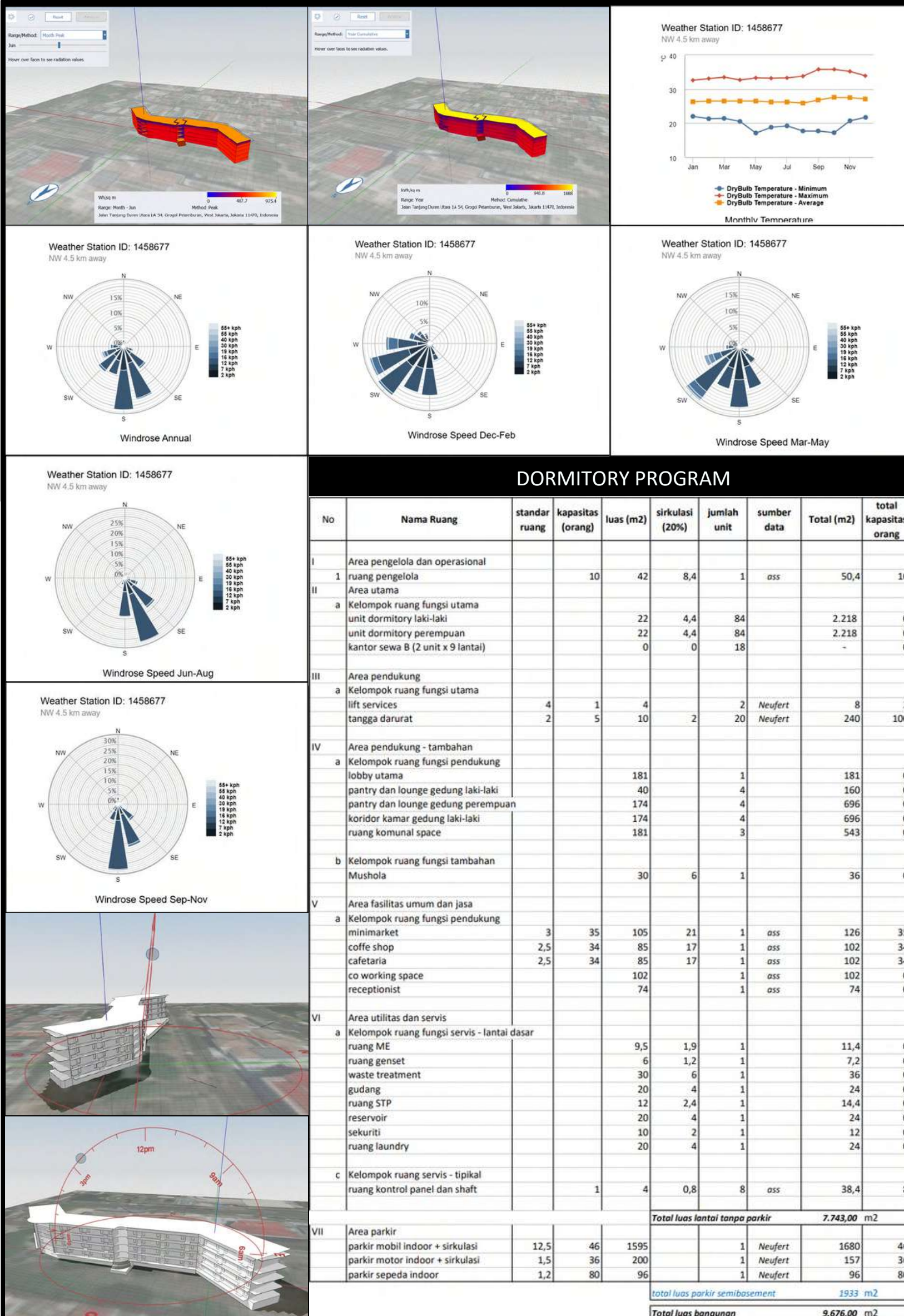


# Dormitory

The university will build new dormitories for new students to help them adapt to the campus environment and increase their love for the university. This building will also apply the principles of sustainable development and introduce a healthy lifestyle to students.

