Robotics Innovation Hub - Coimbatore

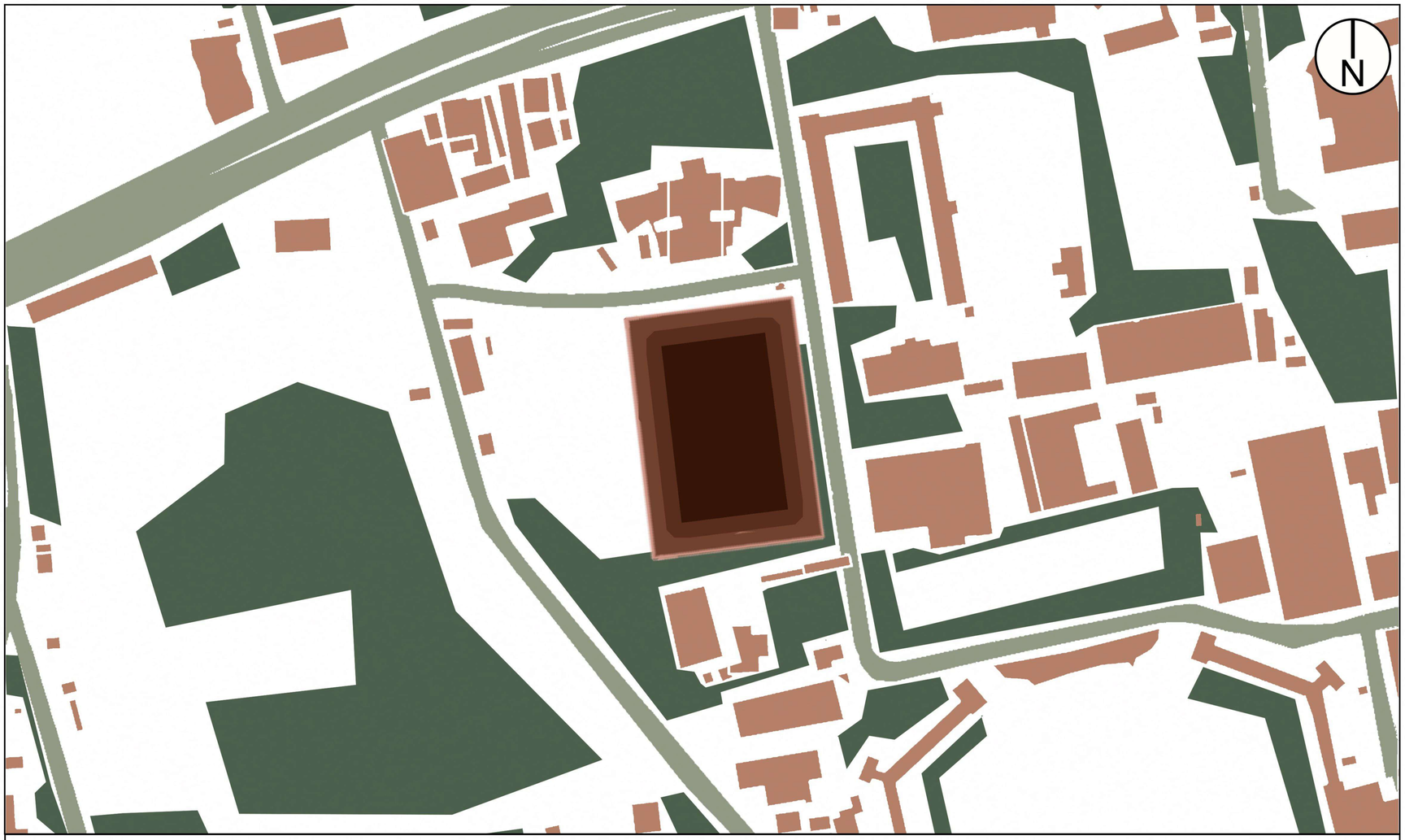


Introduction

The proposed design is a Robotics Innovation Hub, chosen for its ability to bring together people across age groups through learning, experimentation and interaction, creating a dynamic and lively environment. With India's growing focus on robotics and Coimbatore's position as a major industrial and educational hub of Tamil Nadu, the city provides a strong context for such a facility.

Note

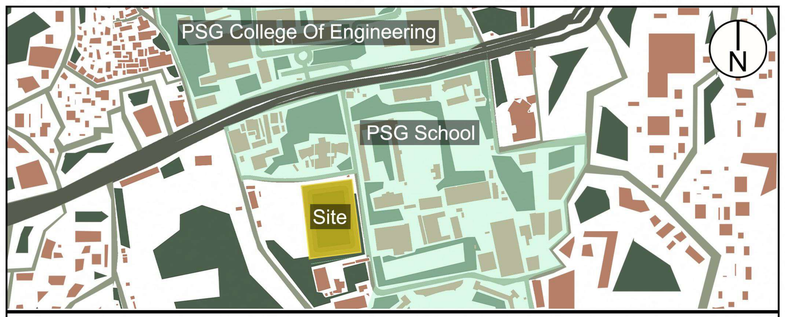
Operational Timing: 8:00 AM – 8:00 PM
Accommodates staff, regular users and extended robotics work hours.



