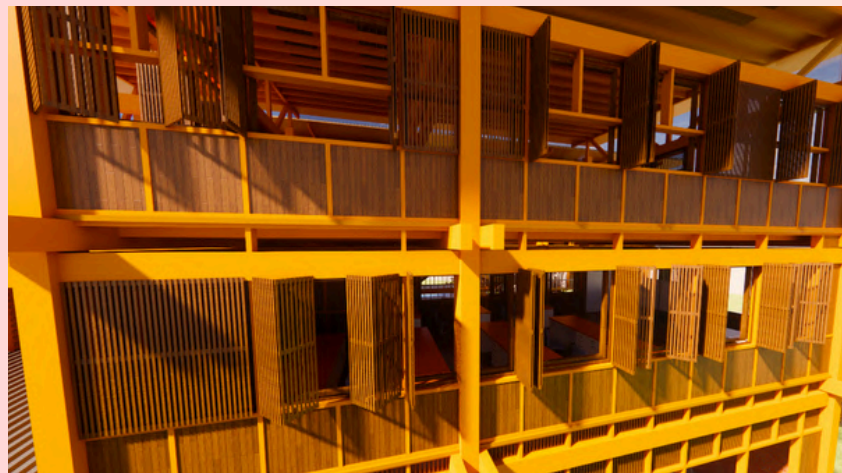
Extended Roof Overhangs: Designed to block the high midday sun while allowing lower morning and evening sun angles to enter, reducing cooling loads and creating pleasant light variation throughout the day.

DAYLIGHTING

The double-height kitchen space is strategically positioned to allow daylight to penetrate deep into the interior, enhancing both visual comfort and spatial openness.



Operable louvers filter direct sunlight, offering flexibility for adjusting brightness and reducing glare.



Clerestory windows and semi-open transitional areas further distribute light into adjacent spaces, minimising reliance on artificial lighting and lowering energy consumption.



FACADE DESIGN

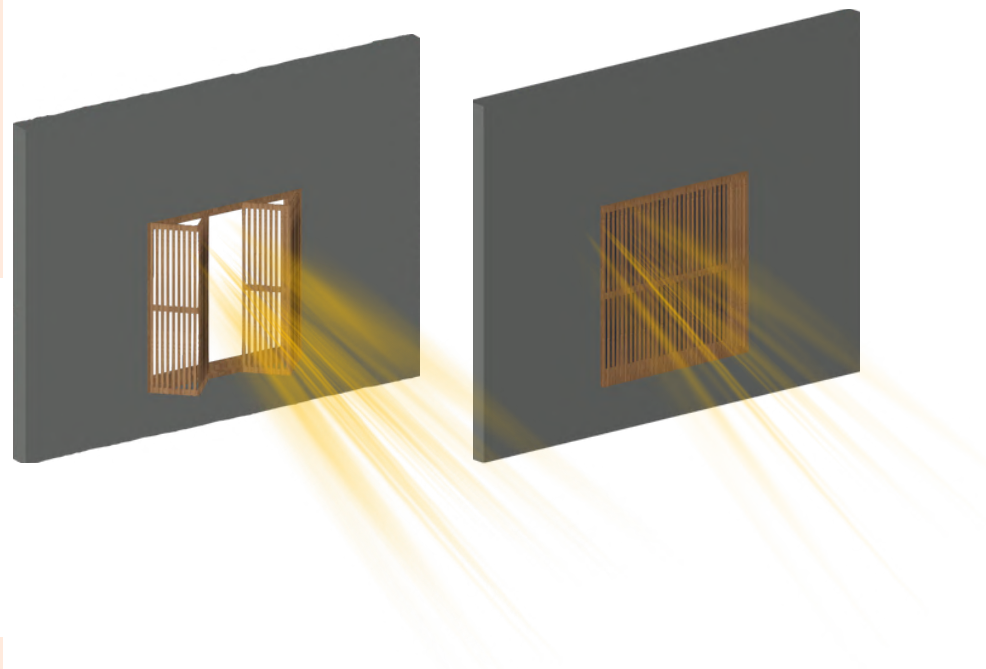
FACADE DESIGN STRATEGIES USED IN THE BUILDING