## SITE AND CLIMATE ANALYSIS

## DESIGN LOCATION



## DORMITORY PROGRAM

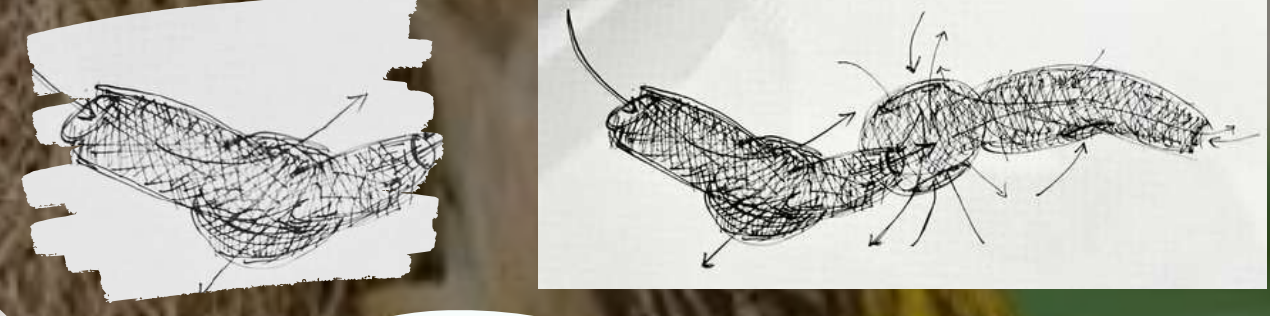
No	Nama Ruang	standar ruang	kapasitas (orang)	luas (m2)	sirkulasi (20%)	jumlah unit	sumber data	Total (m2)	total kapasitas orang
I	Area pengelola dan operasional								
1	ruang pengelola		10	42	8,4	1	oss	50,4	10
II	Area utama								
a	Kelompok ruang fungsi utama								
	unit dormitory laki-laki			22	4,4	84		2.218	0
	unit dormitory perempuan			22	4,4	84		2.218	0
	kantor sewa B (2 unit x 9 lantai)			0	0	18		-	0
III	Area pendukung								
a	Kelompok ruang fungsi utama								
	lift services	4	1	4		2	Neufert	8	2
	tangga darurat	2	5	10	2	20	Neufert	240	100
IV	Area pendukung - tambahan								
a	Kelompok ruang fungsi pendukung								
	lobby utama			181		1		181	0
	pantry dan lounge gedung laki-laki			40		4		160	0
	pantry dan lounge gedung perempuan			174		4		696	0
	koridor kamar gedung laki-laki			174		4		696	0
	ruang komunal space			181		3		543	0
b	Kelompok ruang fungsi tambahan								
	Mushola			30		1		36	0
V	Area fasilitas umum dan jasa								
a	Kelompok ruang fungsi pendukung								
	minimarket	3	35	105	21	1	oss	126	35
	coffe shop	2,5	34	85	17	1	oss	102	34
	cafetaria	2,5	34	85	17	1	oss	102	34
	co working space			102		1	oss	102	0
	receptionist			74		1	oss	74	0
VI	Area utilitas dan servis								
a	Kelompok ruang fungsi servis - lantai dasar								
	ruang ME			9,5	1,9	1		11,4	0
	ruang genset			6	1,2	1		7,2	0
	waste treatment			30	6	1		36	0
	gudang			20	4	1		24	0
	ruang STP			12	2,4	1		14,4	0
	reservoir			20	4	1		24	0
	sekuriti			10	2	1		12	0
	ruang laundry			20	4	1		24	0
c	Kelompok ruang servis - tipikal								
	ruang kontrol panel dan shaft	1	4		0,8	8	oss	38,4	8
<b>Total luas lantai tanpa parkir</b>									<b>7.743,00 m2</b>
<b>Area parkir</b>									
	parkir mobil indoor + sirkulasi	12,5	46	1595		1	Neufert	1680	46
	parkir motor indoor + sirkulasi	1,5	36	200		1	Neufert	157	36
	parkir sepeda indoor	1,2	80	96		1	Neufert	96	80
<b>total luas parkir semibasement</b>									<b>1933 m2</b>
<b>Total luas bangunan</b>									<b>9.676,00 m2</b>

Area : 7187 m<sup>2</sup>  
 Coordinate : - 6.170011, 106.785861  
 6°10'12.0"S 106°47'09.1"E

New students = 1,680 people  
 The assumption that must be facilitated = 20% x 1.680 = 336 people  
 1 room unit consists of 2 people (336 : 2 = 168 rooms)  
 84 men's rooms  
 84 girls' rooms  
 Average / unit = 26 m<sup>2</sup>  
 Module 4 x 6 m



# DESIGN CONCEPT



## EcoNest

'Eco' is short for ecology, referring to the relationship between organisms and their environment.  
 'Nest' means nest, which refers to a comfortable and safe place to live.

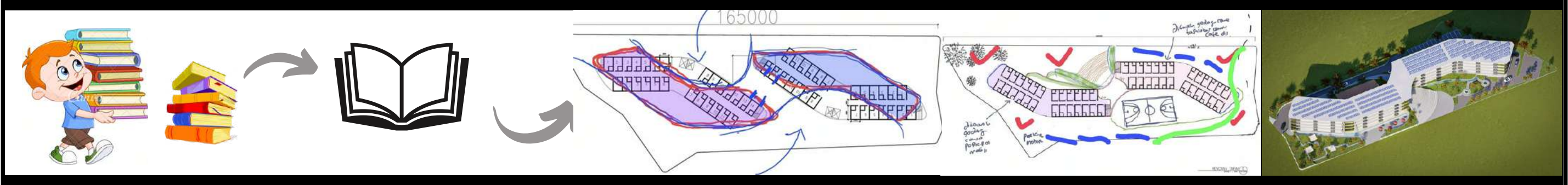
The weaver bird is known for its complex nests with "tunnels" entering. applied in building design as the concept of access and circulation, with certain zones that can be accessed through certain "tunnels".