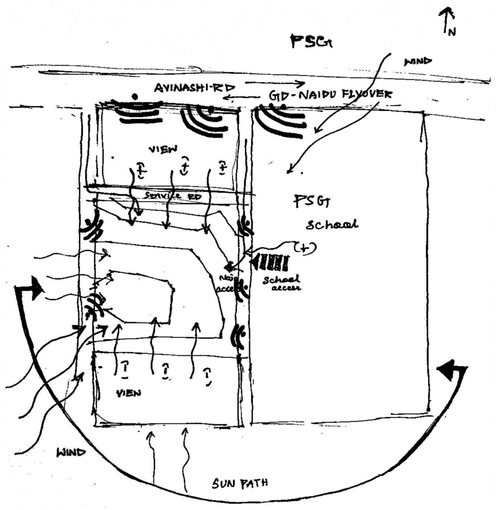
Site : Chandra Gandhi Nagar Main Road, Masakali Palayam Village, Sowri Palayam, Coimbatore, Tamil Nadu, 641028, India

Why This Site

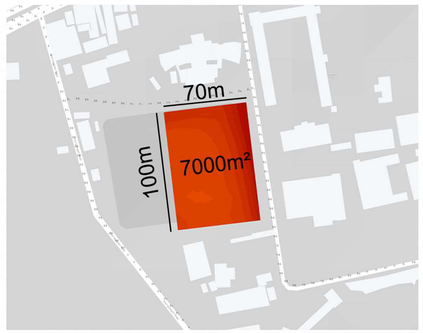
The site was chosen in Coimbatore due to the city's growing presence in engineering, automation and robotics. Its proximity to the PSG educational campus, including PSG College of Technology and PSG schools, provides access to students, researchers and educators. Located along Avinashi Road, the site also offers strong connectivity and accessibility, making it a suitable location for a robotics-focused facility.



Site Baseline Analysis:



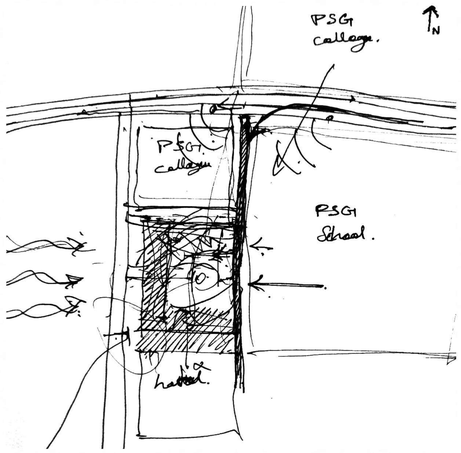
Site Context Map



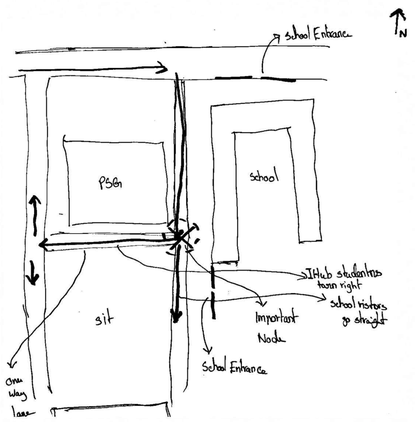
Site Dimensions



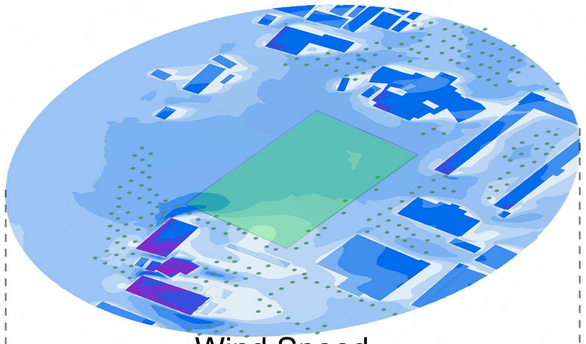
Sun Hours



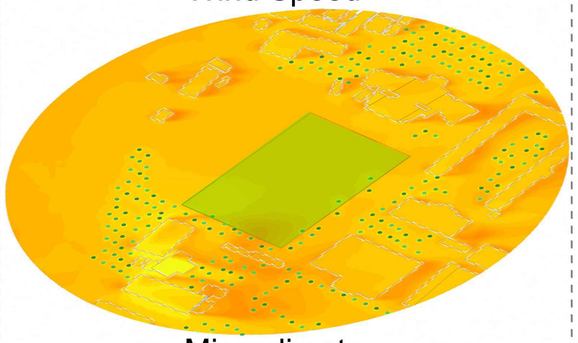
Connectivity Map



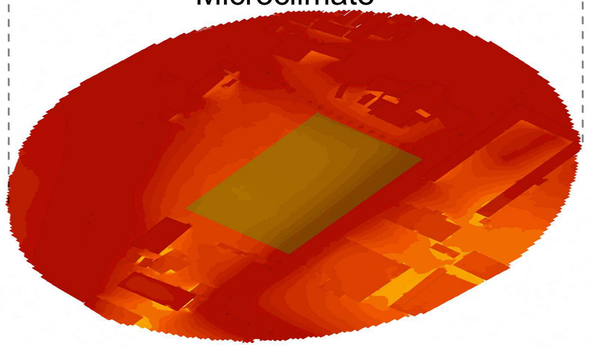
Traffic Map



Wind Speed



Microclimate



Noise

Site Design Rationale

North: Noise from Avinashi Road and JD Naidu Flyover.

South: Jade Hotel may overlook the site but helps block southern sun.

Southwest: Open side with good wind potential.

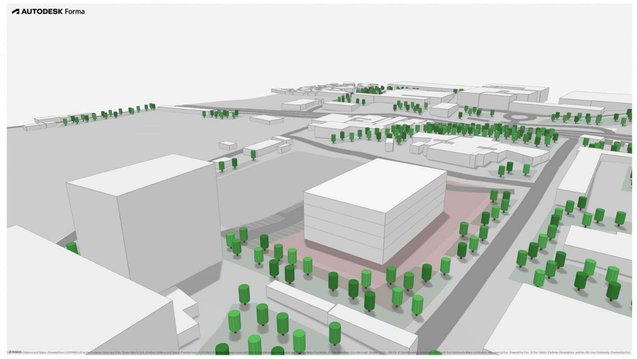
Proximity to PSG College and School enables student interaction, with school students overlooking robotics activities and college students having direct site access.