- Operable Louver System
 1. Ventilation
 2. Daylight Control
- Natural Material Palette
- Zoning of Openness

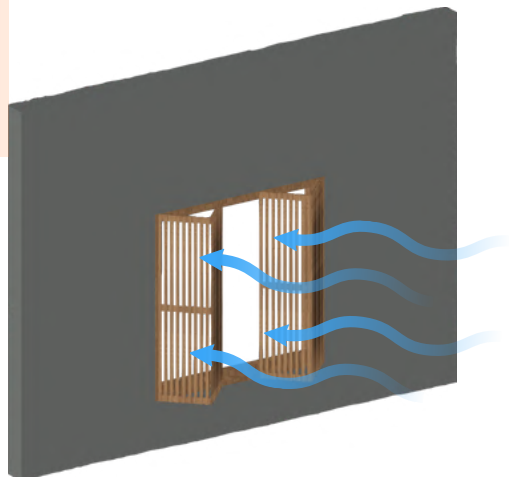


Operable Louver System

1. Adjustable louvers on the northeast and southwest façades allow precise control of sunlight, adapting to different times of day and seasonal changes.

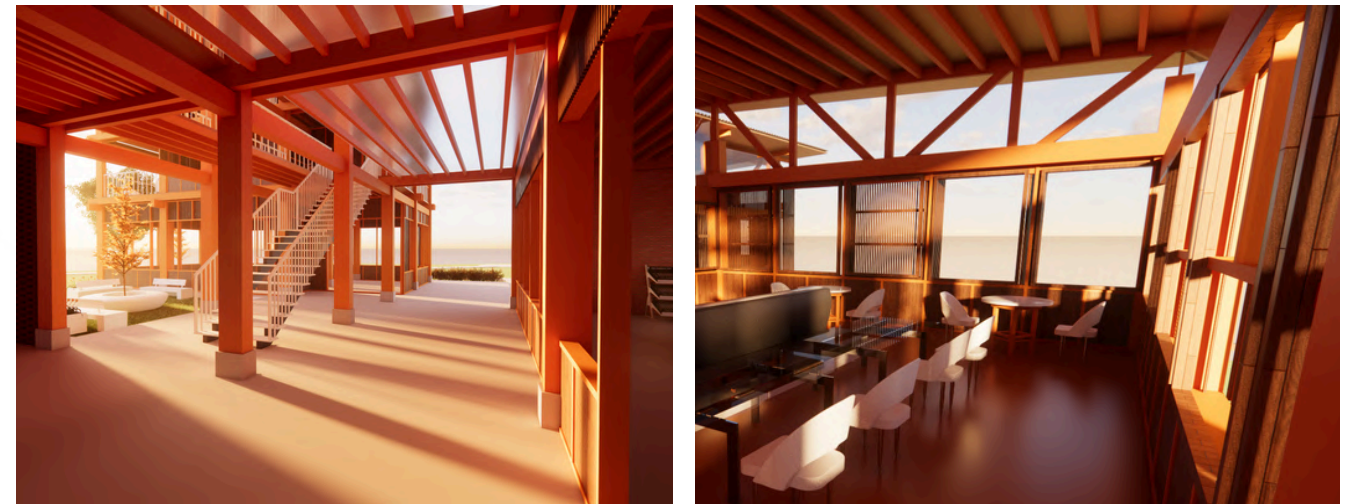


2. Operable louvers on the façade enable natural cross-ventilation, complementing the building's orientation with prevailing wind directions.



Natural Material Palette

Use of timber for façade harmonises with the park's greenery and reduces environmental impact



FACADE DESIGN

Zoning of Openness

Highly active, public-facing façades are more open and permeable, while private or quieter areas have fewer, strategically placed openings for privacy and climate control.