### BUILDING MASS CONCEPT

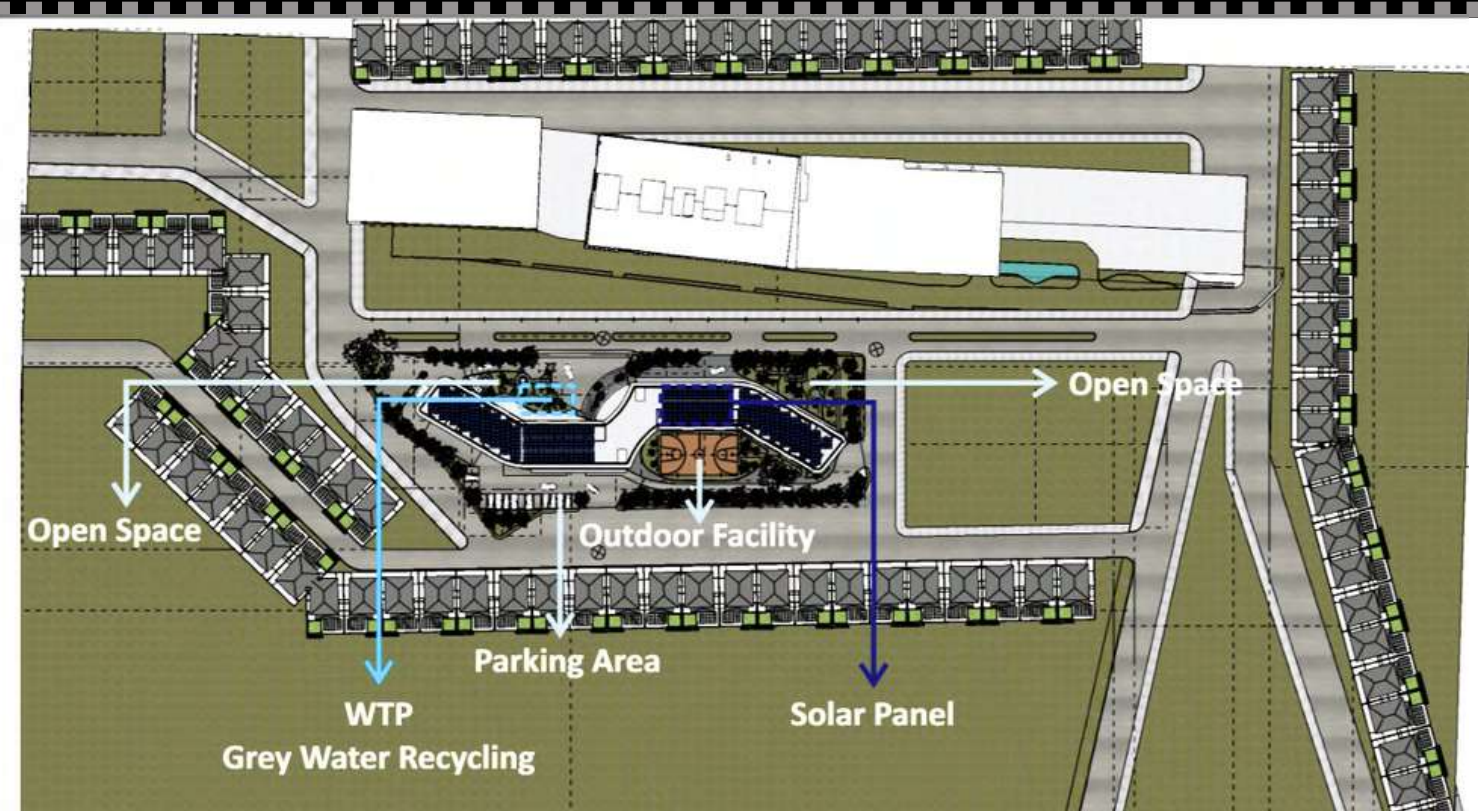
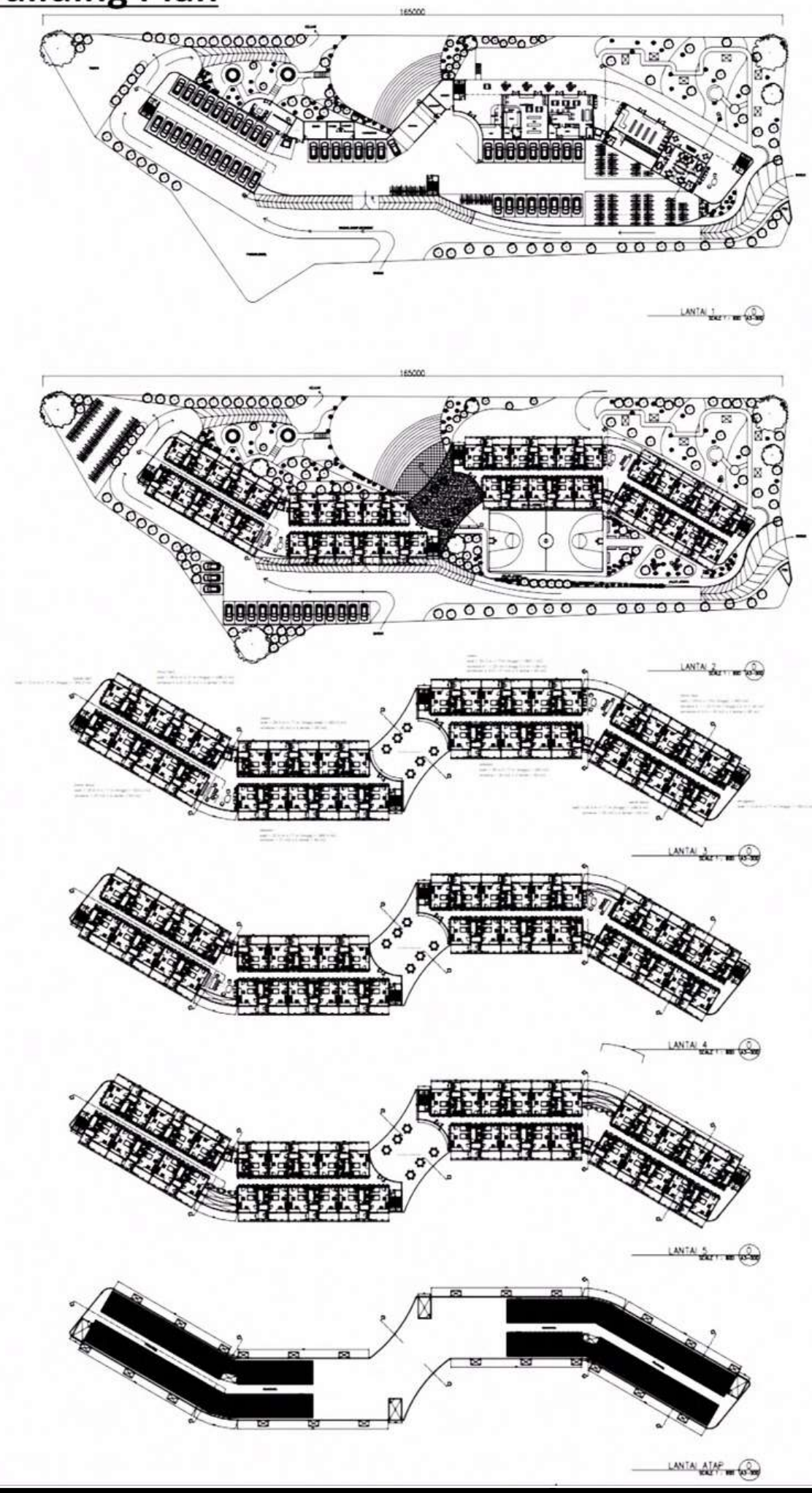
### Metaphor