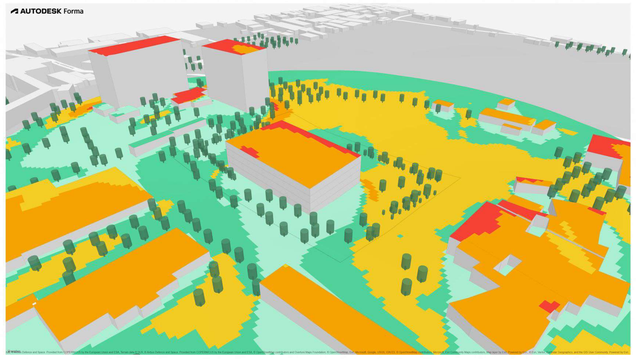
The 6m PSG Hospital road experiences heavy traffic during school hours. Hub traffic turns into the service road, while school traffic continues straight, reducing congestion at the junction.

month	mean (°C)	min (°C)	max (°C)
Jan	24.49	18	32
Feb	26.39	17.6	35.4
Mar	28.47	20	36.6
Apr	29.33	21	38
May	28.29	23.4	36.4
Jun	26.53	21	34
Jul	25.7	21.4	34
Aug	25.72	20.2	33.6
Sep	26.27	21.4	34.2
Oct	25.94	20	34
Nov	25.14	19	32
Dec	24.07	17.4	30.6
Year	26.36	17.4	38

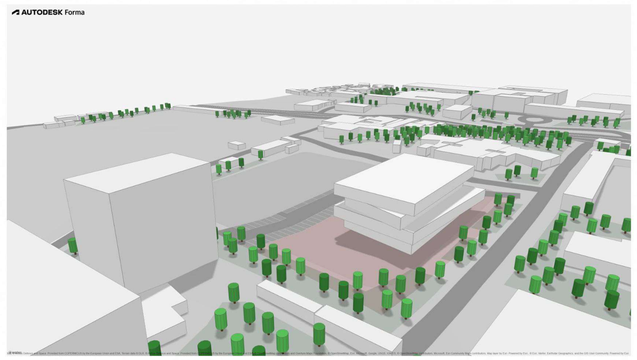
Temperature Statistics

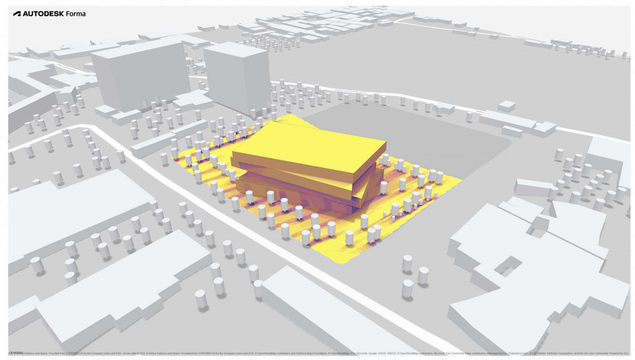
PROPOSAL 1



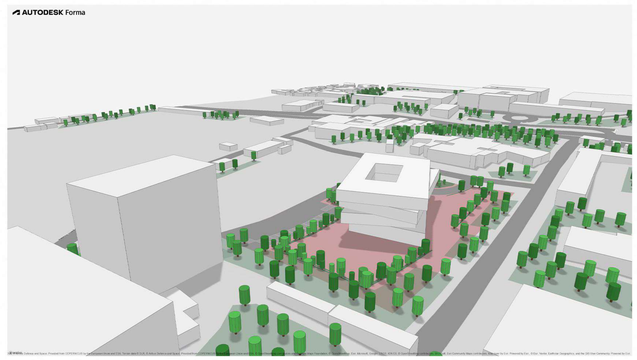


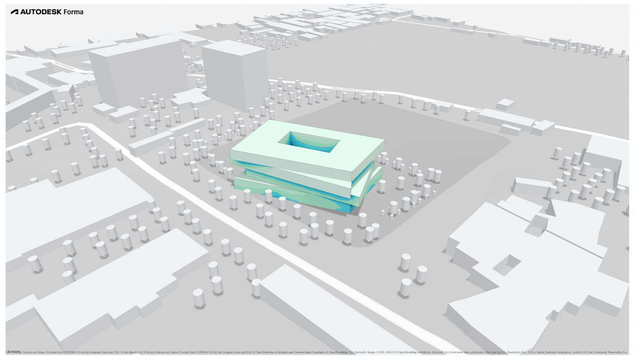
Iteration 1 - Basic rectangular form slightly angled as per wind direction.





Iteration 2 - Depressions and projections made for balconies and to shade it.





Iteration 3 - Central courtyard introduced for better daylight penetration within the building due to its deeper floor plates.

Area metrics

Proposal 1

Site:	Chandra Gandhi Nagar Main Road, Masakali Palayam Village, Sowri Palayam, Coimbatore, Tamil Nadu, 641028, India
Version:	Proposal 1
Last updated:	Aug 19, 2026, 15:52

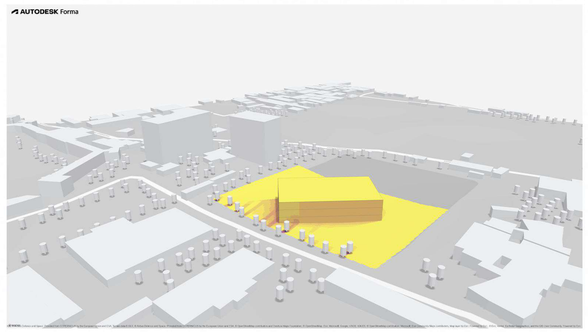
Site area		7,000 m^2
BC	19 %	1,309 m^2
› GFA	56 %	3,935 m^2
› GIA	51 %	3,542 m^2
› NIA	46 %	3,188 m^2