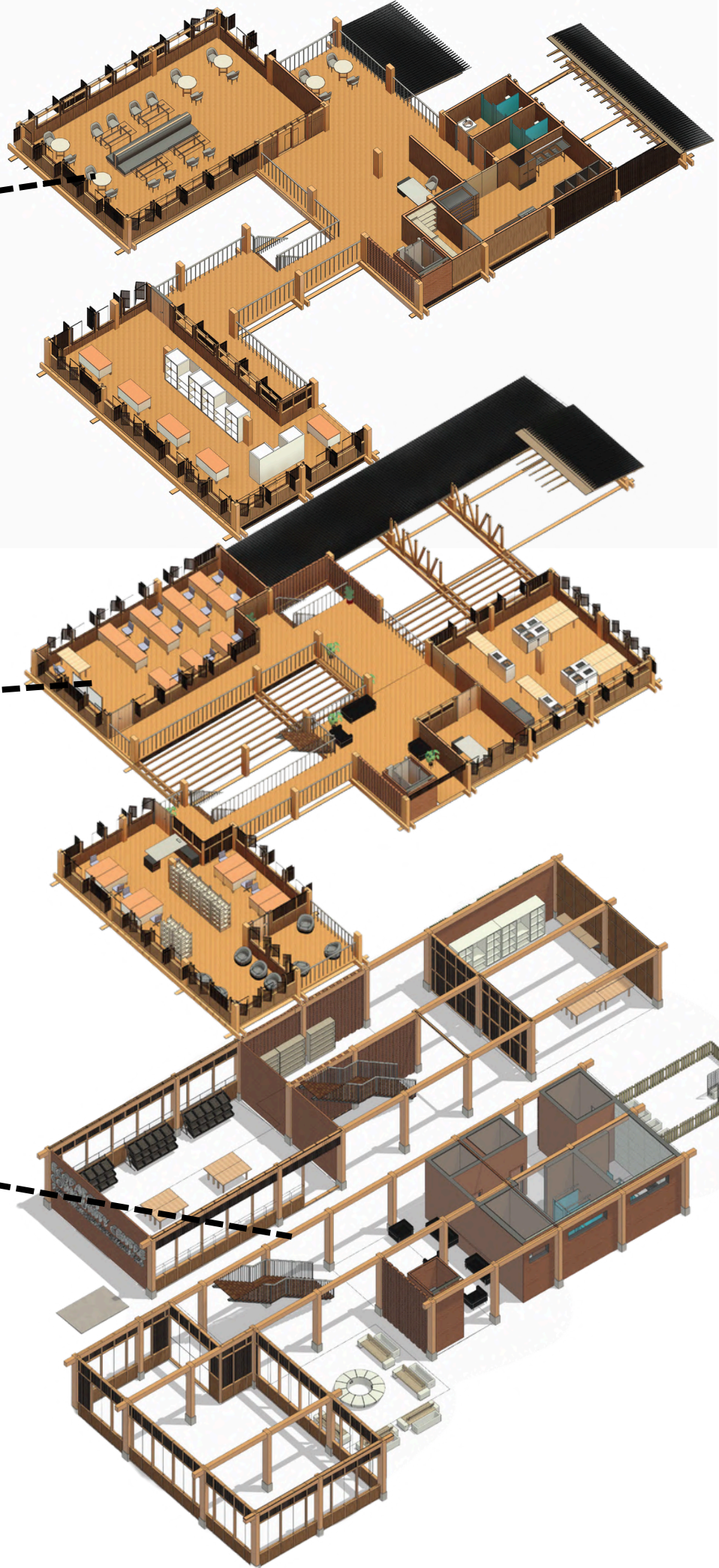
CAFE
operable facade- able to control hoe much light
and how much privacy is needed