Borrowed as a reference idea, then translated into architectural form



books are a source of knowledge, inspiration, and transformation. Books are usually associated with deeper learning, knowledge, and understanding  
 An open book can symbolize openness and transparency

### Building Plan



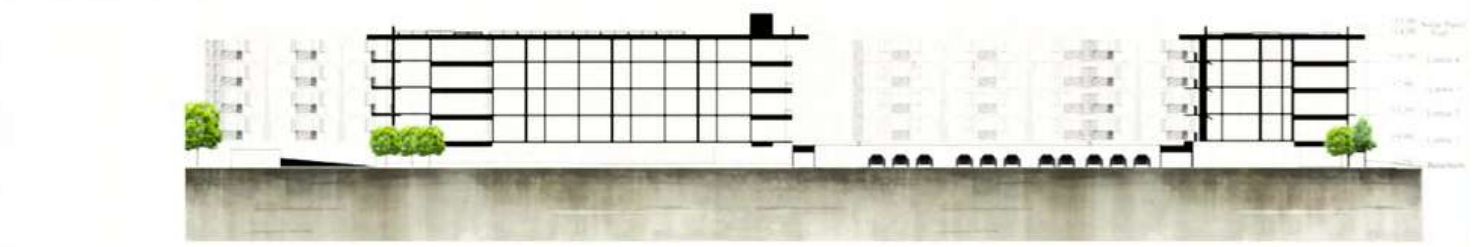
### South View



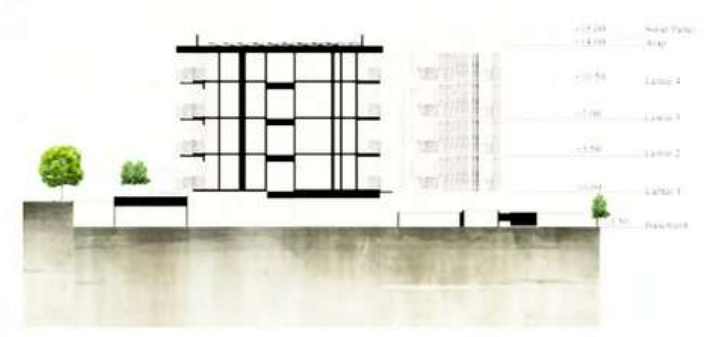
### North View



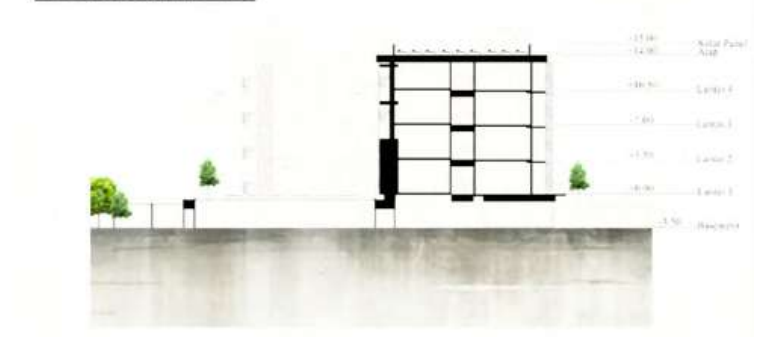
### Section A-A



### Section C-C



### Section D-D





Final energy use = 1.9 Kwp / unit x 168 units = 319.2 Kwp  
 319,000 / 450 wp = 708 panels x 2m x 1m panel size = 1,416 m<sup>2</sup>  
 (area of solar panels)  
 Total energy needs covered = 75%  
 Required solar panel area = 172,992 / 1500 = 115 kWp  
 1,416 m<sup>2</sup> solar panel area  
 The roof area of the building is not = 1,790 m<sup>2</sup>