PROPOSAL 2

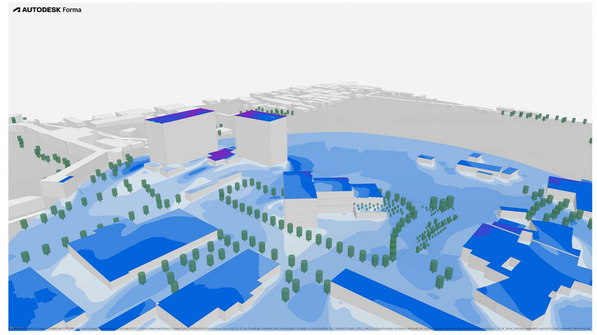






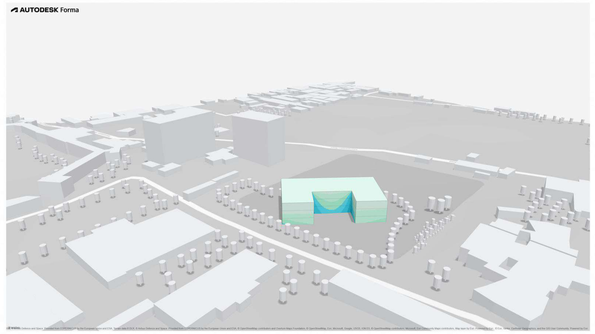






Iteration 1
Rectangular base form rotated 45° to minimize solar heat gain

Iteration 3
Terraces are stepped to gain views and to recieve glare free northern light in the southern side.



Iteration 2
The front nd central space is cut out to reduce the radiation on that face and to let daylight penetrate into the building.

Area metrics

Proposal 2

Version:	Proposal 2	
Last updated:	Aug 18, 2026, 20:33	
Site area		7,000 m²
BC	18 %	1,260 m²
› GFA	54 %	3,780 m²
› GIA	49 %	3,402 m²
› NIA	44 %	3,062 m²

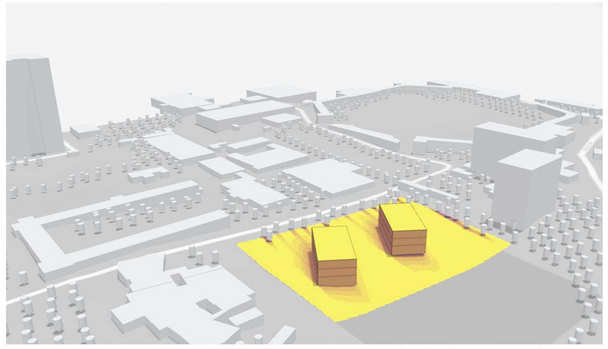
PROPOSAL 3



Iteration 1

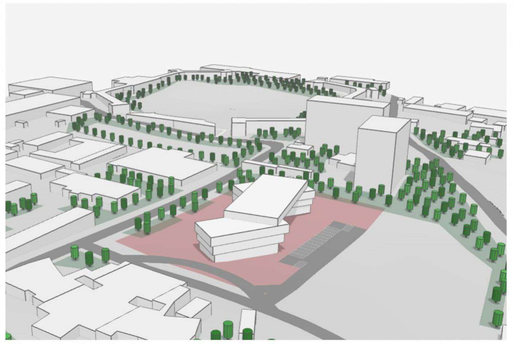
Basic Recatangular Massing.

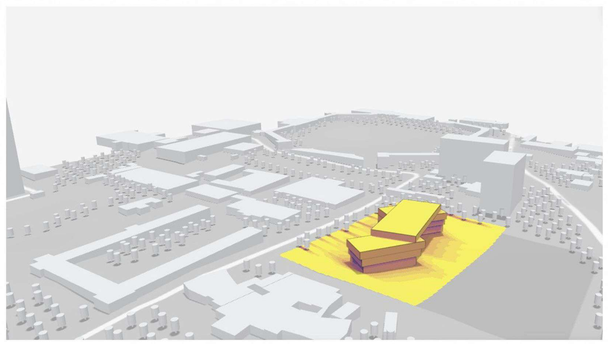


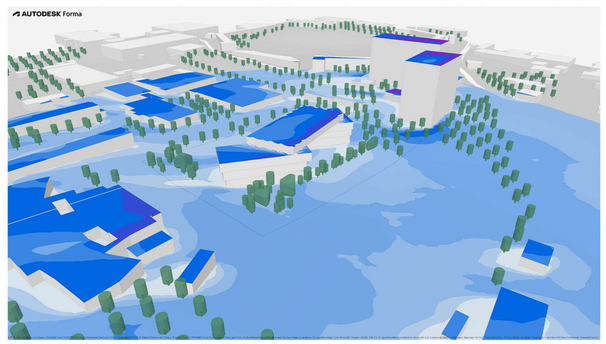


Iteration 2

Split into 2 blocks to achieve mutual shading in the open spaces.







Iteration 3

Blocks rotated 180° to allow wind into open spaces and a bridging floor is added to shade the space below and connect 2 buildings.