CLASS ROOM
operable facade - able to control hoe much light
and privacy needed



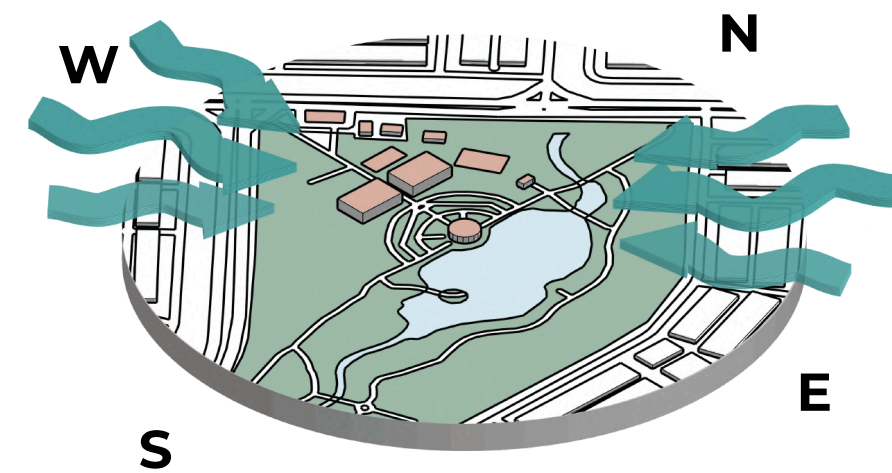
PUBLIC WALKWAY
open concept, spaces in the ground hoe floor have