## ACHIEVING ENERGY, WATER AND MATERIAL SAVINGS

### ENERGY SAVINGS

Energy Efficiency Measures 82.13%

### EDGE ADVANCED

Meets EDGE Energy Standard

### WATER SAVINGS

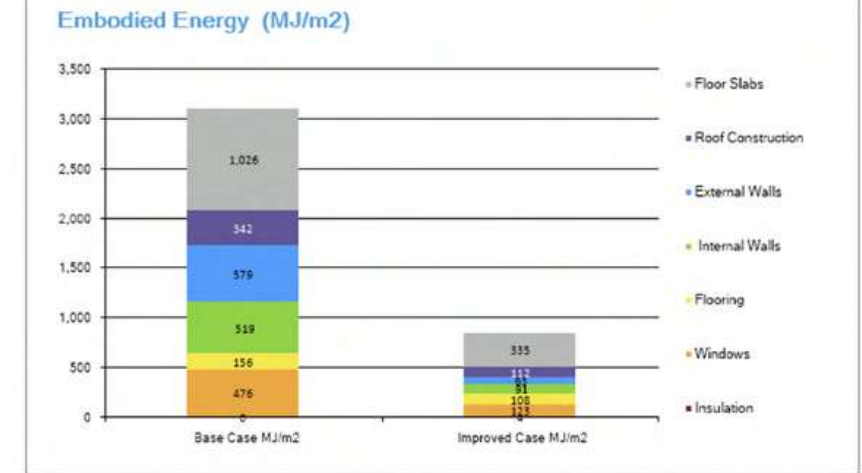
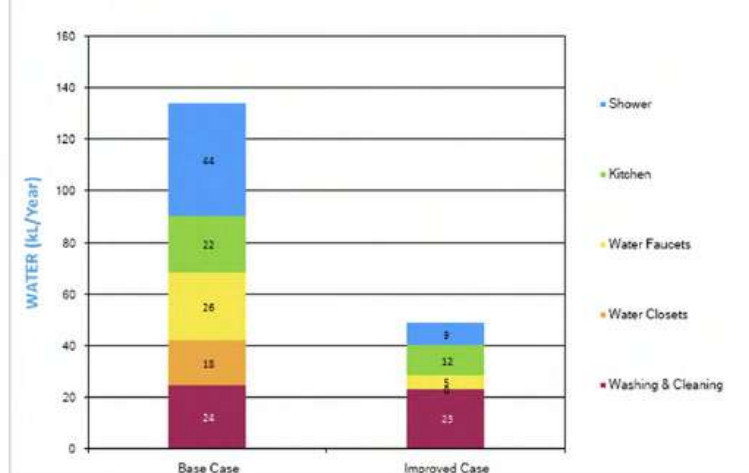
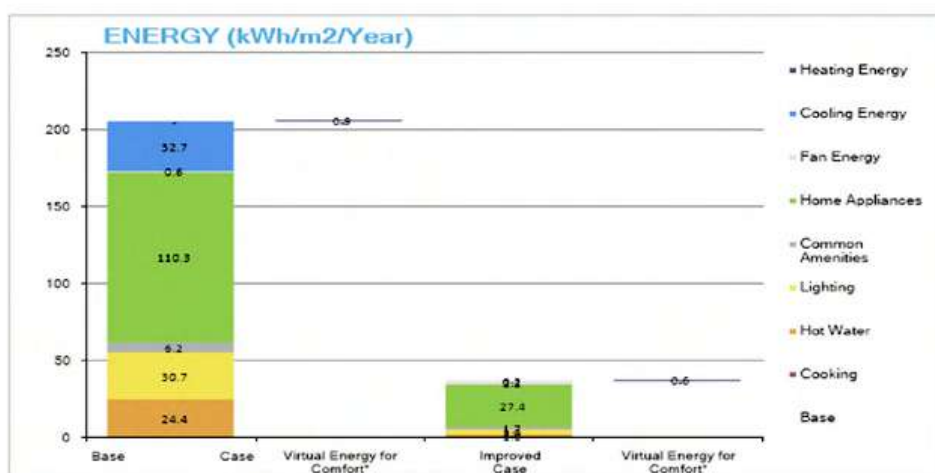
Water Efficiency Measures 63.76%