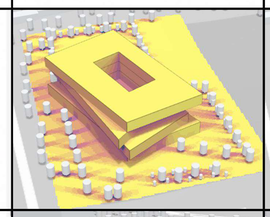
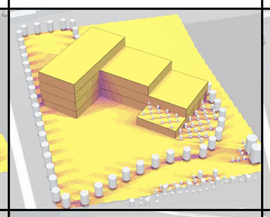
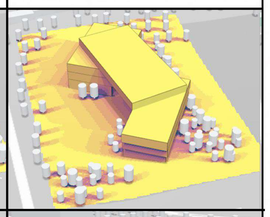
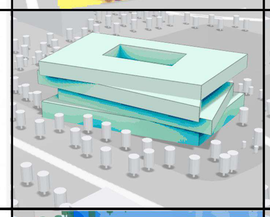
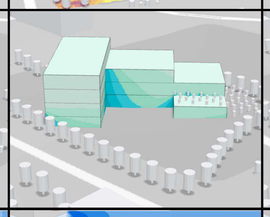
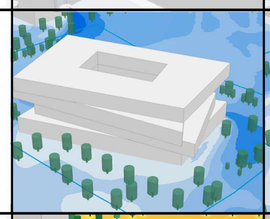
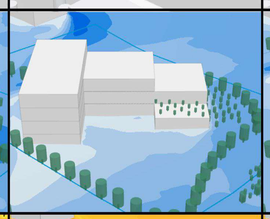
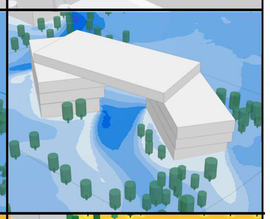
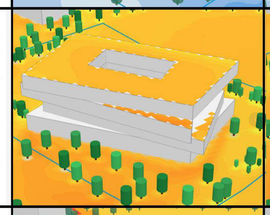
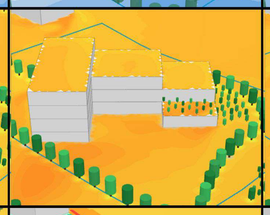
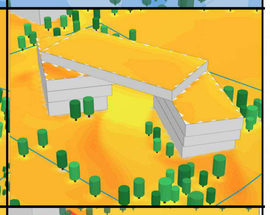
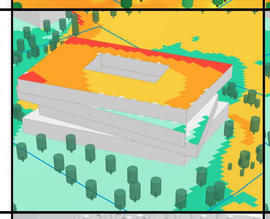
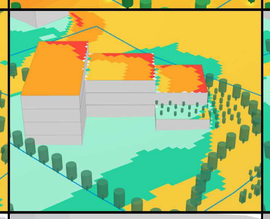
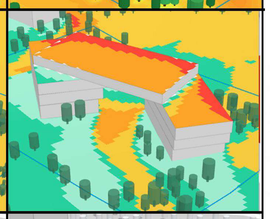
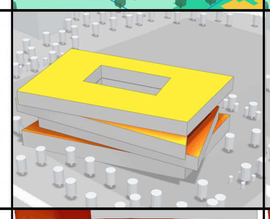
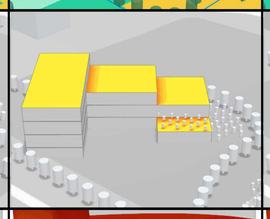
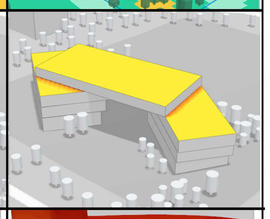
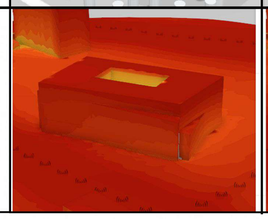
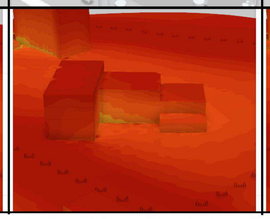
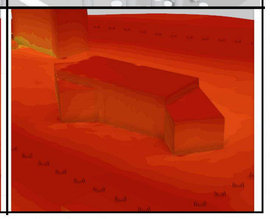
Area metrics

Proposal 3

Site:	Chandra Gandhi Nagar Main Road, Masakali Palayam Village, Sowri Palayam, Coimbatore, Tamil Nadu, 641028, India
Version:	Proposal 3
Last updated:	Aug 18, 2026, 20:09

Site area			7,000 m^2
BC		21 %	**1,500 m^2**
› **GFA**		57 %	**3,973 m^2**
› **GIA**		51 %	**3,575 m^2**
› **NIA**		46 %	**3,218 m^2**

COMPARISON

	Proposal 1	Proposal 2	Proposal 3
Sun Hours			
Daylighting Potential			
Wind Direction			
Microclimate			
Lawson LDCC Comfort			
Solar Energy			
Noise			

Comparison Inference:

Proposal 1

The compact form provides strong mutual shading, particularly between the stacked floors, reducing direct solar exposure. The central courtyard brings daylight into the core while remaining partially protected from excessive solar gain. Its compact massing also creates a more controlled microclimate.

Proposal 2

The U-shaped form distributes solar exposure across different faces, reducing prolonged exposure on a single facade. The large courtyard receives good daylight and remains relatively open for wind movement. However, its larger exposed open space can experience higher solar exposure compared to Proposal 1.

Proposal 3

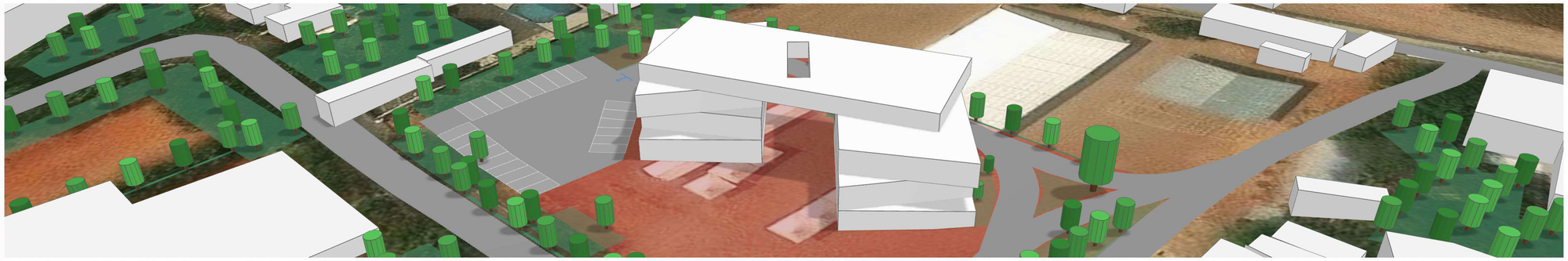
The two blocks create mutual shading around the central courtyard, with the connecting bridge adding further shade. The narrow gap between the blocks acts as a wind channel, concentrating airflow through the courtyard. The more open layout also allows better connection between the shaded and exposed outdoor areas.