more permeable facades



NATURAL VENTILATION

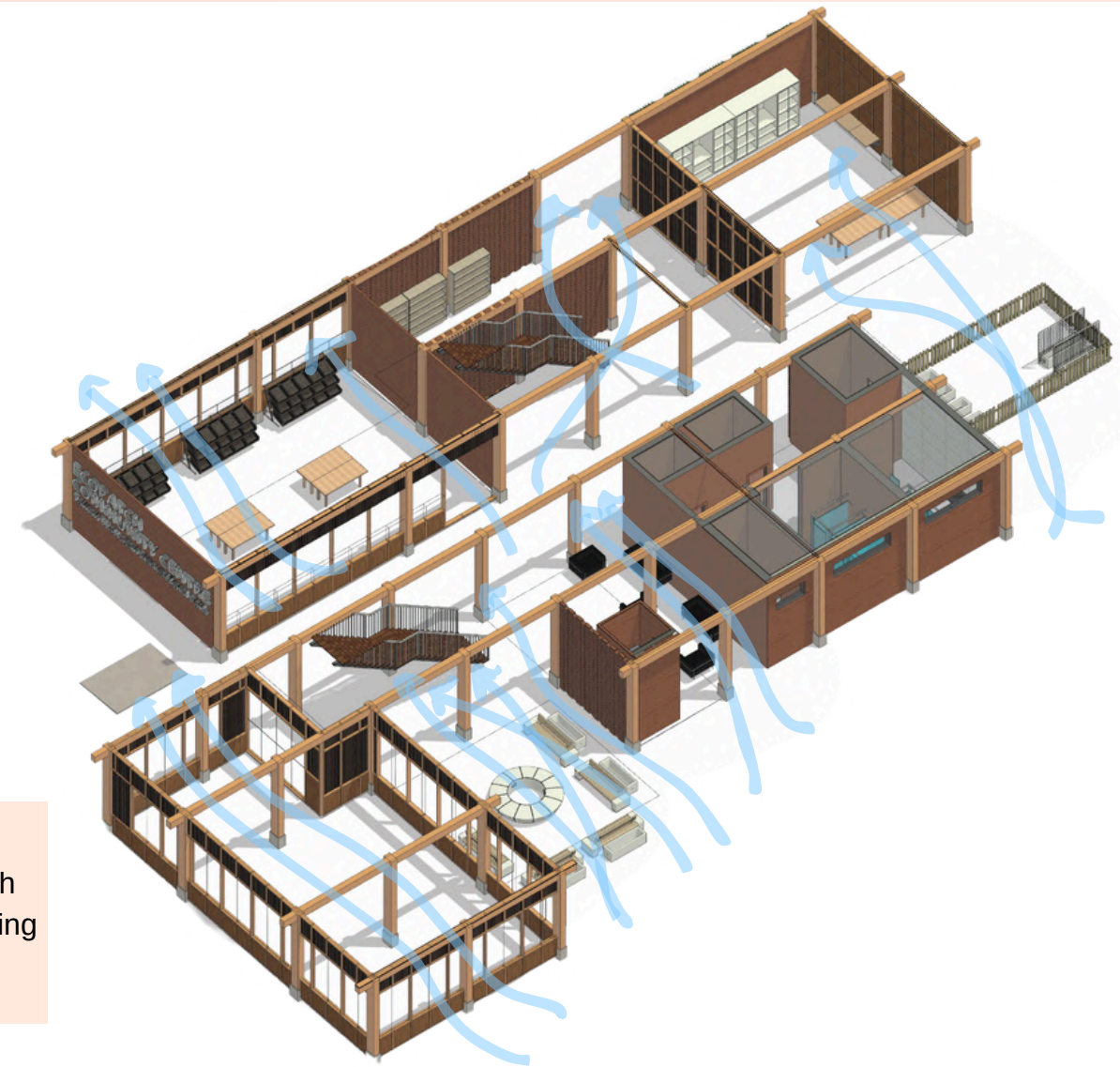
NATURAL VENTILATION STRATEGIES USED IN THE BUILDING