Meets EDGE Water Standard

### Embodied Energy Savings

Materials Efficiency Measures 73.00%

Meets EDGE Materials Standard



Carbon Emissions: 0.00 tCO<sub>2</sub>/Year/Unit

Meets Zero Net Carbon Standard

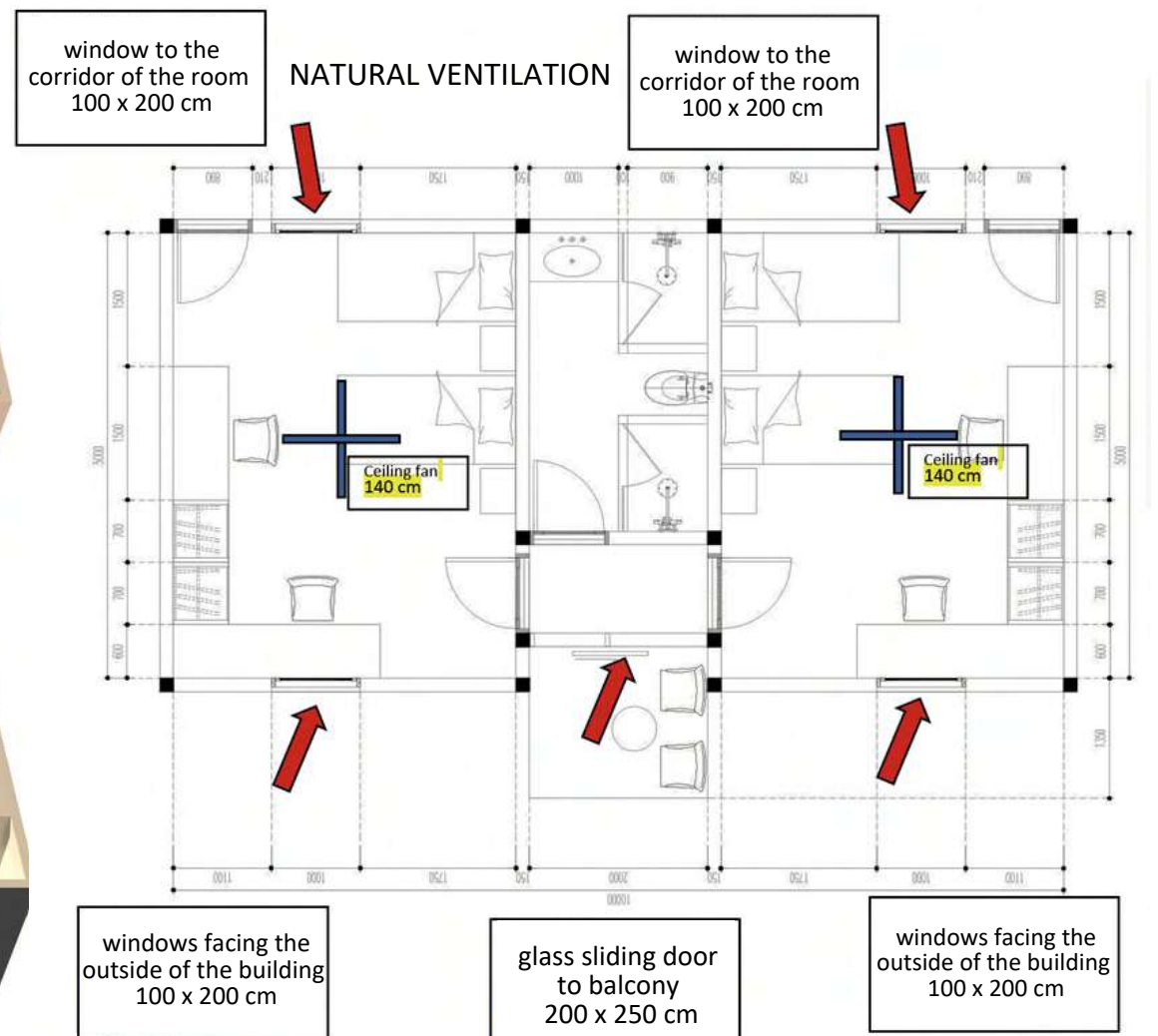


6m x 6m room would require a minimum of 4 fans with a minimum diameter of 0.9m or 900mm each.

Table 24: Minimum fan size (in meters)/Number of ceiling fans required for different room sizes<sup>16</sup>.

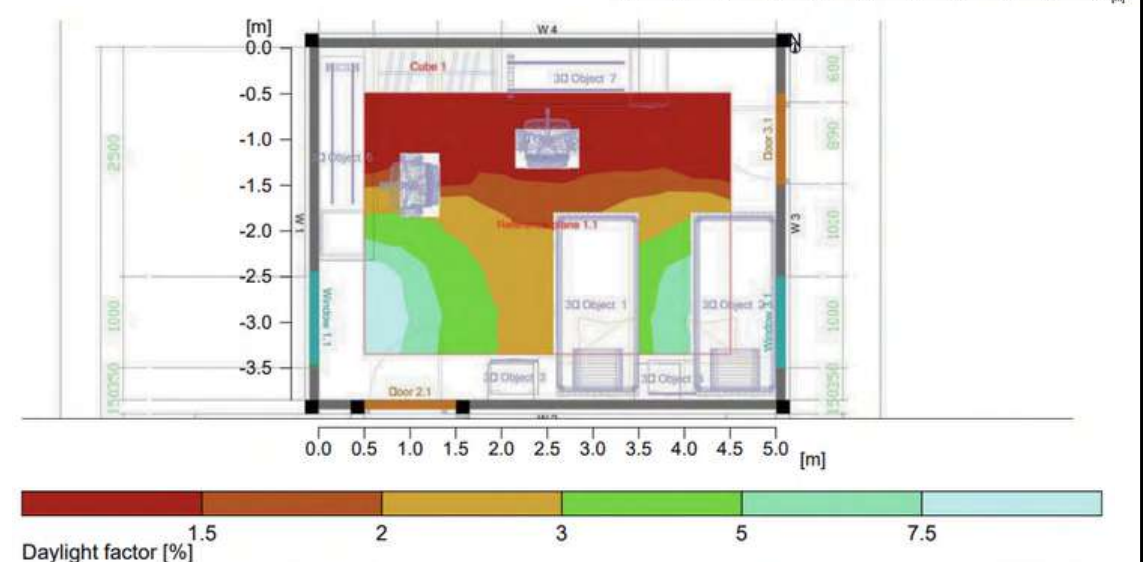
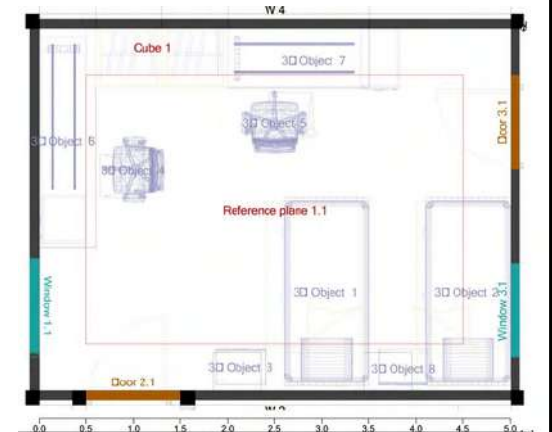
Room Width	Room Length											
	4m	5m	6m	7m	8m	9m	10m	11m	12m	13m	14m	15m
3m	1.2/1	1.4/1	1.5/1	1050/2	1.2/2	1.4/2	1.4/2	1.4/2	1.4/2	1.2/3	1.2/3	1.2/3
4m	1.2/1	1.4/1	1.2/2	1.2/2	1.2/2	1.4/2	1.4/2	1.4/2	1.5/2	1.2/3	1.2/3	1.2/3
5m	1.4/1	1.4/1	1.4/2	1.4/2	1.4/2	1.4/2	1.4/2	1.4/2	1.5/2	1.4/3	1.4/3	1.4/3
6m	1.2/2	1.4/2	0.9/4	1.05/4	1.2/4	1.4/4	1.4/4	1.4/4	1.5/4	1.2/6	1.2/6	1.2/6
7m	1.2/2	1.4/2	1.05/4	1.05/4	1.2/4	1.4/4	1.4/4	1.4/4	1.5/4	1.2/6	1.2/6	1.2/6
8m	1.2/2	1.4/2	1.2/4	1.2/4	1.2/4	1.4/4	1.4/4	1.4/4	1.5/4	1.2/6	1.2/6	1.2/6
9m	1.4/2	1.4/2	1.4/4	1.4/4	1.4/4	1.4/4	1.4/4	1.4/4	1.5/4	1.4/6	1.4/6	1.4/6
10m	1.4/2	1.4/2	1.4/4	1.4/4	1.4/4	1.4/4	1.4/4	1.4/4	1.5/4	1.4/6	1.4/6	1.4/6
11m	1.5/2	1.5/2	1.5/4	1.5/4	1.5/4	1.5/4	1.5/4	1.5/4	1.5/4	1.5/6	1.5/6	1.5/6
12m	1.2/3	1.4/3	1.2/6	1.2/6	1.2/6	1.4/6	1.4/6	1.4/6	1.5/6	1.4/8	1.4/8	1.4/8
13m	1.4/3	1.4/3	1.2/6	1.2/6	1.2/6	1.4/6	1.4/6	1.4/6	1.5/6	1.4/9	1.4/9	1.4/9
14m	1.4/3	1.4/3	1.4/6	1.4/6	1.4/6	1.4/6	1.4/6	1.4/6	1.5/6	1.4/9	1.4/9	1.4/9