Conclusion

Proposal 1 is selected as the best-performing option. The final design will also integrate key strengths derived from Proposals 2 and 3.

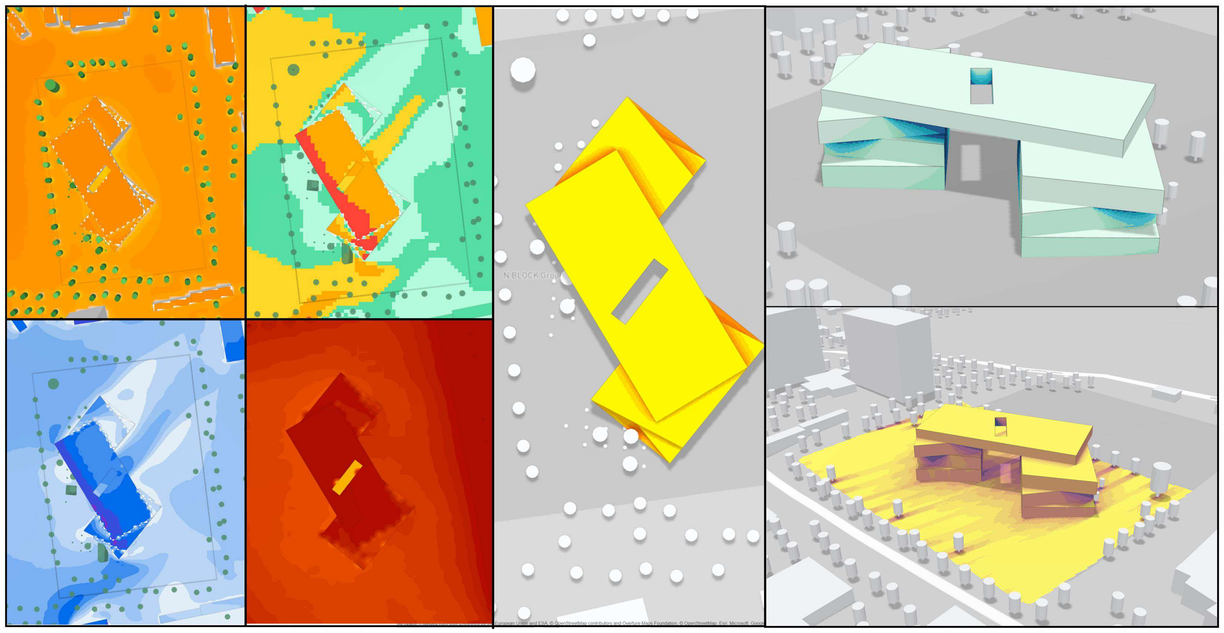
Final Concept Massing

Proposal 1 forms the base, with Proposal 2’s orientation for better wind and solar distribution, and Proposal 3’s projecting blocks and bridge for mutual shading.