- Building Orientation to Capture Prevailing Winds
- Operable Louvers for Airflow Regulation
- Cross-Ventilation Through Opposing Openings
- Stack Effect via Double-Height Spaces
- Open Lower Ground Floor for Air Movement



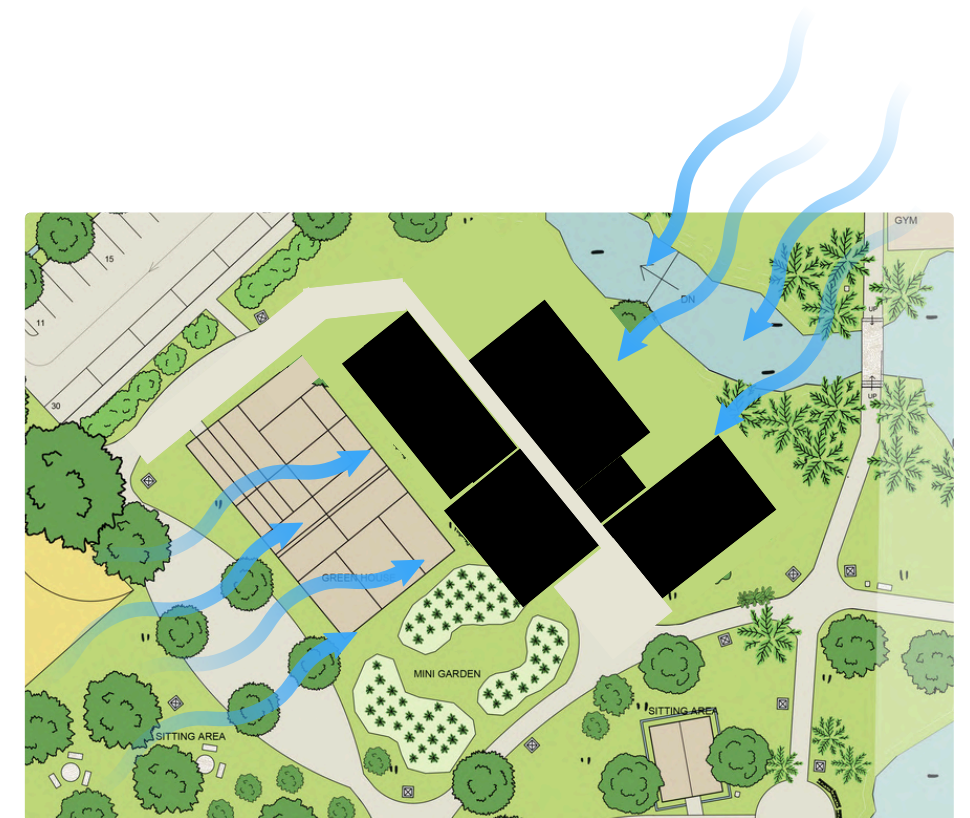
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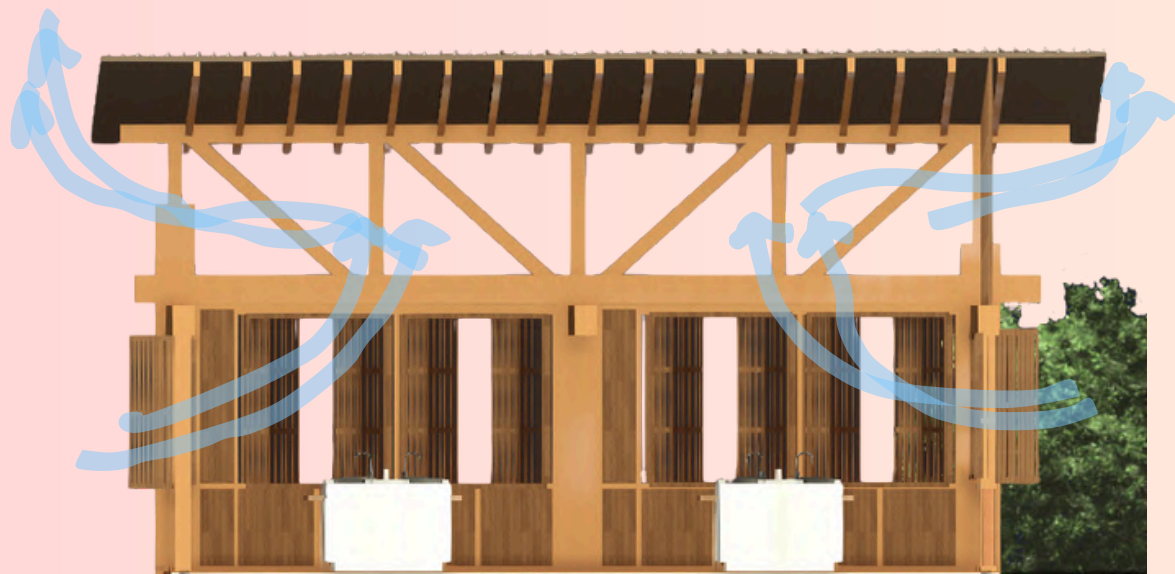
Open Lower Ground Floor for Air Movement
The public, open-plan lower ground floor with high ceilings facilitates unobstructed breezes, enhancing comfort in communal gathering areas.

Building Orientation to Capture Prevailing Winds
The NE–SW alignment follows the direction of the Northeast and Southwest Monsoon winds, enabling effective year-round cross-ventilation.