### BEDROOM FLOOR PLAN



### DAY LIGHT AREA - RELUX

This room is lit by direct sunlight, and will affect energy savings in dormitory buildings



# ENERGY SAVING

HME04 External Shading Devices - Annual Average Shading Factor...  
 AASF

## HME04 - Annual Average Shading Factor (AASF) Calculator

Select your Latitude and Hemisphere - [View map with Latitude & Hemisphere](#)

0° - 9°  North

Ensure that all windows have been accounted for. If any windows do not have an overhang, they must still be included in the calculation and

Window Type	Window Orientation Which side does this window face?	Window Area (m <sup>2</sup> )	Overhang Type
Type 1	North	212.00	Horizontal Overhang
Type 2	North East	214.00	Horizontal Overhang
Type 3	South	168.00	Horizontal Overhang
Type 4	South West	168.00	Horizontal Overhang

## Window to wall ratio

HME01\* Reduced Window to Wall Ratio - WWR of 17.43%  
 WW...

## HME01 - Window-to-Wall Ratio (WWR) Calculator

Orientation	Wall Area (m <sup>2</sup> ) Example: 120	Glazing Area (m <sup>2</sup> ) Example: 60	Ratio in %
North	1016.60	212.00	20.85
South	1062.50	168.00	15.81
East	0.00	0.00	
West	0.00	0.00	
North East	979.20	214.00	21.85
North West	180.20	0.00	0.00
South East	180.20	0.00	0.00
South West	952.00	168.00	17.65
<b>Total</b>	<b>4370.70</b>	<b>762.00</b>	
Improved Case WWR User Input (%)			17.43

HME07 : using Low-E coated glass  
 Asahi Sunergy Euro gray (SNGN) glass with  
 U value = 4.0 W/m<sup>2</sup>K, and SHGC = 0.41  
 HME05 : use insulation on the roof

## Windows and shading devices



Total Window Area

Overhang Depth	AASF
Dh=H/3 (window overhang depth=1/3 window height)	0.39
Dh=H/3 (window overhang depth=1/3 window height)	0.34
Dh=H/3 (window overhang depth=1/3 window height)	0.39
Dh=H/3 (window overhang depth=1/3 window height)	0.36