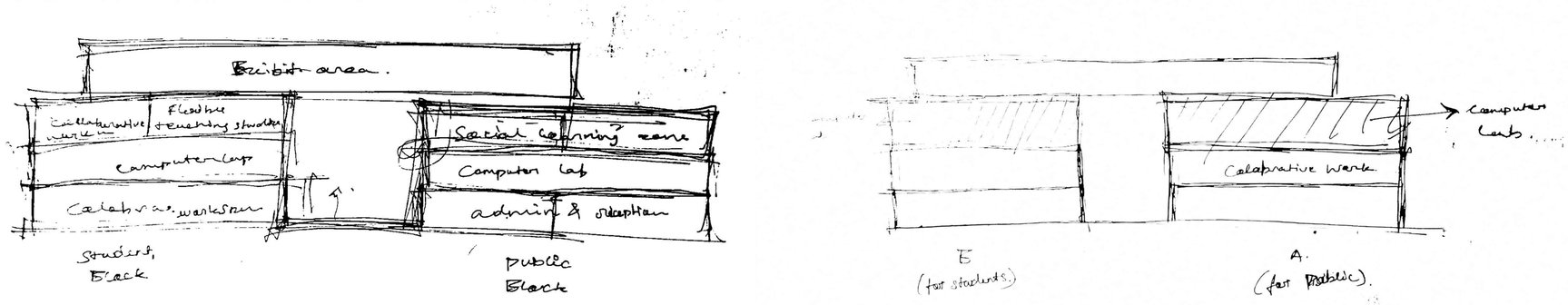




Conceptual Site Plan

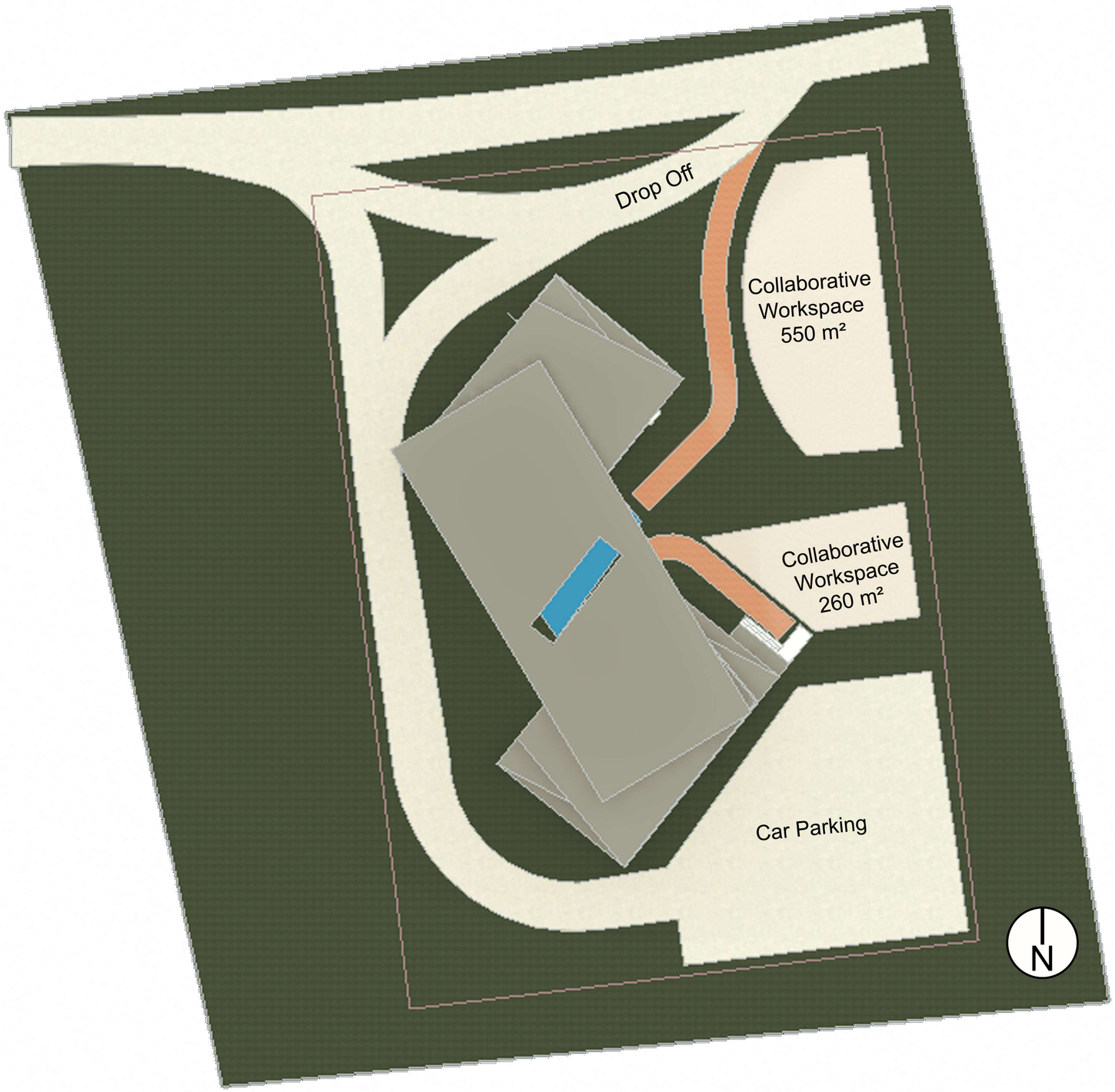


Site Analysis



Conceptual Function Based Sectional Zoning

Site Plan



Design Rationale:

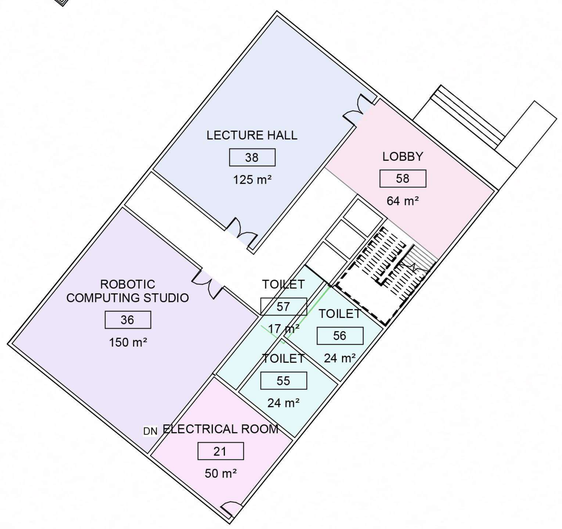
The Robotics Innovation Centre in Coimbatore, Tamil Nadu, is conceived as a collaborative and publicly engaging environment for learning, experimentation and technological innovation. With an approximate floor area of 1,500 m², the centre is organized into two primary blocks connected by a bridge at the fifth-floor level, creating a strong visual and functional relationship between the spaces. At the site and courtyard level, collaborative workspaces and interactive zones allow school students from the adjacent block, visitors and the public to observe, engage with and learn from ongoing robotic activities. An Innovative Space and Maker Space provide flexible environments for experimentation, prototyping and hands-on learning. A landscaped water body between the two blocks acts as a climatic element, enhancing microclimatic cooling and creating a comfortable outdoor gathering space. The remaining programme requirements are accommodated within the four-storey building, while shaded balconies, courtyards and open spaces strengthen interaction between people, technology and the surrounding landscape.