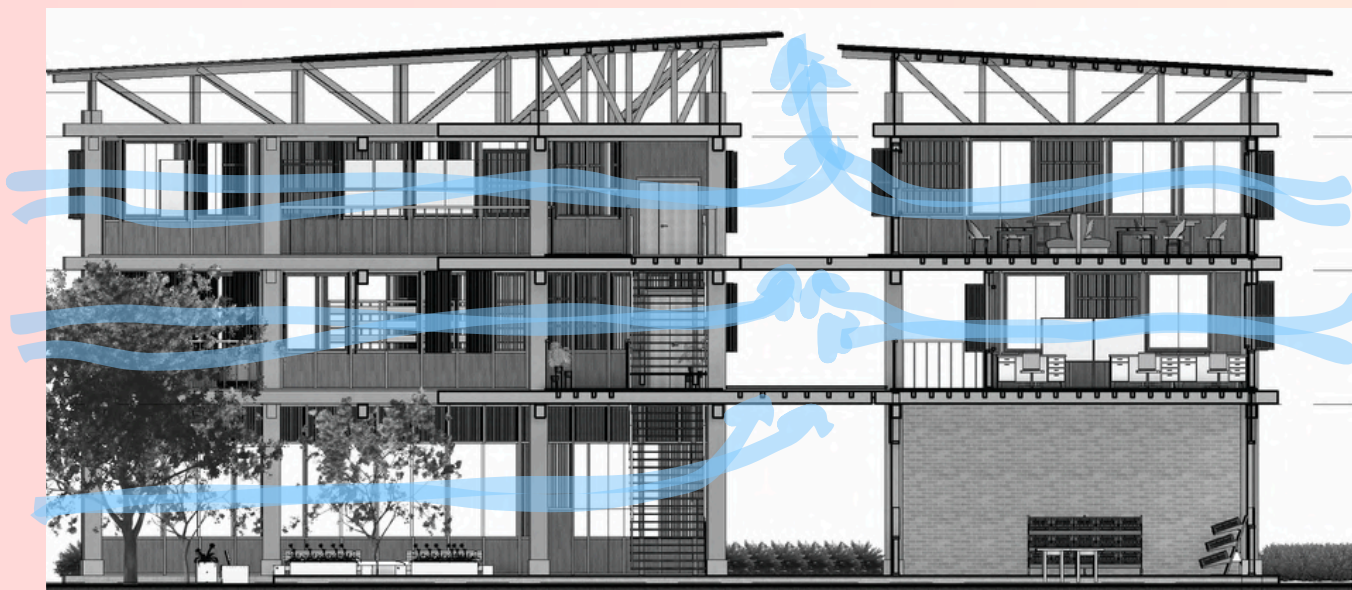


NATURAL VENTILATION

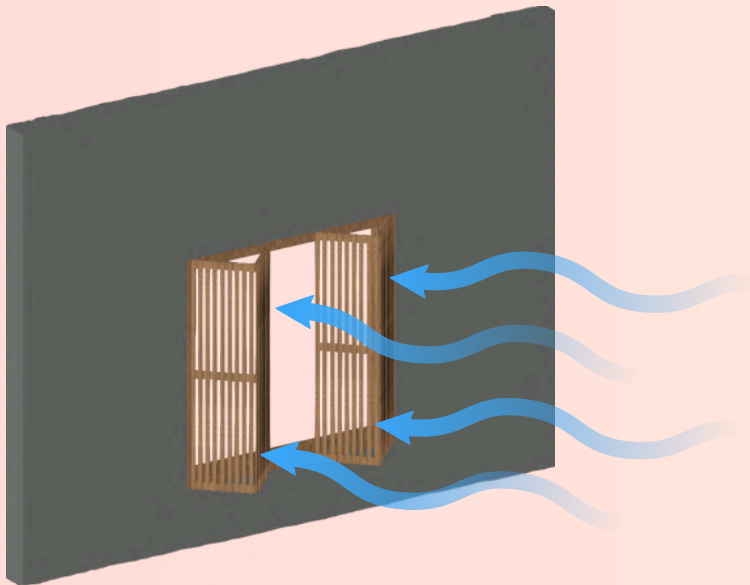
Stack Effect via Double-Height Spaces
The tall kitchen and vertical connections between floors allow hot air to rise and escape through upper openings, drawing cooler air from shaded areas below.



Cross-Ventilation Through Opposing Openings
Large openings on opposite façades ensure continuous air movement across interior spaces, flushing out warm air.



Operable Louvers for Airflow Regulation
Louvers on the façade allow controlled wind entry, letting users adjust airflow based on comfort and weather conditions.