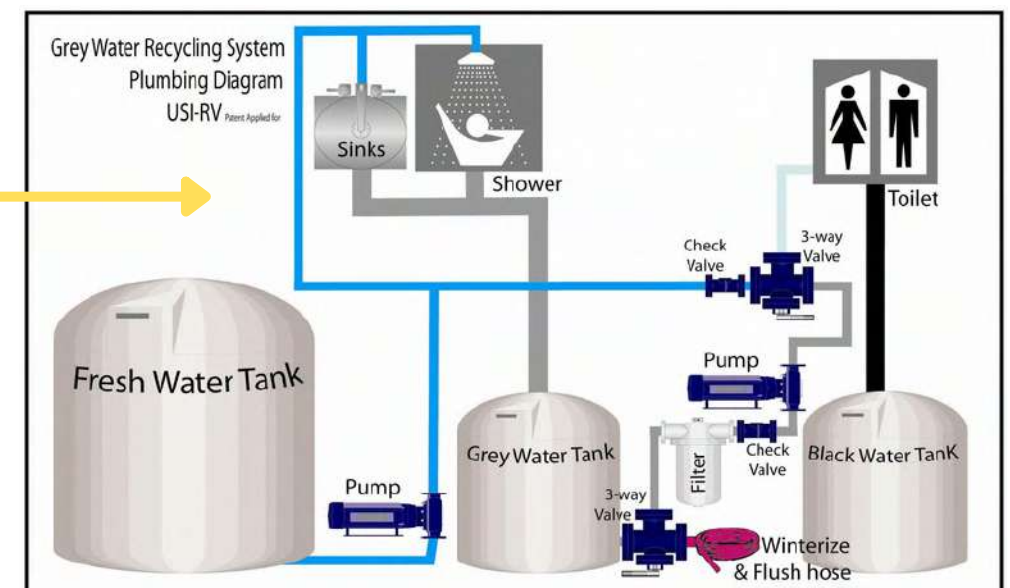
## Reflective paint - roof



## Renewable energy – solar photovoltaics

HME20 Solar Photovoltaics - 75% of Total Energy Use  
 % of ...  Capa...

## Grey Water System



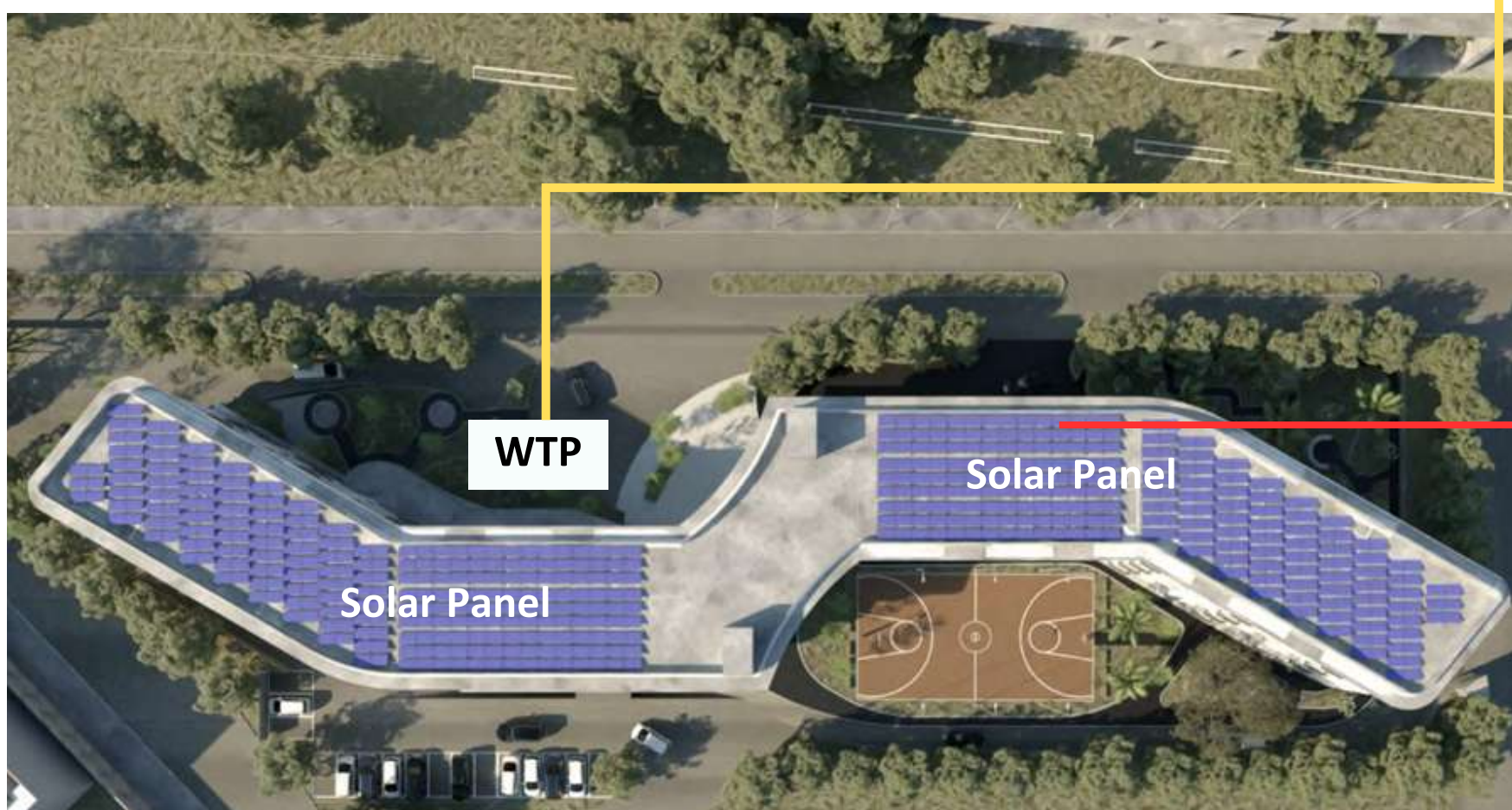
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Total energy needs covered = 75%

Required solar panel area = 172,992 / 1500 = 115 kWp = 1,416 m<sup>2</sup> solar panel area

The roof area of the building is not = 1,790 m<sup>2</sup>



# INTERIOR DORMITORY

Typical Bedroom Dormitory



Bathroom Dormitory



Typical Bedroom Dormitory



Pantry



Pantry



Living Area & Pantry



Corridor



EXTERIOR DORMITORY

North View



South West View



North View



South East View