Ground Floor Plan

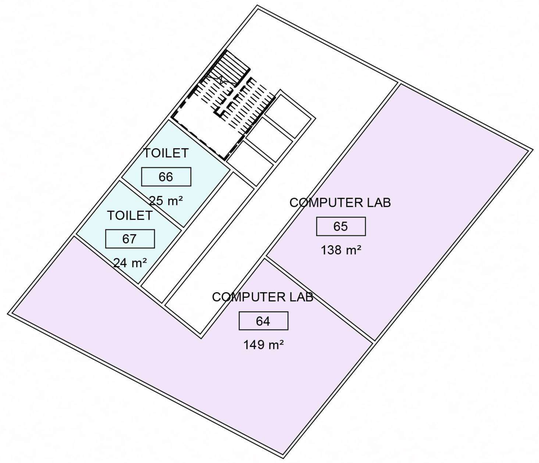


Room Legend

- ADMIN OFFICE
- ELECTRICAL ROOM
- LECTURE HALL
- LOBBY
- RECEPTION
- ROBOTIC COMPUTING STUDIO
- TOILET
- WAITING AREA

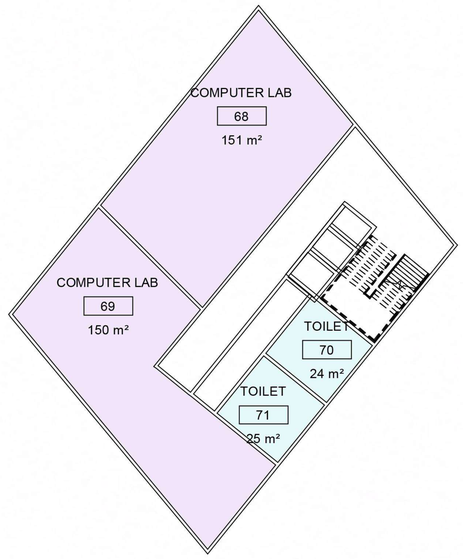


First Floor Plan



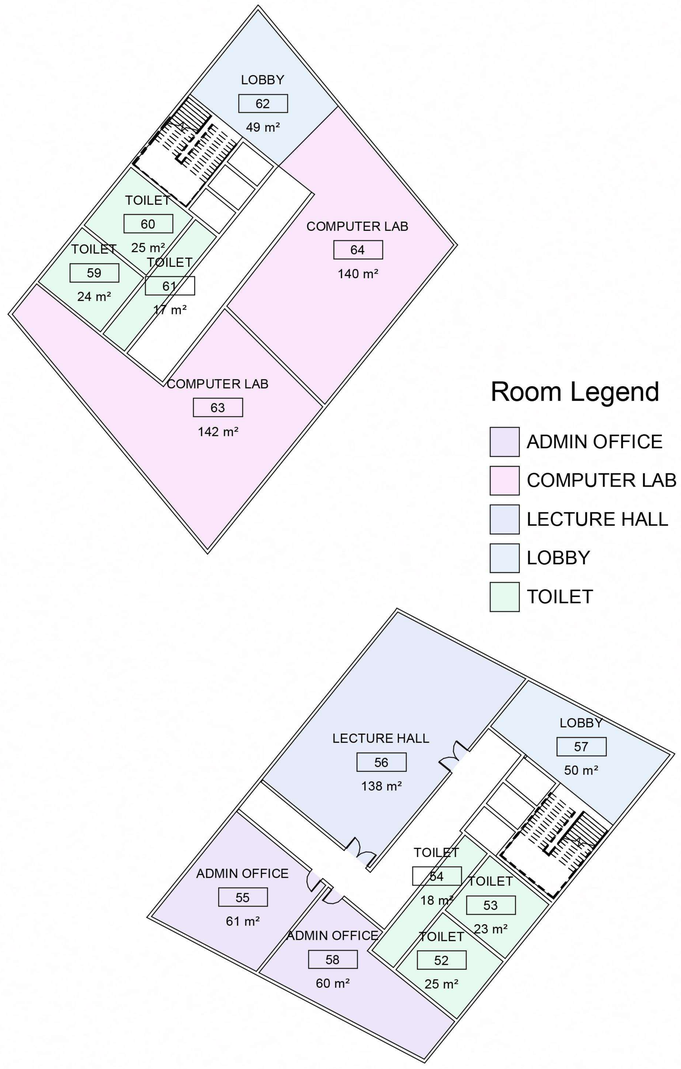
Room Legend

- COMPUTER LAB
- TOILET



Scale 1:200

Second Floor Plan



Room Legend

- ADMIN OFFICE
- COMPUTER LAB
- LECTURE HALL
- LOBBY
- TOILET

Third Floor Plan

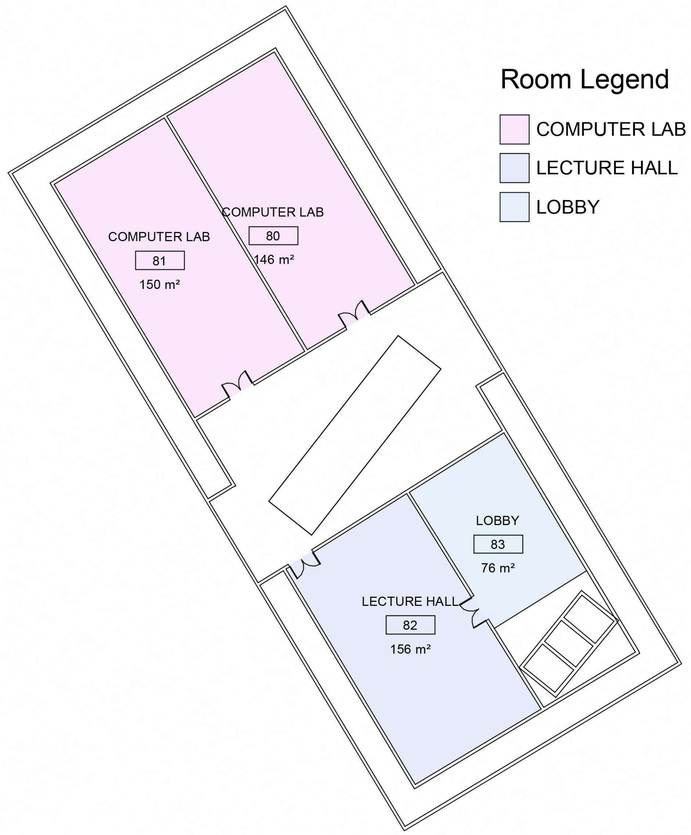


Room Legend

- ADMIN OFFICE
- COMPUTER LAB
- LECTURE HALL
- LOBBY
- TOILET

Scale 1:200

Fourth Floor Plan



Room Legend

- COMPUTER LAB
- LECTURE HALL
- LOBBY

Scale 1:200