STRATEGIC LANDSCAPING

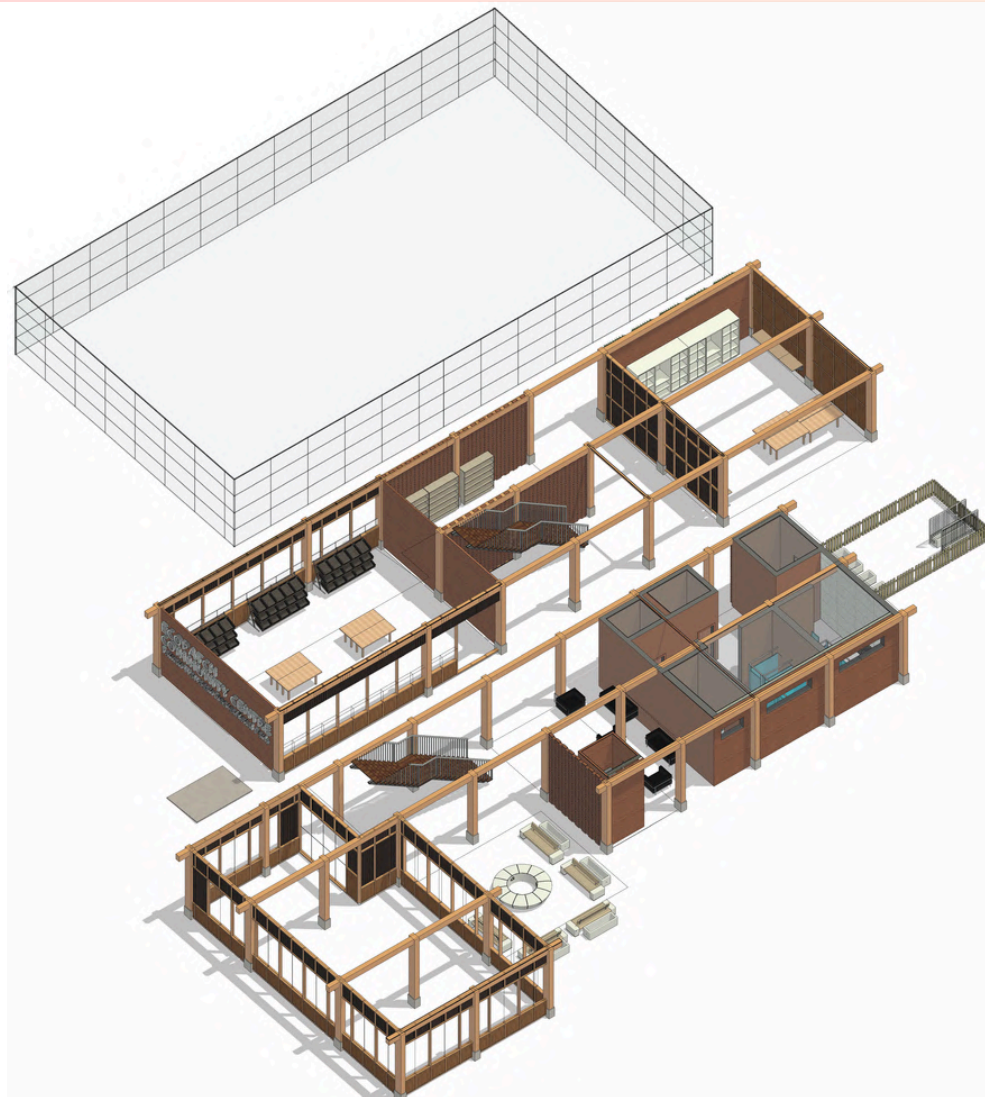
STRATEGIC LANDSCAPE STRATEGIES USED IN THE BUILDING

- Vertical Green Wall
- Integration of Greenhouse
- Integration with Circulation

Integration of Green House

The existing greenhouse and mini garden are preserved and integrated into the building's operational flow, forming an essential link between cultivation and the communal kitchen.

These areas are used for hands-on gardening, harvesting, and food preparation, embedding sustainability into daily activities.



Vertical Green Wall

A key landscape feature is the vertical green wall incorporated into the building façade. This living wall not only adds a vibrant visual element but also improves insulation, filters air pollutants, and enhances the building's biodiversity by attracting pollinators. It functions as an additional shading device, reducing solar heat gain on the building's envelope while maintaining a strong visual connection to the surrounding park.



Integration with Circulation

The public pathway running alongside and through the site is lined with landscaped areas, shaded seating, and edible planting beds. This blurs the boundary between the park and the building, encouraging spontaneous interaction between passers-by and programme spaces.



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